Ergonomics Process *Manual*

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Foreward

The Ohio Bureau of Workers' Compensation's (BWC's) Division of Safety and Hygiene's mission is to interact with employers and employees to facilitate the identification of safety and health risks. The mission also charges the division to stimulate management, the union (if applicable) and employees toward process improvements; to help prevent injuries and illnesses in the work place; and to minimize the financial and emotional impact of a work-related injury or illness. In accordance with this philosophy, the division's ergonomics group has initiated an ergonomics based injury-management process.

This manual provides you with information, essential steps and the tools necessary to develop an ergonomics process at your facility. It is designed to assist both small and large companies in the development of an in-house ergonomics process. This manual explains the ergonomics process and provides examples designed to assist companies in preventing and controlling injuries related to ergonomic risk factors.

The purpose of developing an ergonomics process is to improve the quality of work life for employees, reduce the costs associated with work-related injuries, as well as continually upgrade your facility with regard to ergonomic improvements. For any company that is serious about reducing/eliminating ergonomic-related injuries, the implementation of an ergonomics process is essential. We believe this manual will be a useful tool for companies throughout Ohio.

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Introduction

What is ergonomics?
A practical definition for ergonomics is the science of evaluating the relationship between the worker and the work place to ensure that job demands do not exceed worker capabilities. More specifically, ergonomics is the study of human abilities and limitations, and the application of this information to the design of the environment.

The worker, in performing a job, must act to complete assigned tasks to generate the desired product in the most efficient manner possible. At the same time, the worker must be protected against undue physical, biological and psychological strain that might occur as a result of the performance of the required tasks.

Ergonomics is concerned with:

- The design of the work place to meet the physical characteristics of the worker;
- The analysis and design of controls and displays to allow the worker to operate and monitor processes efficiently with minimum error;
- The minimization of external forces that can act to affect the worker in the work place, such as noise, thermal conditions, illumination and vibration;
- The development of job procedures that meet the capabilities of the worker in the system;
- The design of tools so that they match the physical characteristics of the worker.

Cumulative trauma disorders
Cumulative trauma disorders (CTDs) are defined as disorders of the bones, tendons, ligaments, joints, muscles and nerves that may result from exposure to ergonomic physical risk factors. CTDs also may be referred to as work-related musculoskeletal disorders (WMSDs) or repetitive stress injuries (RSIs). 'Cumulative' implies that physical stresses build up gradually over time. 'Trauma' indicates a bodily injury that can be labeled as a disorder because it involves a physical ailment of abnormal state.

Repetitive jobs cause mechanical wear and tear to one or more body parts. A similar result may occur when an incident causes a local microtrauma that would normally heal without complications. Instead the job activity's required movements further irritate the area of microtrauma and prevent normal healing. Common CTDs that may have work-related causes are:

- Carpal tunnel syndrome;
- Epicondylitis (tennis or golfer's elbow);
- Ganglionic cyst;
- Trigger finger;
- Tendinitis;
- Thoracic outlet syndrome.

Certain physical elements of a job or task are potentially stressful and known to be risk factors for CTDs. Job stresses become harmful and may result in CTDs when a worker exceeds his or her capabilities. An ergonomics process works to eliminate or reduce these risk factors that are known to increase the likelihood of developing a CTD.

Factors that increase the risk of developing CTDs include:

- Repetitive motions;
- Excessive forceful exertions;
- Awkward or static postures;
- Contact stresses;
- Vibration;
- Extreme environmental conditions;
- Inadequate recovery time.

Injury/illness statistics

According to a 1997 Bureau of Labor Statistics survey of occupational injuries and illnesses, 27.7 percent of nonfatal injuries or illnesses involving days away from work resulted from overexertion and 43.6 percent were classified as strains/sprains. Another 4.1 percent of nonfatal injuries and illnesses resulted from repetitive motion.

The average cost of a CTD injury is $4,051 (CTD News, Vol. 7(6), 1998). The indirect costs of these injuries can exceed direct costs by a factor of 6.7 (S. Clemments, UNUM Disability Lab at Rutgers University). Indirect costs include lost productivity, overtime substitution, recruitment, retraining, supervision of the injured worker, etc. If these types of injuries and costs impact your company, it is beneficial for you to implement an ergonomics process.

It is likely that the Occupational Safety and Health Administration (OSHA) will mandate that you have an ergonomics process in place. It is expected that an OSHA ergonomics standard will recognize a company's ergonomic activities prior to the implementation of an ergonomics standard. It will not make obsolete any viable safety and health programs that deal with musculoskeletal disorder problems. (OSHA up to date, Vol. 27, No. 6, June 1998).

Benefits of implementing an ergonomics process include:

- Providing employers and employees with the tools, methods and a structure necessary to reduce work injuries, frequency, severity and associated costs;
- Increasing production;
- Improving quality;
- Improving morale;
- Preparing the employer and employees for the OSHA ergonomics standard.

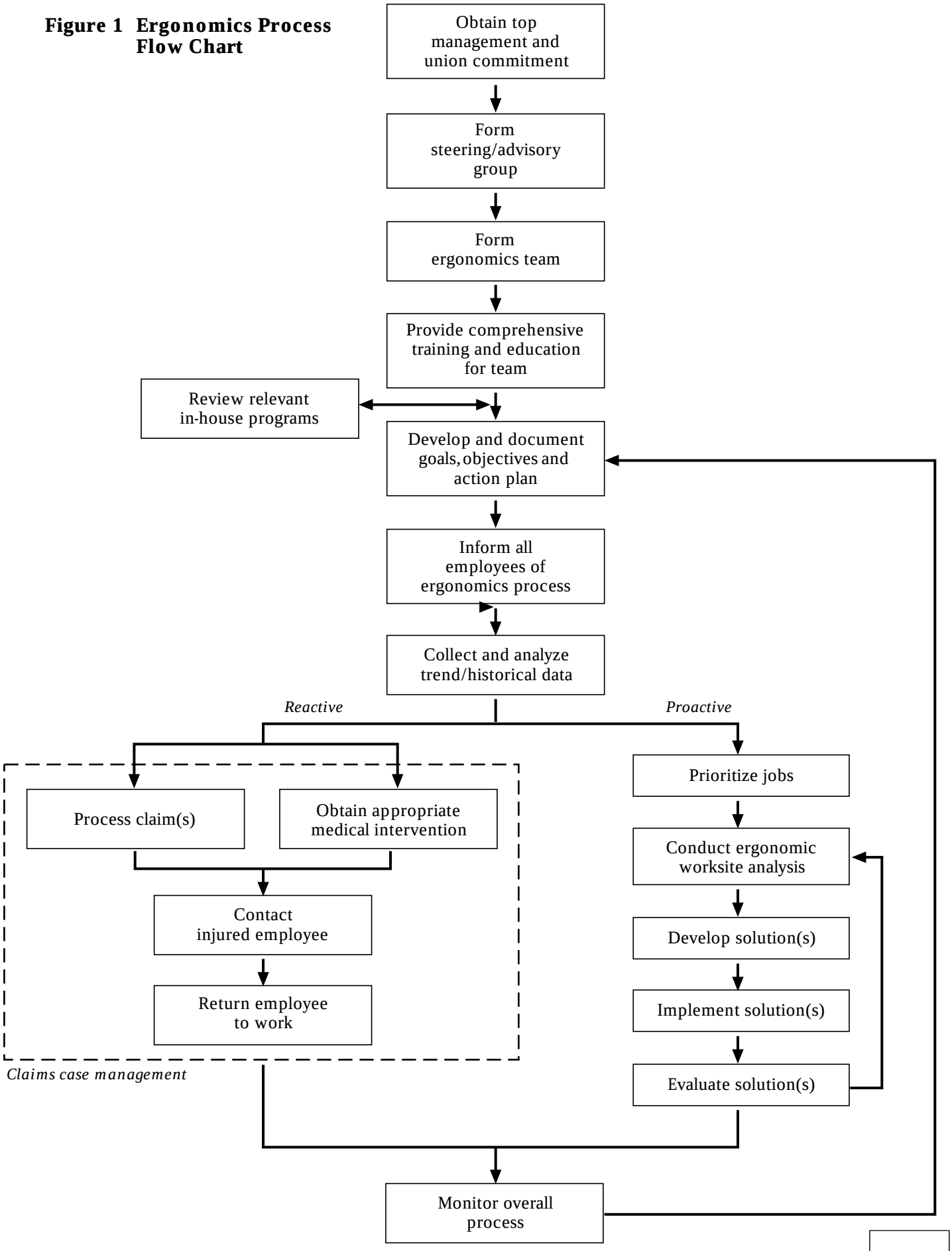
The remainder of this manual addresses the fundamental elements of an effective ergonomics process. As you read the manual, you may find that your company has an ergonomics or safety team with some essential elements in place. If this is the situation, then this manual's techniques and examples may supplement your existing process and enhance its effectiveness. If your company has never embarked on this type of venture, then this manual will provide you with direction, information and examples on how to develop and implement a successful ergonomics process. In conclusion this manual was designed to help you create an ergonomics process or enhance an existing ergonomics process.

Ergonomics process flow chart

The ergonomics process flow chart shown in Figure 1 identifies the various steps required to develop an effective ergonomics process within your facility. Each box in the flow chart represents a task that must be addressed and completed by a company representative, a steering/ advisory group, and/or the ergonomics team. Although the flow chart is in sequential order, you may find that your ergonomics team will not address the steps in this exact sequence. The ergonomics team also may find that they are working on several tasks at the same time.

See Figure 1 on following page.

Figure 1 Ergonomics Process Flow Chart



Obtain top management and union commitment

The top management and the union leadership (if applicable) within your organization must collectively agree to support and commit to the ergonomics process. Both parties must work together to help improve the quality of work life, while protecting the employability of all the employees within the organization. The ergonomics process goal is to reduce the frequency and severity of injuries and the cost of workers' compensation claims. Open communication, joint problem identification and solution development with the support of both labor and management is necessary to achieve this goal.

The top management and the union leadership should have joint meetings to receive information and discuss the ergonomics process and its components. Appendix A contains an example of an executive summary that you can use to inform everyone about the ergonomics process. This summary outlines the intent of the ergonomics process and identifies expected outcomes of implementing such a process.

Top management and the union leadership (if applicable) can show their support for this effort by drafting and signing a memorandum of understanding or a letter of commitment — a document that contains verbiage regarding the commitment to the ergonomics process by both the top management and union officials. The memorandum of understanding/ letter of commitment is not a legal document. If your company does not have a union organization, top management should draft and sign the document to confirm its support for the ergonomics process. Appendix B contains example letters of commitment and memorandum of understanding.

Both parties must identify and resolve any contractual issues that the ergonomics process may affect. Both parties must agree to partake in this joint effort with the understanding that the ergonomics process will not be adversely affected, especially during grievance discussions and contract negotiations. If top management and/or your labor organization will not commit to the ergonomics process, postpone the ergonomic effort until you can obtain a firm commitment from both management and the union.

Form the steering/advisory group

A steering/advisory group may be a group of people or one person that is responsible for spearheading the effort to formulate an ergonomics team. A steering/advisory group can operate in several ways, including:

- Forming and then disbanding after the ergonomics team is established;
- Serving as an approval body that oversees the ergonomics team projects and expenditures;
- Comprising members from an existing group.
- Comprising of only management personnel or it may be a combination of management and hourly employees;

Bottom line: someone or people with decision-making ability must be responsible for assembling the ergonomics team.

Form ergonomics team

The ergonomics team is the driving force of the ergonomics process. Ask prospective ergonomics team members to serve on the team on a voluntary basis. Consider specific qualifications and characteristics when choosing ergonomics team members. An ergonomics team member should work well with others, be willing to share ideas and be a good listener.

Because job tasks and demands are multifaceted, ideally, the ergonomics team will be comprised of employees that represent the various departments throughout your company. If a department is unable to have a representative serve on the team, perhaps an associate from that department can serve as a resource person for the team. Also, you can use an existing team (e.g., safety team) to tackle ergonomic issues as long as the team is not overburdened by assuming additional tasks.

To solicit prospective ergonomics team members, consider creating or using an existing membership application or volunteer form. Appendix C contains a sample membership application form. Use the ergonomics team application form to gather pertinent employee information. The team must develop criteria to choose the most appropriate and desirable team members (e.g., from a particular department, years of experience, job title, etc.).

It is preferred to have an equal number of management and employee representatives on the ergonomics team. The number of team members may vary according to your company size. In general, most teams are comprised of six to 10 members. Some teams have an open seat, which is filled by an associate from a department that has been targeted for ergonomic analysis and improvements. The department employee that fills the open seat only participates on the team for the duration of that specific ergonomics project.

Sub-teams

When an ergonomics team consists of more than 10 people, consider a sub-team strategy in which the core ergonomics team breaks into smaller groups so that each group can tackle separate projects at the same time. Each sub-team is responsible for its specific projects analysis, problem identification, solution development, monitoring and regularly updating the ergonomics team on the status of its projects.

Employee involvement teams often have a facilitator to assist with team meetings and tasks. Facilitators assist the team in establishing the norms and rules, keeps the team discussion on track, and documents and organizes issues. Facilitators do not actively participate in problem identification and solution development. Facilitators should receive facilitators' training so that they are familiar with roles, responsibilities and the structural components required to facilitate a successful employee involvement team. Civic groups, chambers of commerce, labor organizations or safety councils may provide facilitator training and/or training information.

Consider soliciting prospective ergonomics team members from these departments/positions:

- **Management** — A participating member from management can provide support to the ergonomics team in many ways. Managers typically have access to all/most areas of the company and personnel making it easier to gather and communicate information to all employees. Managers generally are knowledgeable about the company's goals and objectives. They also can recognize employee contributions to the process, as well as ensure resources (e.g., time allocations, money) are available to achieve success. Management's visible participation symbolizes the company's commitment and support for the ergonomics process.
- **Union representatives** — These individuals establish union commitment and support to foster a successful process. Union involvement will ensure that the goal of the ergonomics process is not to eliminate jobs or make employees work harder, but to reduce ergonomic injuries and the costs associated with those injuries. Union involvement also may ensure that the ergonomics process does not violate any labor/management bargaining contract issues.
- **Supervisors** — Supervisors are involved in the day-to-day operations and are often aware of the intricacies of the company's various jobs. Supervisor involvement is essential because they are often the first lines of communication to the employees. They also may play a key role in recognizing ergonomic risk factors and assisting in the development of practical, realistic solutions designed to decrease/eliminate risk factors.
- **Associates/affected employees** — Front line employees' participation is essential to make the ergonomics process a success. No one knows a job better than the person who performs the job. Employee input is often invaluable when the team has to identify risk factors and develop solutions to eliminate/reduce the risks. Employees also promote the ergonomics process and solicit feedback from their peers on the work floor.
- **Human resources/benefits compensation personnel** — Human resource personnel usually track and document the injury and illness cost, and frequency information. Typically, human resources and or benefits compensation personnel administrate the workers' compensation claims and transitional return-to-work program. Their input and resources can provide valuable injury information to the team and enhance the team's ability to target specific departments according to the injury type, frequency and severity.
- **Engineers, facilities planning and maintenance personnel** —These individuals are experts in machine and process design. Engineering and maintenance may assist the ergonomics team with problem identification and solution development. Their assistance may be necessary to implement the ergonomic changes within an area/department.

- **Health-care provider** — Internal company health-care providers can assist the ergonomics team with valuable injury/illness information. If your health-care provider is located off-site, inform him or her of your ergonomics effort and invite him or her to participate on the team.
- **Plant safety representative** — One of the many functions of the plant safety representative is to provide a safe work place free from recognized safety and ergonomic hazards. Plant safety representatives are knowledgeable about state and federal safety guidelines and standards. It is imperative that you do not violate federal and state safety guidelines and standards when implementing ergonomic improvements.
- **Purchasing/accounting/financing** — Finance and accounting personnel may expedite capital expenditures for ergonomic improvements and their involvement in the process is preferred. When provided with ergonomics training, these individuals can ensure that tools and equipment have desirable ergonomic characteristics when purchased.

Provide comprehensive training and education

The ergonomics team members should receive ergonomics training and team employee involvement/dynamics training as soon as the team is formed and as new members join the team. The team members must receive basic and advanced ergonomics training to have a comprehensive understanding of ergonomic principles, theories and applications. Training and education ensure that the ergonomics team members can identify ergonomic hazards and provide recommendations to reduce/eliminate the identified hazards. The team employee involvement/dynamics training will provide information and enhance the member's skills regarding team dynamics, problem solving, and membership roles and responsibilities.

Ergonomics training resources:

- Ohio Center for Occupational Safety and Health (OCOSH) — 1-800-644-6292
- Ergonomics consulting firms
- Universities
- Union organizations

The next page contains a sample training agenda.

Cover these items in ergonomics team member training:

Proposed ergonomics training agenda

Introduction to ergonomics

- Definitions of ergonomics
- Categories of ergonomic applications
- Ergonomic standards and guidelines
- Injury costs and statistics

CTDs and manual materials handling (MMH) overview/ considerations

- Definition of CTDs
- Types of CTDs
- Types of MMH tasks
- Basic anatomy
- Risk factors associated with CTDs and MMH-related tasks
- Slide/video examples identifying risk factors

Systematic approach to prevent/control CTD- and MMH-related injuries/illnesses

- Identify trends
- Review and analysis of records
- General information gathering
- Prioritize jobs/job selection
- Data collection and analysis for the selected job
- Anthropometry
- Work-site analysis
- Biomechanical design model
- National Institute for Occupational Safety and Health lifting guide
- Solutions development
- Interventions (engineering and administrative controls);
- Implementation
- Evaluation of intervention

Review relevant in-house programs

It is important for the ergonomics team to review all relevant in-house programs/processes to determine if a structure is in place within the company to serve as a template for the ergonomics process. Perhaps the ergonomics team can piggyback off of a team, program or process that's in place and that has produced measurable success. Consider using existing forms and tracking devices, rather than creating new ones. The bottom line: don't reinvent the wheel.

Examples of in-house programs/process are:

- Safety;
- Continuous improvement;
- Quality;
- Employee involvement.

Develop and document goals, objectives and an action plan

To make the ergonomics process a success, the ergonomics team must develop and document the structural components of the ergonomics process. Documentation will help establish clear achievable goals, objectives and action plans. Based on our experience, ergonomics teams that do not have a written program encounter frustration, lack of interest and eventual failure. To assist your team with this task, we developed the Ergonomics Process Blueprint for Success of which a copy is located in Appendix D.

The ergonomics team generates the ergonomics-process written plan by discussing a series of questions presented in the Ergonomics Process Blueprint for Success and documenting the answers. Discuss and answer the questions posed in the Ergonomics Process Blueprint for Success by applying a who, what, when, where and why format. For example, a series of questions are listed regarding collecting and analyzing data. Discuss and answer these questions:

- Who will collect and analyze the data?
- What data will be collected?
- When and how often will the data be collected?
- From where will the data be retrieved?
- Why will the data be collected and analyzed?

The Ergonomics Process Blueprint for Success contains sample answers for each question. The examples guide the team through the process, and can serve as discussion points.

You will create your written ergonomics process by addressing and documenting all the questions identified in the Ergonomics Process Blueprint for Success — a fluid document. This means that as you make modifications and changes in your ergonomics process, you should update the written plan to reflect those changes. The major steps and a brief explanation of each step in the Ergonomics Process Blueprint for Success are listed in Table 1 on the following pages.

Throughout the Ergonomics Process Blueprint for Success, the team may need to develop forms or communication tools to effectively administer the process. Appendix H contains various examples of forms and documents that the team can use. The sample forms and the applicable appendices are referenced throughout the Ergonomics Process Blueprint for Success. Use the samples as a starting point to help the team create whatever forms are needed for successful implementation of the process.

Table 1. Summary of the Ergonomics Process Blueprint for Success steps
Explanation of steps

Step 1: **Mission statement**	A mission statement is an inspiring statement of what the team envisions for the process and the team.
Step 2: **Goals**	The team must establish clear, achievable and measurable goals to determine the effectiveness of its efforts.
Step 3: **Ergonomics team personnel**	Identify and document the ergonomics team members' names and department/work area. List individuals who serve as a resource to the team.
Step 4: **Team member roles and responsibilities**	Documenting each team member's roles and responsibilities allow the team members to have a clear understanding of their purpose and it ensures that each team member is held accountable.
Step 5: **Unexcused absences**	The team must devise guidelines to define what is considered an unexcused absence and how unexcused absences will be managed.
Steps 6: **Filling vacant ergonomics team positions**	As team member positions become available, establish a procedure to fill vacant positions efficiently and effectively.
Step 7: **Training and education**	Provide various types of ergonomics training to the ergonomics team members and all employees at your facility. Identify and document training specifics.
Step 8: **Trend data collection and analysis**	The ergonomics team will continually collect and analyze data. State the types of records and the frequency in which the team will collect and analyze data.
Step 9: **Prioritize jobs**	Once data are collected and analyzed, the team must establish criteria to determine the order in which it will target jobs.

Step 10: **Ergonomic work-site analysis**	Ergonomic work-site analysis allows the ergonomics team to identify existing and potential risk factors.
Step 11: **Solution development**	After the risk factors are identified, the ergonomics team must develop control measures designed to reduce/eliminate the identified risk.
Step 12: **Approval process (if applicable)**	Once control measures are developed, the team may have to seek approval from someone or some group within the company.
Step 13: **Solution implementation**	Upon receiving final approval for a project, develop, document and act upon an implementation plan and evaluation strategy.
Step 14: **Solution evaluation**	Evaluate every ergonomic modification to ensure risk reduction and employee satisfaction.
Steps 15: **Medical management**	Develop medical management of injuries and transitional return-to-work strategies to reduce the cost, frequency and severity of worker injuries.
Step 16: **Process monitoring**	Monitor the overall ergonomics process on a periodic basis to measure the effectiveness of the process and make changes as/if needed to the process.

Inform all employees of the ergonomics process

Inform and educate all employees about ergonomics and the ergonomics process mission, goals and objectives. General awareness training allows managers, supervisors and employees to acquire an understanding about ergonomic risk factors and control measures used to reduce/eliminate the risk. Provide ergonomics and ergonomics process awareness training to employees at an all employee meeting or a safety meeting. New hires should receive general ergonomics awareness and ergonomics process awareness training, perhaps during employee orientation. Continuous training and education is a vital component to keep all employees informed about ergonomics and the ergonomics process.

Key points to discuss with all employees are:

- Introduce all ergonomics team members;
- Emphasize the commitment that was obtained by both the union and/or top management (e.g., memorandum of understanding);
- Review the ergonomics process structure and action plan as stated in the Ergonomics Process Blueprint for Success;
- Stress the need and the ways in which employees can get involved;
- Provide information on basic ergonomic principles.

Communication tools

You can use various types of communication tools to promote the ergonomics process, solicit potential ergonomics team members, keep people informed of the ergonomics team activities and provide ergonomics education. It is vital to inform and involve employees in the ergonomics process. Tools you can use to accomplish this goal include:

- Bulletin boards;
- Closed circuit television;
- Mailings/Pay check stuffers;
- Videos made in-house.

Collect and analyze trend and historical data

Trend and historical data collection and analysis provide the ergonomics team with historical injury, illness and production information. These data allow the ergonomics team to identify trends in the areas or departments that may pose ergonomic concern to the work force. Production and injury/illness data may assist the team in its effort to narrow the focus from the overall company view to a department or job specific view. You may obtain injury/illness information from the workers' compensation administrator, human resource director, health and safety director, or a third-party administrator/actuarial firm. You may acquire production information from the production manager, supervisor, quality control manager or engineer. Historical injury and illness data also can provide a means to evaluate and monitor the ergonomics process and ergonomic projects by providing a baseline measure to which you can compare future data. These records may assist the ergonomics team in obtaining injury, illness and production information:

Injury and illness records

- Internal safety and accident reports
- OSHA 200 Logs
- Workers' compensation records
- First aid logs
- Incidence rates

Production information

- Quality control records
- Production records
- Rework/Scrap rates

Personnel records

- Turnover rates
- Absenteeism

Besides injury, illness and production information, there are various rates that you can calculate to detect possible ergonomic problems within a given department/job. Rate information can serve as a comparison tool that allows the team to compare the various rates before and after ergonomic interventions. You also can use these rates to compare your company's rates to similar industries. Appendix E contains sample rate calculations.

Prioritize jobs

Based upon the findings from the data analysis, the ergonomics team must establish criteria to prioritize the departments/jobs that require ergonomic interventions. It is important for all ergonomics team members to be conscious of the fact that the ergonomic issues within the company were not created yesterday and, therefore, they can not be fixed tomorrow. You need to systematically identify, evaluate, resolve and document ergonomic problems.

Criteria that you can use to prioritize the departments/jobs requiring ergonomic interventions include:

- Employee suggestions;
- Cost of injuries;
- Injury frequency;
- Injury severity;
- Number of employees affected.

Conduct ergonomic work-site analysis

Once you have identified the targeted jobs, perform an ergonomic work-site analysis. This allows the team to identify and quantify the potential ergonomic risks associated with a given job. Often, ergonomics teams neglect to analyze the job and go straight to the solution phase of the process. Job analysis provides a baseline against which you can measure ergonomic modifications to determine if the risk factors were reduced. You should teach ergonomic work-site analysis techniques to all ergonomics team members during their comprehensive ergonomics training. Refer to Appendix F for examples of various ergonomic analysis tools that you should explain during the comprehensive training.

Develop solutions

Once you have analyzed the job and have identified, qualified and documented the ergonomic risk factors, the team must develop solutions to reduce/eliminate the risk factors. Discuss solutions in a series of brainstorming sessions. During this activity, it is vital that the ergonomics team members respect each other and their ideas; avoid negative criticism of ideas. View all ideas as possible solutions to an identified problem. A team member or the facilitator should serve as the scribe. The scribe documents the ideas that are vocalized on a flip chart or some other medium. Upon the completion of the brainstorming sessions, begin to prioritize the options to reduce/eliminate the identified ergonomic physical risk factors. The team can use a variety of criteria to select the intervention to be implemented, such as potential for risk factor reduction, cost of implementation, ease of implementation, etc.

There are three types of solutions (control measures) designed to control or eliminate ergonomic risk factors. The objective of any ergonomic control measure or combination of control measures is to reduce/eliminate ergonomic physical risk factors, or reduce the workers' exposure to the ergonomic risk factors.

Control measures

- Ergonomic engineering controls — Permanent physical changes to the work area and or equipment that modify the way a job is performed. Examples include hoists, power tools, lift tables, patient lift devices, anti-fatigue mat, and/or workstation modifications.
- Administrative controls — Work practices or company policies used to reduce/eliminate the workers' exposure to ergonomic physical risk factors. Examples include training, job rotation, providing frequent rest periods, work placement evaluations, and enforcing adherence to existing company policies and procedures.
- Alternative control measures — Serve as a barrier between the worker and the hazard source. Alternative control measures should not be used as a substitute for feasible engineering and administrative controls. Examples include sleeve guards, padded gloves, and shoe inserts. Splints and back supports/belts should not be considered alternative control measures. Back belts and wrist splints may create adverse health effects if used as an injury-preventative device. If a physician prescribes back belts and wrist splints, they are considered medical devices and should be used according to the physicians' orders.

Implement solutions

Once the ergonomics team receives approval for a project, it can begin the solution implementation portion of the process. For this transition to run smoothly, the ergonomics team members must assume responsibility for, and act upon, various tasks. Follow-through on assigned tasks is essential to successful project completion. Implementing the solutions may become a series of highs and lows for the ergonomics team. It is at this point where the team finally gets to see its ideas come to life, and this can be extremely rewarding. Unfortunately, it also is at this stage where employees may criticize and complain about the modifications that are or will be made to the work area. Constructive criticism from employees is wanted and necessary. The team must remember and rely on the fact that it identified the problem jobs, performed ergonomic work-site analysis, developed solutions and conducted the appropriate training to help reduce/eliminate the identified risk factors. The implementation of ergonomic control measures will most likely occur in phases. Actions that may occur during the solution implementation phase include:

- Contacting vendors and ordering equipment;
- Submitting work orders for equipment installation/modification to internal or external maintenance personnel;
- Providing training to all employees that will be affected by the work-site modifications, which the ergonomics team or the equipment vendor representative can furnish;
- Modifying standard operating procedures (SOP) to reflect the new operational procedures;
- Installing equipment and or tools;
- Requesting employee feedback;
- Making modifications as/if needed.

Evaluate modifications

Upon completion of the work-site modifications the ergonomics team should re-evaluate the job to make necessary modifications as/if needed, determine the effectiveness of the modifications and identify any new risk factors that the modifications may have created. The team should establish criteria and a time line to achieve this objective. Evaluate modifications shortly after implementation (for example, two weeks and again in six months or one year). Once the evaluation process is complete, make changes as/if needed. You can use these techniques to evaluate the modifications:

- Interview the employees in the department: request feedback and recommendations;
- Observe;
- Conduct an ergonomic work-site analysis: use the analysis tool that you used to initially analyze the job to evaluate the modification to allow for a direct comparison;
- Compare present injury/illness frequency and severity data with past data;
- Compare present production data and quality with past data.

Medical and claims management

A formalized medical and claims management (MCM) process requires an alliance between management, labor, medical providers and rehabilitation service providers within your organization and community. Design an MCM process to minimize the impact of an injury, disease, or disability on the worker's capacity to successfully and safely perform a job. Internal persons or departments, such as human resources, the safety director or workers' compensation administrator may manage the MCM. Companies also may rely on the services of their managed care organization (MCO) and a risk management service/third-party administrator (TPA).

TPAs assist self-insuring and state-fund employers in the management of workers' compensation, safety/loss prevention, unemployment compensation and group health plans. Although TPAs can provide a needed service to employers, it is imperative that a person within your company understand Ohio workers' compensation laws so that he or she can oversee the MCM process.

Implementing an effective MCM process can provide a significant reduction in workers' compensation cost. Detailed information about MCM is located in Appendix G.

The main components of an effective MCM process include, but are not limited to:

Medical related

- Institute formalized policies, procedures and protocols.
- Establish early reporting of signs and symptoms associated with CTDs.
- Begin early medical intervention.
- Communicate frequently with the injured employee and their medical provider.
- Create on-site transitional work that can be matched with the functional capacity of the injured worker.
- Conduct ongoing case management to address both physical and psychological issues.
- Ensure a safe and timely return to work for the injured worker.
- Establish a working relationship with the medical providers: physicians, therapist, pharmacist and rehabilitation specialists within your community.
- Make necessary job accommodations and ergonomics modifications as/if needed.

Claims related

- Submit the proper claims forms.
- Submit the forms in a timely manner.
- Provide the treating physician(s) with as much information as possible about the injured worker's job(s).
- Follow up with the injured worker, BWC and the MCO.
- Document and track workers' complaints of pain, injury, and illness and workers' compensation claims.
- Implement a formalized transitional return-to-work program.
- Implement ergonomic engineering and/or administrative controls to the work area where a work injury occurred.

Monitor the overall process

The ergonomics team must monitor the ergonomics process to determine its overall effectiveness. Review the process on a periodic basis to evaluate the success in meeting the established goals and objectives. You can monitor the process in a variety of ways. As David Alexander and Gary Orr described in Chapter 6 of *The Occupational Ergonomics Handbook*, initially a team may measure success based on activity-based measures, such as: team formed, training completed, trend data collected and analyzed, jobs prioritized, etc. Once the team is off the ground, the measures may include results-based measures such as: injury/illness reduction, suggestions implemented, projects completed, etc. And finally, the measures of success may include system-based measures such as: transitional return to work policy running smoothly, claims management policies implemented and working, ergonomics review of proposed engineering plant changes, etc. Appendix H contains a sample ergonomic process-monitoring checklist.

Here are measures an ergonomics team can use to determine the effectiveness of their process:

- Number of lost/restricted workdays for ergonomics reasons;
- OSHA 200 Log cases for ergonomics reasons;
- First aid cases for ergonomics reasons;
- Compensation costs for ergonomics reasons;
- Medical costs for ergonomics reasons;
- Number of people trained on ergonomics principles;
- Number of projects implemented;
- Number of suggestions received;
- Production impact due to ergonomics interventions;
- Quality impact due to ergonomics interventions.

The team must determine which measures to use. The measures must directly relate to the goals and objectives identified in the Ergonomic Process Blueprint for Success. Once the team determines the type of measures, it must establish how often it will evaluate the measures (e.g., monthly, semi-annually, annually, etc.). The measures allow the team to determine the effectiveness of the process. If the team determines that it did not meet their goals and objectives after review, then the team must revisit the action plan (Ergonomic Process Blueprint for Success) and make the necessary changes. Share any changes with all employees.

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Glossary

Active surveillance — Collection of data that is not documented.

American Conference of Governmental Industrial Hygienists (ACGIH) — A professional society of industrial hygienists.

Americans with Disabilities Act (ADA) — Makes it unlawful to discriminate in employment against a qualified individual with a disability. The ADA also outlaws discrimination against individuals with disabilities in state and local government services, public accommodations, transportation and telecommunications.

Administrative controls — Work practices or company policies used to reduce/eliminate the exposures to ergonomic physical risk factors.

American National Standards Institute (ANSI) — A research organization that sets minimum work-place safety standards. Its standards do not carry the weight of law; however, they are used as a benchmark for many federal regulations or in cases where no specific regulation exists.

Anthropometry — A human science that deals with the measurement of body size, strength, shape and working capacity.

Awkward posture — Each major joint in the body has a wide range of movement. Any movement that overextends a joint or forces the joint beyond its neutral range is considered an awkward posture. This can be harmful because the fibers that make up the tendons and ligaments may be over-stretched or torn from repetitious use.

Bureau of Labor Statistics (BLS) — The wing of the Department of Labor responsible for maintaining work-place statistics, such as those pertaining to occupational injuries and illnesses.

Carpal tunnel syndrome (CTS) — An entrapped median nerve of the hand and wrist in the passageway through the carpal bones of the wrist (carpal tunnel).

Cumulative trauma disorders (CTDs) — Disorders of the musculoskeletal, nervous and vascular system that usually develop gradually as a result of repeated microtraumas. CTDs also are termed repetitive motion injuries, repetitive strain injury and overuse syndrome.

Date of injury — Date an accident occurred. If the specific date of the accident is unknown, the date first diagnosed.

Employer incentive — Rehabilitation plan design to return an injured worker to his/her previous job as soon as physically possible.

Engineering controls — The making of physical changes to the work area and/or tools.

Ergonomics — The study of the design of work in relation to the physiological and psychological capabilities of people.

Ergonomic physical risk factors — Conditions of a job, process or operation that may contribute to the risk of developing a CTD. Ergonomic physical risk factors include repetitive motions, excessive forceful exertions, awkward or static postures, contact stresses, vibration, extreme environmental conditions and inadequate recovery time.

Ergonomic work-site analysis — A detailed observation of a job, breaking the job into steps, and examining and identifying the ergonomic physical risk factors within the job steps.

Facilitator — A person who can assist teams in the establishment of team norms and rules, keep the team discussion on track, and may assist with documentation and organization issues. Facilitators do not actively participate in team problem identification and solution development.

Force — an ergonomic risk factor, which can derive from numerous sources. For example, holding a heavy pair of tin snips can cause compressive force to the digital nerves of the fingers.

Functional capacity evaluations — An evaluation of an injured worker's ability to physically function in a specific job-related cluster of jobs.

Goal — Exactly what a team wants to accomplish through their group effort.

Health-care provider — A licensed and/or certified person, such as a doctor, nurse or therapist that provides medical services to people.

Health Partnership Program (HPP) — A program that provides access to high-quality, cost-effective medical care for injured workers that will facilitate an early return to work or return the injured worker to a functional lifestyle.

Human Factors Engineering (HFE) — The discipline that applies behavioral principles to the analysis, design and testing during system development.

Human Factors and Ergonomics Society (HFES) — An interdisciplinary, nonprofit organization that promotes the discovery and exchange of knowledge concerning the characteristics of human beings that are applicable to the design of systems and devices of all kinds.

Industrial hygiene — The art and science dedicated to the anticipation, recognition evaluation, and control of chemical physical and biological stressors arising in or from the work environment.

Incident rates — Number of CTDs per department or job for a specific time period (usually a year) and employee exposure hours to a job.

Industrial Commission of Ohio (IC) — The adjudicative branch of the Ohio workers' compensation system.

Labor union — An organization of workers formed to advance its members' interest in respect to working conditions, benefits and wages.

Lost-time claim — A claim filed when an employee loses eight or more calendar days from his or her job due to an industrial injury or occupational disease.

Managed care organization (MCO) — Private-sector organizations certified by BWC to medically manage an employer's employees' compensation claim.

Manual materials handling (MMH) — Involves tasks associated with lifting, pushing, pulling and carrying. Back injuries are the most common injuries associated with MMH task.

Medical claims management — An alliance between management, labor, and medical and rehabilitation service providers within an organization or community. Designed to minimize the impact of an injury, disease, or disability on the worker's capacity to successfully and safely perform a job.

Medical-only claim — A claim filed when an employee loses seven or fewer calendar days from his or her job due to an industrial injury or occupational disease.

Mission statement — An inspiring statement of what a team envisions for the process and the team.

Modified duty — Returning an injured worker to work by obtaining suitable employment. Suitability entails employment within the physical limits and skills of the injured worker, which is agreed to with the treating physician. The employment must be a legitimate duty within a reasonable proximity.

Musculoskeletal disorders — Disorders of the muscles, nerves, tendons, ligaments, joints, cartilage or spinal discs.

National Council on Compensation Insurance (NCCI) — A nationwide source of workers' compensation information and standards. Thirty-seven states use NCCI's classification system.

National Institute for Occupational Safety and Health (NIOSH) — A research institution of the U.S. Department of Health and Human Services.

Objectives — An objective is the end goal(s) or action(s).

Occupational disease — A disease contracted in the course of employment, usually occurring over a period of time. It includes acute and chronic illnesses or disease that may be caused by inhalation, absorption, ingestion or direct contact.

Occupational injury — Any injury, such as a cut, fracture, sprain, amputation, etc., which results from a work-related event or from a single instantaneous exposure in the work environment.

Occupational Safety and Health Administration (OSHA) — A federal agency within the Department of Labor that has enforcement capabilities through penalty assessments against employer's violation of specific OSHA regulations.

OSHA 200 Log — OSHA requires employers with 10 or more employees to record all incidents requiring medical treatment. Employers must post the log in their facility every February.

Ohio Center for Occupational Safety and Health (OCOSH) — An adult continuing education training facility specializing in occupational safety and health.

Ohio Bureau of Workers' Compensation (BWC) — The administrative branch of the Ohio workers' compensation system.

Passive surveillance — A recording system that uses existing data (i.e., OSHA 200 log) to describe past trends.

Permanent partial (percentage) — Compensation that may be paid in claims where there is continuing impairment.

Permanent partial (scheduled losses) — Compensation provided when an employee loses specific body part(s) or suffers loss of function due to a work-related injury or occupational disease.

Permanent total — Compensation provided when the IC declares an employee permanently and totally disabled due to a work-related injury or occupational disease.

Personal protective equipment (PPE) — Serves as a barrier between the worker and the hazard source. Examples of PPE include gloves, safety eyewear and hard hats.

Qualified Health Plan (QHP) — A parallel managed-care system to HPP that allows self-insuring employers greater flexibility to address individual needs and resources.

Repetition — Frequency is the number of times (repetition) a worker performs a movement. The more repetitive a task, the more rapid and frequent are the muscle efforts. Therefore, the more repetitive a task, the greater chance of incurring a CTD.

Self-insurance — Self-insuring employers administer their own claims for liabilities associated with work-related accidents or occupational diseases.

State-fund employers — Employers who pay premiums into the state insurance fund for workers' compensation coverage.

Standard operating procedure — Procedure that identifies each step within a job operation.

Temporary total — Compensation awarded for a temporary disability that prevents an employee from returning to his or her job position at the time of injury.

Third-party administrator (TPA) — Assist self-insuring and state-fund employers in the management of workers' compensation, safety/loss prevention, unemployment compensation and group health plans.

Transitional return to work — Any job or combination of job task and functions that may be performed safely and with compensation by an employee whose physical capacity to perform functional job demands has been compromised.

Turn over rates — Incident of workers who left a particular work area or job in a given period of time.

Video display terminals (VDTs) — more commonly known as computers. VDT workstation design, dimensions, office arrangement, environmental conditions, furniture and the operators anthropometric dimensions (body measurements) are all key elements in VDT operations. The goal for a VDT operator is to work in the desired neutral seated posture.

Wage loss compensation — Compensation available in claims filed for injuries occurring on or after Aug. 22, 1986, where an employee suffers wage loss due to a work-related injury.

Work-related musculoskeletal disorders (WMSD) — Another term for CTDs or repetitive motion injuries.

Work hardening — Interdisciplinary therapies geared to physical restoration to meet the requirements of a specific job. Work hardening provides transitional back to work while addressing the issues of productivity, safety, physical tolerance and work behaviors. Work hardening is a highly structured, goal-oriented, individualized treatment program designed to maximize the person's ability return to work.

Appendix

Table of appendices

Executive Summary

Executive summary

Mission
The company, safety department and/or organization's mission is to interact with employers and employees to facilitate the identification of safety and health risks, and to stimulate management to improve processes. It also is our mission to prevent injuries and illnesses in the work place and to minimize the financial and emotional impact of a work-related injury or illness. In accordance with this philosophy, the company, union and/or safety department has initiated an ergonomics based injury-management process.

Goal
The goal of this process is to reduce the frequency and severity of injuries and the cost of workers' compensation claims.

Methodology
For this process to be successful, the following steps must take place:

- Obtain visible top management and union commitment;
- Form an Ergonomics Team;
- Provide appropriate training for all involved;
- Develop goals, objectives and an action plan;
- Collect and analyze data;
- Develop solutions;
- Monitor process.

Benefits
An effective ergonomics process should result in the following benefits:

- Provide employers and employees with tools, methods and a structure to reduce workers' compensation costs by reducing work injuries (frequency and severity);
- Reduce Ohio Bureau of Workers' Compensation (BWC) premium costs;
- Positively impact production and quality;
- Prepare the employer and employees for the OSHA ergonomics standard.

Memorandum of Understanding

Ergonomics process memorandum of understanding

In recognition of the importance of improving health and safety of the employees, the **ABC Widget Co.** and its labor organization, Local 555, agree to participate in an ergonomics process. The purpose of the ergonomics process is to reduce the frequency of injuries/illnesses in the work place, thereby reducing the associated workers' compensation costs and ultimately providing a safer and more productive work environment. By agreeing to participate in this joint process, all parties agree to the following terms:

1. **ABC Widget Co.** and Local 555 agree to work together in the design and implementation of an on-site ergonomics process with the goal to reduce the frequency of injuries/illnesses within the company as well as associated workers' compensation costs;

2. **ABC Widget Co.** and Local 555 agree to cooperate in evaluating the effectiveness and impact of the ergonomics process. Such evaluation may include job assessments, review of injury records, ergonomics training for all employees, as well as interviews with employees.

3. **ABC Widget Co.** and Local 555 agree to work together in conducting the necessary on-site training for the ergonomics process. **ABC Widget Co.** agrees to provide release time for employees to participate in the training. All issues related to training (e.g., off-site expenses, training delivery, site location and length of training) will be decided jointly. **ABC Widget Co.** and Local 555 will work jointly to minimize disruptions in production, but **ABC Widget Co.** recognizes that participation in the ergonomics process will necessitate the occasional release of employees from work-related responsibilities.

4. The Ergonomics Team's focus is to identify and reduce/eliminate ergonomic conditions in the work place that might lead to an injury/illness. Any other issues fall outside the scope of the team. The use of information collected, discussed or documented by the Ergonomics Team is to be used solely by the team for the purpose of reducing injuries and illnesses within the work place. It is not to be used in any other context or setting without the Ergonomics Team's consent.

5. **ABC Widget Co.** and Local 555 each agree to give each party a 30 day notice prior to terminating their participation in the process.

_____ _____

Mr. ABC, Plant Manager, ABC Widget Co. Date

_____ _____

Ms. Local 555, President, Local 555 Date

XYZ Manufacturing

Letter of commitment to all employees

Dear employee:

The XYZ Manufacturing Ergonomics Process is a new way of thinking and working that will make our manufacturing and office jobs safer and healthier.

Ergonomics is a science devoted to designing jobs and work places in ways that maximize employee effectiveness while minimizing the possibility of physical harm.

To initiate the ergonomics process at our facility, Mr. ABC will coordinate the formation of a group of employees, called the Ergonomics Team. The Ergonomics Team will investigate ways to use ergonomics to make our plant a safer place to work.

Other XYZ Manufacturing plants that have used the ergonomics process have received the following benefits:

- Reduced injuries and health problems;
- Improved job satisfaction;
- Enhanced product quality;
- Improved productivity.

The work of our facility's Ergonomics Team has my complete support and I ask each of you to support the ergonomics process in whatever way is necessary to ensure its success!

Thank you for you cooperation.

John Doe

John Doe
Plant Manager

Memorandum of Understanding

Ergonomics Team membership application form

To solicit prospective Ergonomics Team members, consider creating or using an existing application or volunteer form. Use the Ergonomics Team application form to gather pertinent employee information. The team must establish criteria to choose the most appropriate and desirable team member(s) (e.g., from a particular department, years of experience, job title, etc.). A sample Ergonomics Team membership application form is included on the following page.

WANTED

New member for the Ergonomics Team

Are you interested in working with the Ergonomics Team? Being trained on ergonomics? Making your work place healthier for yourself and those you work with? If so, fill out the form below and return it to a member of the Ergonomics Team or to the health and safety coordinator.

Name _____ Date _____

Classification _____ Clock # _____

Job title _____ Date of hire _____

How would you rate your communication skills, written and spoken?
___ Poor ___ Average ___ Good ___ Excellent

Can you work with others? ___ Yes ___ No

Are you willing to be trained on ergonomics? ___ Yes ___ No

After training, are you willing to assist in training others? ___ Yes ___ No

List any previous experience that would benefit the team _____

_____

_____

_____

_____

Blueprint for Success

Ergonomics Process Blueprint for Success

The following information is designed to assist the Ergonomics Team (or group charged with addressing ergonomics issues) determine how to deal with company ergonomic issues. Once the questions that follow have been answered and documented, a written blueprint detailing the roles and responsibilities of the Ergonomics Team as well as specifying the action plan to tackle ergonomics issues in-house will be established.

The following information is divided into steps. Within each step, the topic or issue is identified, defined and examples provided. A checkbox, ☐, precedes each question the Ergonomics Team needs to answer. Mark the checkbox when the team answers that question. Although the steps are designed to flow sequentially, a team may choose to address questions non-sequentially. We recommended that the team answer all the questions included in each step before it embarks on any projects.

Step 1: Mission statement

A mission statement is an inspiring vision of what the team establishes as its key priorities.

☐ Q1 **What is the Ergonomics Team's mission?**

Example: To establish a proactive ergonomics process that includes the active involvement of all employees.

Step 2: Goals

The Ergonomics Team must establish clear, achievable and measurable goals. Goals specify exactly what the Ergonomics Team wants to accomplish through the ergonomics effort.

☐ Q2 **What goals does the Ergonomics Team want to accomplish through the ergonomics process?**

Examples:

- Listen to all employees' ergonomics concerns.
- Evaluate tools and work environments from an ergonomics perspective.
- Reduce frequency of ergonomic related injuries/illnesses.
- Reduce worker's compensation costs related to ergonomic injuries/ illnesses.
- Keep all workers aware of general ergonomic principles.

Note: Answering the questions that appear in Steps 7-16 will detail how the goals specified above will be accomplished and an action plan established.

Step 3: Ergonomics Team personnel

Document the Ergonomics Team members, including name and department or work area, as well as those individuals who serve as support resources on an as needed basis.

☐ Q3 **List the names of the Ergonomics Team members and the departments or work areas they represent.**

Example: The current Ergonomics Team is composed of the following representatives:

- Management;
- Line workers/associates;
- Engineers/facilities planning;
- Union representative;
- Benefits/compensation personnel;
- Supervisors;
- Maintenance;
- Purchasing/accounting/finance;
- Plant safety personnel;
- Plant nurse.

☐ Q4 **List the names of those individuals/group that have agreed to serve as a resource to the team on an as needed basis.**

Example: The following individuals/groups have agreed to be resources to support the Ergonomics Team on an as needed basis:

- Health-care providers;
- BWC's Division of Safety and Hygiene;
- Local library.

☐ Q5 How many members will be on the Ergonomics Team?

Example: The Ergonomics Team will consist of no more than eight people with balanced representation from labor and management.

OR

The Ergonomics Team will consist of no more than 10 people with two of the 10 positions being revolving seat positions. These two seats will be reserved for the team to invite individuals whose expertise is desired at a particular point in a project.

OR

There will be no limit on the number of individuals on the ergonomics team; however, if the number reaches 15, the team will break into sub-teams which will be responsible for specific projects, always informing the entire team of progress.

Step 4: Team members' roles and responsibilities

Identify and document the roles and responsibilities of the Ergonomics Team members to ensure the team is accountable for its efforts. Identifying team members' roles and responsibilities helps keep the team organized and focused on the goals to accomplish.

At a minimum, determine the following roles:

- Team leader — provides guidance and most importantly is a champion for ergonomics;
- Recorder — documents information discussed at meetings, such as meeting minutes or other events pertinent to ergonomics. The recorder should ensure a copy of the minutes gets to each team member;
- Scribe — records information on chalkboard, flip charts or overhead as needed. You can save the flip chart or overhead transparency which the team can reference at a later date if needed.

Note: If at any time any of the designated people wish to relinquish their duties, they will inform the team and new people will be designated (unless a company policy dictates this procedure).

☐ Q6 **Who will be the team leader?**

Example: Jane Smith, the second shift supervisor, will be the team leader.

☐ Q7 **Who will be the team recorder?**

Example: John Doe, plant engineer, will be the team recorder.

☐ Q8 **Who will be the team scribe?**

Example: Sue Blue, first shift operator, will be the team scribe.

The team will collect various types of information, as well as generate various types of paper work. Select a designated location to house the information the team collects or generates.

☐ Q9 **Where will information collected by the team be housed?**

Example: Minutes, vendor information and project information will be kept in the bottom file drawer of the file cabinet located in the employee involvement meeting room. The file drawer will be labeled Ergonomics Team Information. A sample team meeting minutes form is located in Appendix H-1.

☐ Q10 **Who will ensure appropriate information is placed in the designated location?**

Example: The team leader will keep the key that opens the file drawer. Therefore, anyone who has any information pertinent to the ergonomics process should have the team leader open the file drawer. The team recorder will ensure a copy of the meeting minutes is put in the file drawer.

The team must determine when, where and how often it will meet. There may be a company policy that dictates this schedule.

☐ Q11 **When will the Ergonomics Team meet?**

Example: The Ergonomics Team will meet the third Thursday of each month.

☐ Q12 **How long will each Ergonomics Team meeting last?**

Example: The Ergonomics Team will meet for two hours until the first project is completed and then may reduce the time of the meetings to one hour if deemed appropriate.

☐ Q13 **Where will the Ergonomics Team meet?**

Example: The Ergonomics Team will meet in the employee involvement meeting room. The team leader will ensure the room is reserved for the third Thursday of every month.

Step 5: Unexcused absences

There will be times when a team member must miss a meeting due to a reasonable excuse. These excused absences cannot be avoided. However, there may be instances when a team member does not attend meetings or other team events without a reasonable explanation. It is up to the Ergonomics Team to decide what is considered an unexcused absence, how many unexcused absences will be tolerated and what will the procedure be when the intolerable limit has been reached.

☐ Q14 **What is considered an unexcused absence for missing meetings?**

Example: The Ergonomics Team considers an unexcused absence to occur when a team member fails to inform the team leader of an upcoming conflict with the meeting.

☐ Q15 **What is the number of meetings a team member can miss?**

Example: A team member can miss three meetings due to unexcused absences.

☐ Q16 **What action will be taken when an individual reaches the unexcused absences limit?**

Example: If a team member misses more than three meetings due to unexcused reasons, the team leader will ask the person if he or she wants to continue being a member of the team.

Step 6: Filling vacant Ergonomics Team positions

As members of the Ergonomics Team relinquish their duties or as team member positions become available, a procedure must be in place to efficiently fill or replace those vacant positions.

☐ Q17 **What will the procedure be for filling vacant ergonomic team member positions?**

☐ Q18 **Who will be responsible for carrying out the procedure for filling vacant team positions?**

Example: As vacant positions on the Ergonomics Team become available, the team leader will post a volunteer sign up sheet on the bulletin board in the break room with a date on which time the team may choose to interview volunteer candidates. The team will determine the best candidate based on criteria established. The team leader will inform the chosen volunteer and discuss the next steps (e.g., training) and also will inform the volunteers who were not chosen. A sample ergonomic team membership application form is located in Appendix H-2.

Step 7: Training and education

The Ergonomics Team needs to address several types of training and education. The following are the various types of training the team should address followed by questions it should answer. Have participants evaluate and provide feedback of the training sessions. A sample training evaluation form is included in Appendix H-3.

New Ergonomics Team member training

☐ Q19 **Who will provide the training for the new Ergonomics Team members?**

Example: The veteran Ergonomics Team members will conduct an eight-hour in depth training session for all new team members.

OR

All new Ergonomics Team members will attend BWC's Division of Safety and Hygiene's Ohio Center for Occupational Safety and Health's three-day advanced ergonomics course.

OR

A private ergonomics consulting firm which specializes in training will be brought in-house to train the new team members.

☐ Q20 **What will be the content of the new Ergonomics Team members training?**

Example: The new Ergonomics Team member training will cover at least the following topics: definitions of ergonomics, cumulative trauma disorders, manual material handling; injury statistics, anatomy, risk factors, anthropometry and control measures.

☐ Q21 **What will be the format of the new Ergonomics Team members training?**

Example: If the veteran Ergonomics Team members conduct the new member training, the members will use a reference book, videos, overheads and slides to present the material to the new members.

☐ Q22 **When, where and how often will the new Ergonomics Team member training take place?**

Example: If the new member training is conducted in-house (either by veteran members or by on-site consultants), the training will be conducted in the general training conference room. New members will be trained as soon as possible after joining the Ergonomics Team.

General awareness ergonomics training for all employees

☐ Q23 **Who will provide the general awareness training for all the employees?**

Example: The Ergonomics Team will put together the training materials and present the information to all employees.

OR

A private ergonomics consulting firm who specializes in training will be brought in-house to train all employees on general ergonomics.

☐ Q24 **What will be content of the general awareness training for all the employees?**

Example: The general awareness training for all employees will provide an overview of general ergonomics principles and also instructions on how to apply the principles to their work setting. In addition, the overall ergonomics process will be reviewed with the employees so each employee knows how to get involved with the process.

☐ Q25 **What will be the format of the general ergonomics awareness training?**

Example: If the veteran Ergonomics Team members conduct the new member training, members will use training, videos, brochures, slides and handouts for general awareness training.

☐ Q26 **When, where and how often will general ergonomics awareness training take place?**

Example: All employees will receive general ergonomics awareness training annually during the annual safety and health refresher training session or an all employee staff meeting.

New hire training

☐ Q27 **Who will provide the ergonomics training for new hires?**

Example: The human resources representative will provide the new hire ergonomics training.

OR

A private ergonomics consulting firm who specializes in training will be brought in-house to train all new hires on general ergonomics.

☐ Q28 **What will be the content of the ergonomics training for new hires?**

Example: The new hire training will be similar to the general awareness training for all employees in that it will provide an overview of general ergonomics principles and also instructions on how to apply the principles to their work setting. In addition, the overall ergonomics process will be reviewed with the employees so each employee knows how to get involved with the process.

☐ Q29 **What will be the format of the new hire ergonomics training?**

Example: A video on ergonomics will be shown to the new hire and a copy of the Ergonomics Process Blueprint will be reviewed with the new hire.

☐ Q30 **When, where and how often will new hire training take place?**

Example: All new hires will receive ergonomics training as part of the orientation training administered by the human resources department.

Work-site modification training

☐ Q31 **Who will provide the ergonomics training for the employees whose work site has been modified?**

Example: The Ergonomics Team and/or supervisors will provide the training for affected employees regarding work-site modifications.

OR

If new equipment is being installed, a representative from the supplier will provide the necessary training on the equipment for the affected employees.

☐ Q32 **What is the format of the work-site modification training?**

Example: On-the-job training is the preferred method of training with videos and handouts used to supplement the training.

☐ Q33 **When, where and how often will work-site modification training take place?**

Example: The work-site modification training will begin before any changes are made to a work area and will continue until all modifications are in place and tried by all affected employees.

Step 8: Trend data collection and analysis

The Ergonomics Team needs to collect and analyze several types of data. The following are the various types of data with the questions the team should answer for each type.

Injury/illness record

There are several sources from which injury/illness records can be obtained. The following are examples of injury/illness record data sources:

- OSHA 200 Log;
- First-aid logs;
- Accident reports;
- Near miss reports;
- Claims/workers' compensation records;
- Incidence rates;
- Severity rates.

☐ Q34 **How will you collect injury/illness data?**

Example: The human resource representative collects all injury/illness information on a spreadsheet that the Ergonomics Team is provided on a monthly basis unless an injury demands immediate analysis.

☐ Q35 **Who is responsible for collecting injury/illness data?**

Example: The human resource representative collects all injury/illness information on a spreadsheet that is provided to the Ergonomics Team on a monthly basis. Sample work-place injury tracking forms are located in Appendix H-4.

☐ Q36 **How is injury/illness trend data going to be analyzed?**

Example: The team will review all injury/illness information to determine what trends can be seen in the ergonomic-related data (e.g., strains/sprains, overexertion's, cumulative trauma disorders).

☐ Q37 **Who will analyze the injury/illness data from an ergonomics perspective?**

Example: The Ergonomics Team will conduct all ergonomic trend analyses of the injury/illness data.

Production records

Many times production records may indicate that ergonomics may impact a certain area within production. For example, if there are bottlenecks in the production line, if there are poor quality areas on the line, or if there is a large amount of scrap at a particular work area, perhaps there are ergonomic concerns present.

☐ Q38 **How will you collect production data?**

Example: The Ergonomics Team will use the plant manager's monthly production report which includes production rates, quality rates and scrap rates.

☐ Q39 **Who is responsible for collecting production related data?**

Example: The Ergonomics Team leader will obtain a copy of the plant manager's monthly production report for the entire team to review on a monthly basis.

☐ Q40 **How will you analyze production-related data?**

Example: The team will review all production related data to determine what trends can be seen in the ergonomic related data (e.g., bottlenecks, low quality areas, high scrap areas).

☐ Q41 **Who will analyze the production related data from an ergonomics perspective?**

Example: The Ergonomics Team will conduct all ergonomic trend analyses of the production-related data.

Absenteeism records

Just as production records may indicate an ergonomics concern may be present, high absenteeism on a particular job may indicate the same.

☐ Q42 **How will you collect absenteeism data?**

Example: The Ergonomics Team will use the human resources department's absenteeism records.

☐ Q43 **Who is responsible for collecting absenteeism information?**

Example: The Ergonomics Team leader will obtain a copy of the human resources monthly absenteeism report for the entire team to review on a monthly basis.

☐ Q44 **How will you analyze absenteeism data?**

Example: The team will review all absenteeism data to determine what trends can be seen in terms of what work areas have consistently high absenteeism.

☐ Q45 **Who will analyze the absenteeism data from an ergonomics perspective?**

Example: The Ergonomics Team will conduct all ergonomic trend analyses of the absenteeism data.

Employee complaints/suggestions

The Ergonomics Team recognizes the importance of employee involvement to make the ergonomics process a success. One way for employees to get involved is to offer suggestions or complaints about a particular job.

☐ Q46 **What is the procedure for employees to offer ergonomic suggestions or complaints regarding a particular job?**

Example: The Ergonomics Participation Form is posted on all bulletin boards for employees to complete regarding suggestions or complaints about a particular job. The team recorder collects the forms prior to each ergonomics meeting. Each suggestion or complaint is logged and is as signed a priority (see Step 9). Sample suggestion forms are located in Appendix H-5.

☐ Q47 **How does the Ergonomics Team follow up an employee's suggestion or complaint?**

Example: The team recorder fills out the Ergonomics Participation Form's return receipt portion once the suggestion/complaint is logged on the appropriate form during the team meeting. The receipt portion contains the date received and the proposed action taken. The recorder returns the receipt to the employee who submitted it. In addition, the team posts a monthly log on the bulletin boards itemizing the suggestions/complaints to date and the action taken to date.

☐ Q48 **How will you track the suggestions or complaints?**

Example: The Ergonomics Team activity log will include an entry for each suggestion or complaint the team receives. The team will post this log on the bulletin boards for employees to view the status of the suggestion or complaint. The Ergonomics Team will use activity log to track all project-related activities. Samples of Ergonomics Team activity logs are included in Appendix H-6.

Step 9: Prioritize jobs

Once the data has been collected and analyzed, the team must assign priorities that determine which jobs are tackled first.

☐ Q49 **What are the criteria for determining which job, department, process or workstation will be the target of an ergonomics evaluation?**

Example: The job with the most number of injuries/illnesses will be the first priority.

OR

The job with the most severe or costly injury/illness will have the highest priority.

OR

The job that has the most people affected will have the highest priority.

OR

The job that has a solution that is easy to implement and not very costly will be the first priority.

OR

The job that has the most potential for risk factor reduction will have the highest priority.

Step 10: Ergonomic work-site analysis

Work-site analysis allows for the identification of existing and potential risk factors at a particular job or work area targeted for an ergonomics evaluation. The objective of the ergonomic work-site analysis is to recognize, identify and correct ergonomic risk factors.

☐ Q50 **How will you collect job-specific data (e.g., production, operator and tool)?**

Example: The team will shoot video of the particular job of concern and will complete the work-site analysis information sheet that contains production operator and tool data questions.

☐ Q51 **Who will collect the job-specific data?**

Example: The Ergonomics Team will work in pairs whenever video is shot, one to shoot video and the other to complete the analysis sheet. The pair collecting the data will be determined by familiarity with the chosen area.

OR

If the Ergonomics Team is of sufficient size (more than 10), the team can identify a sub-group to collect the data.

☐ Q52 **How will you analyze job-specific data?**

Example: Task analyses, risk factor identification or summary of ergonomic concerns will be the methods of analyses.

☐ Q53 **Who will analyze the job-specific data**

Example: The Ergonomics Team will conduct all methods of analyses.

OR

If the Ergonomics Team is of sufficient size (more than 10), it may identify a sub-group to analyze the data.

☐ Q54 **Who will inform the supervisors and employees of the affected work area that their area has been selected for an ergonomics evaluation?**

Example: The Ergonomics Team leader will inform the supervisors of all shifts of the affected work area under evaluation who in turn will notify their employees during their shift meetings. There will be at least one-week notice given to the supervisors/employees of the upcoming evaluation.

Step 11: Solution development

Once ergonomic risk factors are identified through the systematic ergonomics work-site analysis discussed previously, the next step is to brainstorm possible solutions to help reduce or eliminate the identified ergonomic stressors.

☐ Q55 **Who will participate in the brainstorming of possible solutions?**

Example: The Ergonomics Team will brainstorm possible solutions, which will include engineering and administrative type controls, and will request the help from engineering department, affected employees and other staff as needed.

☐ Q56 **How will the team document the brainstorming ideas?**

Example: The Ergonomics Team scribe will use flip charts and overhead transparencies to document the ideas generated during the brainstorming sessions. The meeting's minutes also will reflect the ideas generated.

☐ Q57 **How will the team prioritize the brainstorming ideas?**

Example: The team will conduct a cost/benefit analysis on the solutions with the least cost yielding the most risk factor reduction receiving highest priority.

OR

We will give the the solution that can be implemented the easiest the highest priority.

OR

We will give the solution that impacts the largest number of people the highest priority.

☐ Q58 **If approval is required, go to Step 12 below, otherwise, who and how will the proposed solution be summarized and documented?**

Example: A member of the Ergonomics Team will volunteer to capture all the information regarding the particular solution/project at hand in a report summary format to include information on risk factors identified, solutions generated, benefits of solutions, cost justification, etc. Sample project summary forms are included in Appendix H-7.

Step 12: Approval process (if applicable)

There may be instances when the Ergonomics Team must submit their solution proposal to someone or some group to get approval to proceed with the project.

☐ Q59 **Who will generate the solution proposal?**

Example: A member of the Ergonomics Team will volunteer to document the information that is discussed amongst the team members regarding the solution proposal.

☐ Q60 **What will the team include in the solution proposal?**

Example: At a minimum the Ergonomics Team will include in the proposal the following: timeline schedule, equipment costs, prior injury statistics, risk factor identification and reduction with solution, task analysis, production impacts, training schedule and follow-up procedure.

☐ Q61 **Who will present the proposal and to whom will it be presented?**

Example: The Ergonomics Team leader will present the solution proposal to the Steering Committee.

☐ Q62 **What is the procedure for approving, denying or requesting more information?**

Example: The Steering Committee will either grant approval to proceed at the conclusion of the team leader's presentation or it may request more information from the team before granting approval. At this point, the team leader will inform the team, and the team will include the necessary information in the proposal and re-propose the solution.

Step 13: Solution implementation

It is vital to the success of the ergonomics process that once final approval is granted for a proposed project, the team develops and follows an implementation plan and evaluation strategy.

☐ Q63 **Who will ensure that the timeline schedule is followed?**

Example: The Ergonomics Team leader will continually follow up with individuals responsible for completing tasks on the project and document the completions via timeline chart.

☐ Q64 **Who will inform the affected employees of upcoming modification and how will that occur?**

Example: A team member will visit each employee informing them of the upcoming modification.

OR

A team member will attend a safety meeting or specially called meeting in the area being targeted for modification to discuss the upcoming modification and schedule.

Step 14: Solution evaluation

Once a solution has been implemented the Ergonomics Team must ensure the solution did in fact accomplish what was intended (e.g., risk factor reduction). Therefore, the team must evaluate every solution implemented to ensure employees satisfaction with the implementation.

☐ Q65 **Who is going to evaluate implemented solutions/modifications for effectiveness?**

Example: The Ergonomics Team will conduct all follow-up analyses to evaluate for effectiveness.

☐ Q66 **How will the team evaluate implemented solutions?**

Example: The team will use task analyses, risk factor identification analyses, injury tracking, employee surveys/interviews and timelines for completion review to evaluate solution effectiveness

☐ Q67 **How often will the team evaluate solutions?**

Example: Two weeks after the solution has been implemented, the team will interview the affected employees to get initial feedback on the solution. After three to six months, the team will conduct another task analysis or risk factor identification analysis to determine whether or not the solution has made a positive impact on the employees. In addition, the team will track the injuries on the specific job for one year to document the injury rates before and after implementing the solution. A project summary form can assist with this task.

Step 15: Medical management

An effective medical-management program is essential to the success of the ergonomics process. You must interact with health-care providers routinely to exchange important information to help prevent and treat injuries. The elements of a medical-management program include early identification, evaluation, and treatment of signs and symptoms and to aid in their prevention.

☐ Q68 **Who will be in charge of medical management (e.g., injury/illness record keeping, claims reporting, etc.)?**

Example: The human resource director is responsible for all aspects of injury reporting, including first aid.

☐ Q69 **Who disseminates appropriate medical management information to the team and how often?**

Example: The human resource director will provide a monthly report to the team regarding that month's injury/illness activity, unless an injury occurs in which an ergonomics evaluation is deemed appropriate immediately.

☐ Q70 **How will you handle and evaluate early reporting of signs and symptoms of potential medical problems?**

Example: Through the general ergonomics employee training, each employee will be encouraged to report early signs of symptoms/pain to the human resource director for appropriate action to be taken. This information will appear in the monthly report given to the team.

☐ Q71 **What strategies exist to get a worker returned to work as soon as possible?**

Example: When an employee is injured, the human resource director maintains weekly or daily contact with the injured worker to provide support from the company. In addition, the return-to-work policy includes a documented list of restricted-duty jobs that he or she can easily reference when trying to transition a person back to work who may have some performance restrictions.

Step 16: Process monitoring

In implementing any process, procedures must be in place to monitor or track the progress of the process. You must review on a periodic basis to evaluate the success in meeting the established goals and objectives. Share the results of the periodic evaluations with all employees, including any new and/or revised goals or objectives.

☐ Q72 **How will the Ergonomics Team determine if the ergonomics process is effective?**

Example: The team will review annual summary of injury records, and production and quality records for comparison to determine if an impact has been realized. In addition, the team may survey employees to gain their perspective on ergonomics improvements over the year, etc.

☐ Q73 **Who will re-evaluate the goals and objectives of the ergonomics process to determine if changes need to be made and how often will re-evaluation occur?**

Example: The Ergonomics Team will review the Ergonomics Process Blueprint annually to determine if the goals have been accomplished. The team also will review the Ergonomics Process Blueprint to ensure the methods established to implement the ergonomics process are still accurate. If the methods to implement the ergonomics process are no longer accurate, the team will make appropriate changes and inform employees of the changes. In addition, the team will review a program checklist annually to determine the progress it has achieved.

Definitions

☐ Q74 What terms are included in this Ergonomics Process Blueprint document that should be explained so that everyone understands the meaning?

Examples:

- **Ergonomics** — the study of the relationship between a worker and the worker's job. The objective of ergonomics is to adapt the job and work place to the worker by designing tasks, workstations, tools and equipment that are within the worker's physical capabilities.
- **Ergonomics process** — the name of the process implemented to reduce the frequency of injuries and cost of worker's compensation claims by focusing on sound ergonomic principles and handling injuries in the most effective and efficient manner possible.

- **Ergonomic risk factors** — conditions of a job, process or operation that may contribute to the risk of developing a cumulative trauma disorder.

  Examples of ergonomic risk factors include:

  - Repetitive motions;
  - Forceful exertions;
  - Sustained and/or awkward postures;
  - Duration of activity;
  - Vibration;
  - Environmental factors, such as extreme temperatures.

- **CTDs** — disorders of the musculoskeletal and nervous systems which may be caused or aggravated by repetitive motions, forceful exertions, sustained or awkward postures, direct pressure, vibration or extreme temperatures. The most common CTDs are tendon disorders. such as tendonitis, tenosynovitis, De Quervain's disease, trigger finger, and carpal tunnel syndrome.
- **OSHA 200 Log** — an OSHA form on which employers are required to list all work related injuries and illnesses except those requiring first aid only. Employers are required to post the previous year's OSHA 200 Log during the month of February for all employees to view.
- **Interventions** — recommendations for reducing/eliminating the risk factors present at a particular work area. Recommendations and solutions are terms used interchangeably for interventions.
- **Task analysis** — a method used to analyze a job to determine if ergonomic risk factors are present. The job is broken down into a number of tasks to be analyzed.

Rate Calculations

Rate calculations

You can use the following rates to track the injury/illness occurrences as well as turnover rates at a company. The injury/illness rates also allow for a comparison with other industries. The Department of Labor and the National Safety Council uses the incident rate and it has become the recognized statistical rate for measuring and comparing work-related injuries, illnesses and accidents within and between industries. The base for reporting injuries and illnesses is equivalent to that of a year's work for 100 full-time employees (200,000 man-hours). A high turnover rate may indicate that a specific job is physically and/or mentally fatiguing and, therefore, can pose an ergonomics risk to the work force.

- Injury/illness incidence rates (IIR):

$$IIR = \frac{\text{Number of injuries/illnesses} \times 200{,}000}{\text{Number of man-hours worked*}}$$

- Lost workday case incidence rates (LWDI):

$$LWDI = \frac{\text{Number of lost/restricted workday cases} \times 200{,}000}{\text{Number of man-hours worked*}}$$

- No lost workday case incidence rates or medical-only cases (NLWDI):

$$NLWDI = \frac{\text{Number of no lost workday cases} \times 200{,}000}{\text{Number of man-hours worked*}}$$

- Annual turn over rates (TO):

$$TO = \frac{\text{Number of workers who left area in a given year}}{\text{Number of positions available}}$$

*If total number of man-hours worked is not known, estimate by:
(Number of workers) x 2,000

Analysis Tools

Analysis tools

During comprehensive ergonomics training, the team will go over various analysis tools that will assist the team in evaluating targeted jobs. Included on the following pages are samples of these analysis tools and include:

- General ergonomic risk factor checklist;
- Ergonomics job evaluation information sheet;
- CTD risk factor measurement form — (You should use the numbers generated on the measurement form to compare the risks identified before and after an ergonomic intervention has been implemented. The goal is to ensure the number of risks have been reduced after an ergonomic improvement has been made.);
- Ergonomic task analysis and awkward posture identifier forms — (You should use the numbers generated on the measurement form to compare the risks identified before and after an ergonomic intervention has been implemented. The goal is to ensure the number of risks have been reduced after an ergonomic improvement has been made.);
- Videotaping techniques.

General ergonomic risk factor checklist

Check the box (☐) if your answer is yes to the question. A yes response indicates that an ergonomic risk factor may be present which requires further analysis.

Manual materials handling

☐ Is there manual lifting of loads, tools or parts?
☐ Is there lowering of tools, loads or parts?
☐ Is there overhead reaching for tools, loads or parts?
☐ Is there bending at the waist to handle tools, loads or parts?
☐ Is there twisting at the waist to handle tools, loads or parts?

Physical energy demands

☐ Do tools and parts weigh more that 10 pounds?
☐ Is reaching greater than 20 inches?
☐ Is bending, stooping or squatting a primary task activity?
☐ Is lifting or lowering loads a primary task activity?
☐ Is walking or carrying loads a primary task activity?
☐ Is stair or ladder climbing with loads a primary task activity?
☐ Is pushing or pulling loads a primary task activity?
☐ Is reaching overhead a primary task activity?
☐ Do any of the above tasks require five or more complete work cycles to be done within a minute?
☐ Do workers complain that rest breaks and fatigue allowances are insufficient?

Other musculoskeletal demands

☐ Do manual jobs require frequent, repetitive motions?
☐ Do work postures require frequent bending of the neck, shoulder, elbow, wrist or finger joints?
☐ For seated work, do reaches for tools and materials exceed 15 inches from the worker's position?
☐ Is the worker unable to change his or her position often?
☐ Does the work involve forceful, quick or sudden motions?
☐ Does the work involve shock or rapid build-up of forces?
☐ Is finger-pinch gripping used?
☐ Do job postures involve sustained muscle contraction with any limb?

Computer workstation

☐ Do operators use computer workstations for more than four hours a day?
☐ Are there complaints of discomfort from those working at these stations?
☐ Is the chair or desk nonadjustable?
☐ Is the display monitor, keyboard or document holder nonadjustable?
☐ Does lighting cause glare or make the monitor screen hard to read?
☐ Is the room temperature too hot or too cold?
☐ Is there irritating vibration or noise?

Environment

☐ Is the temperature too hot or too cold?
☐ Are the worker's hands exposed to temperatures less than 70 degrees Fahrenheit?
☐ Is the work place poorly lit?
☐ Is there glare?
☐ Is there excessive noise that is annoying, distracting, or producing hearing loss?
☐ Is there upper extremity or whole body vibration?
☐ Is air circulation too high or too low?

General work place

☐ Are walkways uneven, slippery or obstructed?
☐ Is housekeeping poor?
☐ Is there adequate clearance or accessibility for performing tasks?
☐ Are stairs cluttered or lacking railings?
☐ Is proper footwear worn?

Tools

☐ Is the handle too small or too large?
☐ Does the handle shape cause the operator to bend the wrist to use the tool?
☐ Is the tool hard to access?
☐ Does the tool weigh more than nine pounds?
☐ Does the tool vibrate excessively?
☐ Does the tool cause excessive kick back to the operator?
☐ Does the tool become too hot or too cold?

Gloves

☐ Do the gloves require the worker to use more force when performing job tasks?
☐ Do the gloves provide inadequate protection?
☐ Do the gloves present a hazard of catch points on the tool or in the work place?

Administration

☐ Is there little worker control over the work process?
☐ Is the task highly repetitive and monotonous?
☐ Does the job involve critical tasks with high accountability and little or no tolerance for error?
☐ Are work hours and breaks poorly organized?

Ergonomics job evaluation information sheet

Production information

Department _____ Number of shifts _____

Job name _____ Shift duration _____

Product name _____ Breaks (#/duration) _____

Production rate _____ Job rotation? ___ Yes ___ No

If Yes, how often? _____

Job cycle _____

Machine cycle/line speed _____ Scrap rate _____

Piece rate? ___ Yes ___ No

If Yes, what's the standard? _____

Quality concerns _____

Brief description of job steps _____

Operator information

General department information

Number of employees per shift in department _____

Number of employees per shift at workstation _____

Operator specific information

How long has he or she worked on job? _____

Is the employee experiencing aches/pains/injury? ___ Yes ___ No

If yes, answer the following:

1. Neck or upper back? ___ Yes ___ No
2. Lower back? ___ Yes ___ No
3. Shoulder? ___ Left ___ Right ___ No
4. Elbows? ___ Left ___ Right ___ No
5. Hands or wrists? ___ Left ___ Right ___ No
6. Legs, knees or feet? ___ Left ___ Right ___ No

What is the worst part of doing this job? _____

_____

_____

What changes have been made to assist you in performing this job? _____

_____

_____

What would you do to improve this job? _____

_____

_____

Department/job occupational illnessess/injuries information

	Type of incident	Cause of incident	Body part	Shift	Date of incident	Time	Number of lost workdays	Number of restricted days
1								
2								
3								
4								

Note: Attach additional sheets) of occupational illness/injury data if necessary.

Workstation/work area information

Does the operator ___ Sit ___ Stand ___ Has option for both?

What is the vertical height of the work surface? _____

What is the distance between the operator and point of operation? _____

What is the weight of the part/workpiece? _____

Are gloves worn? ___ Yes ___ No If yes, are gloves required? ___ Yes ___ No

Is anti-fatigue matting provided? ___ Yes ___ No

Is the lighting adequate? ___ Yes ___ No Comment _____

Is the temperature adequate? ___ Yes ___ No Comment _____

Is vibration a concern? ___ Yes ___ No Comment _____

Tool information

What tools are used — power, hand, etc.? _____

How often is tool used during shift? ___ < two hours ___ two to four hours ___ > four hours

What is the weight of the tool? _____

Are the tools suspended/counterbalanced? ___ Yes ___ No

How long is the tool handle? _____

What is the diameter of the tool, if applicable? _____

What is the span width of the tool, if applicable? _____

If powered, how is the tool triggered (e.g., one finger)? _____

Does the tool allow for a power grip? ___ Yes ___ No

Have the operators modified the tools? ___ Yes ___ No If Yes, how _____

Additional notes _____

_____

_____

CTD risk factor assessment form

Task title _____ Company _____

Name of analyst _____ Evaluation date _____

Brief task description _____

Upper extremity					
A	**B**	**C**	**D**	**E**	**F**
Risk factor category	**Risk factors**	**2 to 4 hours**	**4+ to 8 hours**	**8+ hours** *Add 0.5 per hour*	**Score**
Repetition (finger, wrist, elbow, shoulder, or neck motions)	**1. Identical or similar motions performed every few seconds** Motions or motion patterns that are repeated every 15 seconds or less. (Keyboard use is scored below as a separate risk factor.)	1	3		
	2. Intensive keying Scored separately from other repetitive tasks in the repetition category; includes steady pace as in data entry.	1	3		
	3. Intermittent keying Scored separately from other repetitive tasks. Keyboard or other input activity is regularly alternated with other activities for 50 percent to 75 percent of the work.	0	1		
Hand force (repetitive or static)	**1. Grip more than 10-pound load** Holding an object weighing more than 10 pounds or squeezing hard with hand in a power grip.	1	3	–	
	2. Pinch more than two pounds Pinch force of two or more pounds as in the pinch used to open a small binder clip with the tips of fingers.	2	3		

Upper extremity					
A	**B**	**C**	**D**	**E**	**F**
Risk factor category	**Risk factors**	**2 to 4 hours**	**4+ to 8 hours**	**8+ hours** *Add 0.5 per hour*	**Score**
Awkward postures	**1. Neck: twist/bend** Twisting neck to either side more that 20 degrees, bending neck forward more than 20 degrees as in viewing a monitor, or bending neck backward more than five degrees	1	2		
	2. Shoulder: unsupported arm or elbow above mid-torso height Arm is unsupported if there is not an arm rest when doing precision finger work, or when the elbow is above mid-torso height.	2	3		
	3. Forearm: rapid rotation Rotating the forearm or resisting rotation from a tool. An example of forearm rotation is using a manual screwdriver.	1	2		
Hand force (repetitive or static)	**4. Wrist: bend /deviate** Wrist bends that involve more than 20 degrees of flexion (bending the wrist palm down) or more than 30 degrees of extension (bending the wrist back). Bending can occur during manual assembly and data entry.	2	3		
	5. Fingers Forceful gripping to control or hold an object, such as click-and-drag operations with a computer mouse or deboning with a knife.	0	1		
	6. Extended arm reaches	1	2		
	7. Reaching overhead (above shoulder level)	1	2		
	8. Reaching behind the torso	1	2		
Contact stress	**1. Hard/sharp objects press into skin** Includes contact of the palm, fingers, wrist, elbow, or armpit.	1	2		
	2. Using the palm of the hand as a hammer	2	3		
Vibration	**1. Localized vibration** Vibration from contact between the hand and a vibrating object, such as a power tool.	1	2		
	Total upper extremity score:				

Back and Legs					
A	**B**	**C**	**D**	**E**	**F**
Risk factor category	**Risk factors**	**2 to 4 hours**	**4+ to 8 hours**	**8+ hours** *Add 0.5 per hour*	**Score**
Awkward postures (repetitive or static)	1. **Mild forward or lateral Bending of torso more than 20 degrees, but less than 45 degrees**	1	2		
	2. Severe forward bending of torso more than 45 degrees	2	3		
	3. Backward bending of torso	1	2		
	4. Twisting torso	2	3		
	5. Prolonged sitting without adequate back support Back is not firmly supported by a back rest for an extended period	1	2		
	6. Standing stationary or inadequate foot support while seated Stand in one place (an assembly line or check stand) without sit/stand option or walking, or feet are not firmly supported when sitting.	0	1		
	7. Kneeling /squatting	2	3		
	8. Repetitive ankle extension /flexion Using a foot pedal to start or stop a machine cycling (as in sewing machine operations).	1	2		
Contact stress	**1. Hard /sharp press into skin** Includes contact against the leg.	1	2		
	2. Using the knee as a hammer or kicker	2	3		
Vibration	**1. Sitting/standing on vibrating surface** (without vibration dampening)	1	2		
Push/pull	**1. Moderate load** Force needed to push/pull a shopping cart full of apples.	1	2		
	2. Heavy load Force need to push / pull a two-drawer, full file cabinet across a carpeted room.	2	3		

Back and legs

A	B		C	D	E	F
Risk factor category	**Risk factors**		**2 to 4 hours**	**4+ to 8 hours**	**8+ hours** *Add 0.5 per hour*	**Score**
Manual materials handling load	**1. Weight** Load being handled is more than 20 pounds. (Write actual weight of maximum load in box to right.)	**Actual weight (lbs.)** _____	2	3		
	2. Distance Horizontal distance from the mid-point between the ankles to center of the hand is greater than 10 inches. (Write actual maximum distance in box to right.)	**Actual weight (lbs.)** _____	2	3		
Manual materials handling frequency	**1. Lifting Frequency** Lifting frequency is between one and five times per minute. (Write actual lifting frequency in the box to right.)	**Actual weight (lbs.)** _____	1	1		
	2. Lifting Frequency Lifting frequency is five or more times per minute.		2	3		
		Total back and legs score:				

Environmental Worksheet

A	B	C	D	E	F
Risk factor category	**Risk factors**	**2 to 4 hours**	**4+ to 8 hours**	**8+ hours** *Add 0.5 per hour*	**Score**
Environment	**1. Lighting (poor illumination/glare)** Inability to see clearly (e.g. glare on a computer monitor).	0	1		
	2. Cold temperature Air temperature less than 60°F for sedentary work, 40°F for light work, 20°F for moderate/heavy work; cold exhaust blowing on hands.	0	1		
	Total environmental score:				
	Total score (upper extremity + back and legs + environmental:				

Ergonomic task analysis

Department _____ Production rate per employee _____

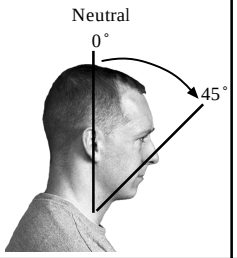
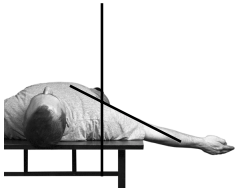
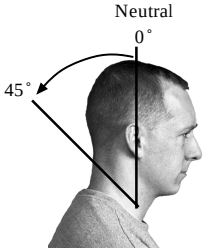
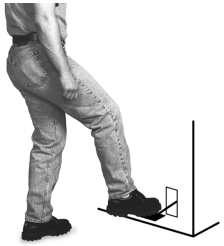
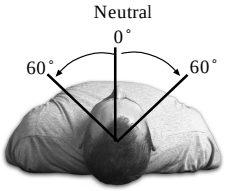
Team member name _____ Cycle time _____

Job _____ Date _____

Tasks (job steps)	Hands and wrist		Grip		Elbow and forearms		Shoulders		Neck	Back	Legs		Total risk factors	
	Left	Right	Left	Right	Left	Right	Left	Right			Left	Right	per cycle	per shift
Total risk factors per cycle														
Total risk factors per shift														

Notes:

Ergonomic task analysis awkward posture identifier

Hand and wrist	Grip	Elbow and Forearm	Shoulder	Neck	Back	Legs
Flexion (F) 	**Lateral pinch (LP)** 	**Flexion (F)** 	**Adduction (AD)** 	**Flexion (F)** 	**Flexion (F)** 	**Static exertion (SE)** • Prolonged standing without movement • Walking less than two to four minutes every 15 minutes
Extension (E) 	**Precision pinch (PrP)** 	**Rotation (Ro)** 	**Abduction (AB)** 	**Extension (E)** 	**Twist (CW)** 	**Foot pedal/static (SE)** 
Radial deviation (RD) 	**Palm pinch (PaP)** 	**Reach (Re)** 	**Flexion (F)** 	**Rotation (R)** 	**Twist (CC)** 	
Ulnar deviation (UD) 		**Static exertion (SE)** • *High* - If nine-pound object is held for 10 seconds or more • *Moderate* - If four-pound object is held for one minute or more	**Extension (E)** 			

References for awkward posture identifier

1. Putz-Anderson, V., 1988. "Cumulative Trauma Disorders: A Manual for Musculoskeletal Diseases of the Upper Limbs," Taylor and Francis

Hand	**Elbow and forearms**	**Pinch**
Abduction	Pronation	Lateral
Adduction	Supination	Precision
Ulnar deviation	Flexion	Palm
Radial deviation	Static exertion	
	Reach	

2. Eastman Kodak Co. Ergonomics Group, 1986. "Ergonomic Design for People at Work Volume 2,"Van Nostrand Reinhold, New York.

Neck
Rotation
Flexion
Extension

3. Kroemer, K.H.E., Kroemer, H.J., and Kroemer-Elbert, K.E. 1986. "Engineering Physiology Volume 4," Elsevier Science Publishers B.V, New York.

Shoulder
Abduction
Adduction

4. Grandjean, E., 1988. "Fitting the Task to the Man Fourth Edition,"Taylor & Francis, New York.

Legs
Static exertion

Foot peddle

5. Konz, S., 1990. "Work Design: Industrial Ergonomics, Third Edition," Publishing Horizons, Inc., Arizona.

Leg
Static exertion

6. Humantech, "Ohio Center For Occupational Safety and Health, Advanced Ergonomics," Toledo, Ohio, 1995.

Back, twist
CW and CC

Videotaping techniques

Document

- Name of company and location of taping
- Date and time of taping
- Videographer's name
- Name of the operation being recorded

Taping

- Take a full body shot of the employee, including the surface on which the employee is standing or sitting.
- Following the long shot, zoom in to focus on the area or function of greatest concern, if known.
- Videotape the employee from all sides (front, back, and both sides), when possible.
- If several employees are performing the same task, tape at least three employees (if possible).
- Tape the worst case, best case and the average case, when possible.

Taping duration

- Always tape at least one full cycle (long enough to show what task is being evaluated).
- For cycle times less than 30 seconds, tape 10 cycles.
- For cycle times greater than 30 seconds, tape at least one cycle.

Medical/Claims Management

Medical and claims management

The cost of injuries and disabilities continue to deplete the financial assets of employers, insurance carriers and the injured worker. This cost is often passed on to the consumer in the form of higher prices for goods and services, and insurance premiums. As expenses for health care and insurance coverage continue to escalate, it becomes crucial that methods, policies and procedures be developed to control these cost. Experts suggest that the employer can no longer rely on the government or outside risk management services/third party administrators to manage uncontrolled workers' compensation cost (Shrey, 1996). Because of these sky-rocketing costs, workers' compensation should not be viewed as another cost of doing business.

BWC has established a managed-care program for state-fund employers called the Health Partnership Program (HPP). Self-insuring employers have an option to choose a managed-care program called the Qualified Health Plan. This change is a result of legislative mandate, House Bill 107 in 1993. Under this system, managed care organizations (MCOs) provide medical management and cost-containment services to Ohio's injured workers. The MCO must medically manage a claim for the life of a claim, as long as the employer remains in contact with the MCO. In cases where the employee has multiple claims with different employers, each claim remains with the associated employer and is managed by the employer's current MCO.

BWC certifies the medical providers who choose to participate. Once providers are certified, prospective MCOs create their provider networks from the pool of BWC-certified providers. BWC-certified MCOs may solicit employers for their employee's workers' compensation coverage under the HPP plan during the employer enrollment period. During open enrollment, employers have the option to change their MCOs. Upon selecting an MCO, the employer must notify their employees.

Medical management

With the implementation of HPP, the employers' MCOs provide medical-management services. Medical management, or disability management, as it is often referred to, is an active process of minimizing the impact of an impairment on an individual's capacity to participate competitively in the work environment.

Perhaps the most important component to medical management is early intervention. If medical interventions are delayed, the condition or disability often becomes worse. There also are psychosocial behaviors that may arise due to injuries, the employee assumes the sick role and the disability benefits become vary attractive compared to returning to the job. Unfortunately many companies do not have a process in place to handle complaint of pain and discomfort by employees until the complaint turns into a workers' compensation claim. Early interventions and transitional return-to-work programs decrease lost-work time,

increase productivity and decrease workers' compensation cost. According to Dr. Donald Shrey, an injured employee typically spends five to five and one-half weeks in a transitional return-to-work program. Eight weeks is the recommended maximum amount of time for an injured employee to spend in a transitional return-to-work program.

The main components of an effective process include, but are not limited to:

- Formalized policies, procedures and protocols;
- Early reporting of signs and symptoms associated with CTDs. (A sample early reporting form is included at the end of this section.);
- Early medical intervention;
- Frequent communication with the injured employee and their medical provider;
- On-sight transitional work that can be matched with the functional capacity of the injured worker;
- Ongoing case management to address both physical and psychological issues;
- Safe and timely return to work for the injured worker;
- A working relationship with the medical providers: physicians, therapist, pharmacist and rehabilitation specialists within your community;
- Necessary job accommodations and ergonomics modifications as/if needed.

From an ergonomics perspective, the key element of an effective medical-management process is to simultaneously address the medical aspect of the workers' injury and make the necessary changes to the work environment to reduce/eliminate the possible occupational cause(s) of the injury. If these efforts are not addressed simultaneously, frequently, the rehabilitated worker returns to work and is exposed to the same physical risk factors that may have caused or exacerbated the CTD condition.

Claims management

To understand claims management, you must first understand the difference between the two types of employers under the Ohio workers' compensation law — state-fund employer and the self-insuring employer. State-fund employers pay workers' compensation premiums directly to the Ohio workers' compensation fund. When an injury occurs and the claim is approved, BWC pays compensation to the injured employee and health-care providers. Self-insuring employers are generally large employers who are permitted to pay compensation directly to the injured worker, and directly pay providers for medical services and other benefits that the injured/disabled worker is entitled to under the law.

There are two types of workers' compensation claims:

- A **medical-only claim** — a claim filed when an employee loses seven or fewer calendar days from his or her job due to an industrial injury or occupational disease. For a medical-only claim BWC pays related medical expenses.
- A **lost-time claim** — a claim filed when an employee loses eight or more calendar days from his or her job due to an industrial injury or an occupational disease. For a lost-time claim, BWC pays compensation for lost wages and related medical expenses.

An injured worker with a lost-time claim will receive compensation based on the type of disability he or she is diagnosed with — temporary total disability, wage loss compensation, permanent partial disability or permanent total.

- **Temporary total disability** is a disability that totally prevents an injured worker from performing any gainful work, but the disability is expected to be temporary in duration.
- **Wage loss compensation** occurs when an employee with an allowed claim suffers a wage loss as a result of returning to employment other than his/her former position of employment. The injured worker will be paid a percent of his or her wage loss, not to exceed the state wide average weekly wage, for a period not to exceed 200 weeks.
- **Permanent partial disability** is a permanent disability of a partial nature involving the permanent limitation or restriction of the use of a portion of the body. A permanently stiff wrist or elbow, limiting the use of the hand or arm, constitutes permanent partial disability.
- **Permanent total disability** is a disability that totally prevents a person from performing any sustained remunerative employment and is expected to be of permanent duration. Examples are loss of use of hands, arms, legs, or both eyes.

Key components of effective claims management include, but are not limited to:

- Submitting the proper claims forms;
- Submitting the forms in a timely manner. You must make a report of all occupational injuries and occupational diseases resulting in seven or more lost workdays to BWC within seven days of acquiring knowledge. One day is added onto the statute of limitations for the injured worker, up to a maximum of two additional years, for each day the employer fails to report an injury to the BWC;

- Providing the treating physician with as much information as possible about the injured worker's job. You can accomplish this by videotaping the operation, providing job descriptions and inviting the physician in for a plant tour. The more information the physician is provided with the better he or she can accurately diagnose the injury. It is imperative for the employer to display the willingness to communicate and work with the physician to return the employee back to purposeful work as soon as possible;
- Following up with the employee, BWC and the MCO;
- Documenting and tracking workers' complaints of pain, injury, and illness, and workers' compensation claims.
- Implementing a formalized transitional return-to-work program. You can accomplish this with the assistance of your MCO;
- Implementing ergonomic engineering and/or administrative controls to the work area where a work injury resulted from.

For additional information, call BWC at 1-800-OHIOBWC, read the OHIO AFL-CIO Workers' Compensation Facts Handbook or contact the workers compensation administrator within your facility.

Early reporting of signs and symptoms

Date _____

Plant _____ Dept. _____ Shift _____

Job name _____

Hours worked/week _____

Time on this job _____ (years) _____ (months)

Other jobs you have done in the last year (for more than two weeks)

Dept. _____ Job name _____

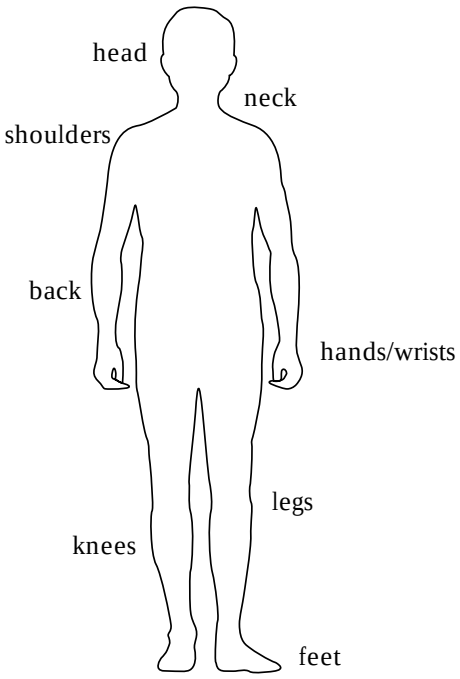
Dept. _____ Job name _____

Dept. _____ Job name _____

Have you had any work-related pain or discomfort during the last year?

___ Yes ___ No (if no, stop here)

If Yes, circle the areas of the picture which bother you the most.



Complete a separate page for each body area that bothers you.

Check area that is of concern:

☐ Neck ☐ Shoulder ☐ Elbow/forearm ☐ Hand/wrist ☐ Fingers

☐ Upper back ☐ Lower back ☐ Thigh/knee ☐ Low leg ☐ Ankle/foot

1. Please put a check by the words that best describe your problem:

☐ Aching ☐ Numbness (asleep) ☐ Tingling

☐ Burning ☐ Pain ☐ Weakness

☐ Cramping ☐ Swelling ☐ Other

☐ Loss of color ☐ Stiffness

2. When did you first notice the problem: _____ (month) _____ (year)

3. How long does each episode last?

☐ one hour ☐ one day ☐ one week ☐ one month ☐ six months

4. How many separate episodes have you had in the last year? _____

5. What do you think caused the problem? _____

_____

_____

6. Have you had this problem in the last seven days? ☐ Yes ☐ No

7. How would you rate this problem (mark an X on the line)?

Now: none _____ unbearable

When it is the worst: none _____ unbearable

8. Have you had medical treatment for this problem? ☐ Yes ☐ No

8a. If no, why not? _____

8b. If yes, where did you receive treatment?

Company medical personnel (if so, how many times in past year _____)

Personal doctor (if so, how many times in past year _____)

Other (if so, how many times in past year _____)

Did treatment help? ☐ Yes ☐ No

9. How much time have you lost in the last year because of this problem? _____ (days)

10. How many days in the last year were you on restricted or light duty because of this problem?

_____ (days)

11. What do you think would help to improve your symptoms? _____

_____

_____

Sample Forms

Ergonomic Team meeting minutes form

Team meeting minutes are an extremely important documentation tool. Documentation of each meeting must become a standard operating practice at every Ergonomics Team meeting. Meeting minutes serve many purposes, including:

- Helping organize the team;
- Serving as a tracking tool;
- Documenting what the team discussed during a meeting;
- Identifying the members who were present and absent;
- Placing the agenda, date and time of the next Ergonomics Team meeting;
- Identifying individual action items for the team members.

One of the most useful elements of meeting minutes is documenting the individual Ergonomics Team member's action items. Action items are assignments or task that an individual team member is responsible for. Documenting action items serves as a reminder of the team member's responsibilities, and it holds the member accountable for their responsibilities. Post a copy of the meeting minutes for all employees to see. The next page contains a sample meeting minutes' form.

XYZ Manufacturing

Ergonomics Team meeting minutes

Date _____ Time _____

Mission statement

We, the Ergonomics Team, will work to reduce work-related injuries and illness by systematically eliminating their causes through education and awareness, modification to the work place and work practice.

Team members

P-present A-absent

I. M. Here	P A	Jim Handy	P A	Lonnie Blue	P A
Joe Bloe	P A	Dave Clark	P A	John Hancock	P A
Sue Cancook	P A	Steve Clever	P A		

Minutes

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Action items

1. _____
2. _____
3. _____
4. _____
5. _____

Agenda for next meeting

Date _____ Time _____

1. _____
2. _____
3. _____
4. _____
5. _____

Ergonomics Team membership application form

To solicit prospective Ergonomics Team members, consider creating or using an existing application or volunteer form. Use the Ergonomics Team application form to gather pertinent employee information. The team must establish criteria to choose the most appropriate and desirable team member(s) (e.g., from a particular department, years of experience, job title, etc.). The next page contains a sample Ergonomics Team membership application form.

WANTED

New member for the Ergonomics Team

Are you interested in working with the Ergonomics Team? Being trained on ergonomics? Making your work place healthier for yourself and those you work with? If so, fill out the form below and return it to a member of the Ergonomics Team or to the health and safety coordinator.

Name _____ Date _____

Classification _____ Clock # _____

Job title _____ Date of hire _____

How do you rate your communication skills, written and spoken?
___ Poor ___ Average ___ Good ___ Excellent

Can you work with others? ___ Yes ___ No

Are you willing to be trained on ergonomics? ___ Yes ___ No

After training, are you willing to assist in training others? ___ Yes ___ No

List any previous experience that would benefit the team _____

_____

_____

_____

Training and evaluation forms

The training evaluation form provides an avenue for the Ergonomics Team to receive feedback from the employees that participated in ergonomics training. This tool can enhance training because it allows the training instructor to design or modify ergonomic training so that it can best meet the needs of the employees. The following page contains a sample evaluation form.

Ergonomics training evaluation form

The Ergonomics Team would like your input on the ergonomics training you receive through the ergonomics process. Your input is much appreciated.

Please answer the questions below and turn in the form. Please mark one number per question. If a question does not apply, mark NA.

	Poor				**Satisfactory**					**Outstanding**	
1) Organization of materials	1	2	3	4	5	6	7	8	9	10	NA
2) Usefulness of ideas, skills, and techniques	1	2	3	4	5	6	7	8	9	10	NA
3) Ability to hold your interest	1	2	3	4	5	6	7	8	9	10	NA
4) Expertise on the topic	1	2	3	4	5	6	7	8	9	10	NA
5) Effective response to questions	1	2	3	4	5	6	7	8	9	10	NA
6) Ability to stay focused on the topic	1	2	3	4	5	6	7	8	9	10	NA
7) Relevance to your job	1	2	3	4	5	6	7	8	9	10	NA
8) Overall training rating	1	2	3	4	5	6	7	8	9	10	NA

Additional comments _____

_____

_____

_____

_____

_____

_____

_____

Thank you for taking the time to give us your feedback!

Work-place injuries tracking form

A work-place injury tracking form allows the team to track injury information, such as type of injury, department where the injury occurred and loss time. This is one of many tools that the Ergonomics Team can use to determine the ergonomic priorities within a company and, therefore, determine which departments should receive ergonomic analysis and modifications. This information also can serve as a before and after ergonomic interventions comparison.

The human resource department, workers' compensation administrator or a third-party administrator can obtain company injury, frequency, severity and type of injury information. It is imperative to keep injured employees names confidential. The following pages contain sample tracking forms. Each sample form appears twice; once without any data shown — just blank — and the second time with example data.

SUMMARY OF INDUSTRIAL INCIDENTS

		JANUARY			FEBRUARY			MARCH			APRIL			MAY			JUNE			JULY			AUGUST			SEPTEMBER			OCTOBER			NOVEMBER			DECEMBER			YEAR TO DATE		
DESCRIPTION	DEPT.	Not Lost Time	Lost Time	Lost Time Hrs	Not Lost Time	Lost Time	Lost Time Hrs	Not Lost Time	Lost Time	Lost Time Hrs	Not Lost Time	Lost Time	Lost Time Hrs	Not Lost Time	Lost Time	Lost Time Hrs	Not Lost Time	Lost Time	Lost Time Hrs	Not Lost Time	Lost Time	Lost Time Hrs	Not Lost Time	Lost Time	Lost Time Hrs	Not Lost Time	Lost Time	Lost Time Hrs	Not Lost Time	Lost Time	Lost Time Hrs	Not Lost Time	Lost Time	Lost Time Hrs	Not Lost Time	Lost Time	Lost Time Hrs	Not Lost Time	Lost Time	Lost Time Hrs
C.T.D. - HAND & WRIST																																							
Totals																																							
C.T.D. - ELBOW, SHOULDER, & NECK																																							
Totals																																							
BACK																																							
Totals																																							
STRAINS/ SPRAINS																																							
Totals																																							
CUT/ LACERATION																																							
Totals																																							
HIT/ CONTUSION																																							
Totals																																							
OTHER																																							
Totals																																							
TOTALS																																							

SUMMARY OF INDUSTRIAL INCIDENTS

		JANUARY			FEBRUARY			MARCH			APRIL			MAY			JUNE			JULY			AUGUST			SEPTEMBER			OCTOBER			NOVEMBER			DECEMBER			YEAR TO DATE		
DESCRIPTION	DEPT.	Not Lost Time	Lost Time	Lost Time Hrs	Not Lost Time	Lost Time	Lost Time Hrs	Not Lost Time	Lost Time	Lost Time Hrs	Not Lost Time	Lost Time	Lost Time Hrs	Not Lost Time	Lost Time	Lost Time Hrs	Not Lost Time	Lost Time	Lost Time Hrs	Not Lost Time	Lost Time	Lost Time Hrs	Not Lost Time	Lost Time	Lost Time Hrs	Not Lost Time	Lost Time	Lost Time Hrs	Not Lost Time	Lost Time	Lost Time Hrs	Not Lost Time	Lost Time	Lost Time Hrs	Not Lost Time	Lost Time	Lost Time Hrs	Not Lost Time	Lost Time	Lost Time Hrs
C.T.D. - HAND & WRIST	22	1																																					
	23		3																																				
	27	2		25																																			
	30		2	10																																			
Totals		3	5	35																																			
C.T.D. - ELBOW, SHOULDER, & NECK	22	1																																					
	23		3																																				
	27	2		25																																			
	30		2	10																																			
Totals		3	5	35																																			
BACK	22	1																																					
	23		3																																				
	27	2		25																																			
	30		2	10																																			
Totals		3	5	35																																			
STRAINS/ SPRAINS	22	1																																					
	23		3																																				
	27	2		25																																			
	30		2	10																																			
Totals		3	5	35																																			
CUT/ LACERATION	22	1																																					
	23		3																																				
	27	2		25																																			
	30		2	10																																			
Totals		3	5	35																																			
HIT/ CONTUSION	22	1																																					
	23		3																																				
	27	2		25																																			
	30		2	10																																			
Totals		3	5	35																																			
OTHER	22	1																																					
	23		3																																				
	27	2		25																																			
	30		2	10																																			
Totals		3	5	35																																			
TOTALS		21	35	245																																			

Ergonomics injury/illness log
Monthly safety review

Name	Clock No.	Area	Shift	CMC/Dept. Mgr.	Comments	Action Taken

Ergonomics injury/illness log
Monthly safety review

Name	Clock No.	Area	Shift	CMC/Dept. Mgr.	Comments	Action Taken
Bobby Joe	212134	332	1	TG	Right elbow	Job videotaped for team
Jo Jo Snow	212131	321	2	DB	Left wrist	Interviewing employee
TJ Jay	212221	331	1	TG	Bilateral hands	
Roger Dodger	123134	342	2	DB	Right wrist	
Broom Hilda	24434	341	2	DB	Back	
Patsy Cline	25674	414	3	DH	Bilateral arms	
A.J. Racer	200034	331	1	TG	Right forearm	
Bob Doe	342134	343	2	DB	Bilateral Wrists	
D.R. Sues	212135	412	3	DH	Right wrist/elbow	
Kim Limb	233334	332	1	TG	Right wrist	

Ergonomic team suggestion forms

Involving employees from all levels of your organization is a key component in the ergonomics process. You should develop a mechanism to solicit and track employee suggestions and concerns.

Develop an ergonomics suggestion form or use a suggestion form that is in place (assessment of available resources). Consider the following recommendations when considering an employee suggestion/participation form:

- Designate a location where employees can easily obtain the suggestion forms;
- Designate a location (suggestion box) where the employees can submit the suggestion forms;
- Devise a system that informs the employee that the ergonomics team received his or her suggestion/concerns;
- Track all ergonomic suggestions/concerns;
- Develop a database to do this tracking and maintain it on a regular basis;
- Assign a tracking number to all forms to have a reference for each form received.

Ergonomics participation form

Employee section for completion

Date _____

Employee name _____

Department _____

Job title _____

Specific job/task causing ergonomic concern _____

_____

Why is it an ergonomic concern? (Be specific as to how it's causing problems): _____

_____

_____

(Use back of page if needed.)

What modification do you recommend to reduce and/or eliminate the ergonomic concern? (Please answer if you have any proposed solutions.) _____

_____

Thank you for your interest in improving ergonomics at our plant.

Please check below if you want to receive a personal update from an Ergonomics Team member.

___ Yes, I'd like to be personally contacted by an Ergonomics Team member for an update on my ergonomics idea.

___ No, I don't need a personal contact.

(Note to all participants: The Ergonomics Team will post monthly updates on the main bulletin board communicating status of all ideas submitted on these forms.)

Ergonomics Team section

Verification of receipt _____

Employee name _____

Thank you for your input. Your ergonomics participation form number is EPF # _____

Sincerely, the Ergo Team

Date _____

Opportunity for improvement form

Employee name _____ Date _____

Your department _____ Supervisor _____

The following is a suggestion that will (check all areas affected):

- ☐ Improve quality
- ☐ Improve safety
- ☐ Reduce costs
- ☐ Save time
- ☐ Save space
- ☐ Save materials
- ☐ Eliminate errors
- ☐ Other: _____

Describe the suggestion below: _____

For Ergo Team Use

OFI# _____ Evaluation by _____ Date _____

Ergonomic Team suggestions form

Instructions: Please write your suggestions in the space below. Make certain to explain clearly and completely what your suggestion will accomplish. If additional space is required or a sketch would help, use the reverse side of this form. When it is completed, put it in one of the suggestion boxes located in the cafeteria or next to the training center. Thank you for your interest.

What? _____

_____

_____

_____

Why? _____

_____

_____

_____

How? _____

_____

_____

_____

Signature (optional): _____ Date: _____

Date forwarded for further action: _____

Action taken: _____

_____

_____

_____

Follow up: _____

_____

_____

_____

Ergonomics Team activity log

The Ergonomics Team activity log is a record keeping tool used to track all ergonomic activities. The suggested components of this log are: project assignment number, project status (active or inactive), project start date, project end date, department number or location, suggestions for improvement and comments. We recommend that you post the team activity log in a designated location for all employees to view. Posting this information allows all the employees within the facility to track the status of Ergonomics Team's effort. The following are sample ergonomic team activity logs. Each log appears twice; first as a blank sample and second with example data included.

Ergonomics Team activity log

Tracking No.	Problem/Project description	Project dates		Status	Comments
		Start	End		

Ergonomics Team activity log

Tracking No.	Problem/Project description	Project dates		Status	Comments
		Start	End		
98-001	Center section lift — Department. A needs mechanical assist due to back problems.	1/1/98	5/7/98	Closed	Mechanical assist developed and integrated into the process in Deptartment A. Workers like the change.
98-002	Ted Red's experiencing wrist problems when typing on computer	6/1/98	7/1/98	Closed	We provided Ted with an adjustable keyboard tray and mouse caddy. Ted hasn't had any problems since he began using the new equipment.
99-001	Punch press operator experiencing problems loading parts	7/1/99		Open	We are evaluating the work area. We are considering adjustable lift tables.

Ergonomics activity log

Suggest No.	Date Rec'd	Reply Date	Project No.	Status	Start DATE	Comp DATE	Dept.	Project Description	Comments

Ergonomics activity log

Suggest No.	Date Rec'd	Reply Date	Project No.	Status	Start DATE	Comp DATE	Dept.	Project Description	Comments
–	–	–	EP001	Active	Sept. 99		12	Lifting device for parts containers	Two lifts ordered, one received
101	10/1/99	10/3/99	EP002	Active	Oct. 99	Nov. 99	22	Keyboard tray and new chair provided to employee suffering from CTS	Worker is happy with modifications Team will follow-up in three months
–	–	–	EP003	Active	Oct. 99		25	Complaints assembling widgets with manual tools and no fixtures	Videotaping jobs for ergo analysis
102	9/9/99	9/10/99		Future			20	Improve method of packing widgets	

Ergonomics Team activity log

Shift	Dept.	Problem	Solution	Status

Ergonomics Team activity log

Shift	Dept.	Problem	Solution	Status
1	123 — Punch press	Loading from floor level	Adjustable lift tables	Closed
1	Accounting	Back problems with computer operator	New chair with adjustable back rest	Closed
3	Maintenance	No assists for moving materials between work areas	Handled wheel carts provided	Closed
2	201 — Assembly	Wrist complaints assembly parts	New hopper design bringing parts closer to worker	Active

Ergonomic project summary forms

The ergonomic project summary form is designed to document and track the specifics of each ergonomic project. An example of the information tracked on this form is project start date, the project number, the department, proposed solutions and the desired benefits. This form serves as a tracking and historical information form. It allows the team to determine what phase an active project is in or when the project is complete it provides vital historical information. The following pages contain samples of ergonomic project summary forms.

Ergonomics project summary

Problem summary

- Job name:
- Job description:
- Start and end dates for project:
- What was the ergonomics concern:

Cost of problem

- Medical:
- Compensation:
- Quality impact:
- Production impact:
- Other:

Implemented solution

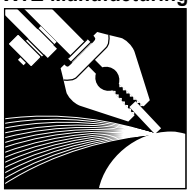
Cost of solution

- Design:
- Engineering:
- Facility modification:
- Implementation:
- New equipment:
- Materials:
- Down time:
- Retraining:

Cost comparison between problem and solution

Follow-up activities

XYZ Manufacturing



Ergonomic project summary

Project start date: _____

Project number: _____

Project name: _____

Department number: _____

Machine number: _____

Job description: _____

_____

Why initiated? _____

_____

Body part affected: _____

Evaluation method: _____

_____

Proposed solution: _____

_____

Implemented solution: _____

_____

Desired benefit: _____

_____

Immediate follow-up comments: _____

_____

Three-month follow-up comments: _____

_____

One-year follow-up comments: _____

_____

Actual benefits: _____

_____

Ergonomics process monitoring checklist

Elements	Action recommended	Level of completion				
		None	Some but inactive	In progress	Complete	Estimate date of completion
Top management and union commitment	Top management and the union (if applicable) visibly support the ergonomics process (e.g., written support).					
	Top management approves resources (e.g., time and money) needed to support the process.					
Form steering/advisory group (if applicable)	A group of people or person govern the ergonomics process.					
	A plan exists to form the initial team.					
Form Ergonomics Team	The Ergonomics Team members' names and department/work area have been identified and documented.					
	Individuals/departments who serve as a resource to the team have been identified and documented.					
Comprehensive team training	Ergonomics Team members have received ergonomics training.					
	A method of training new Ergonomics Team members has been identified.					
Review relevant in-house programs	Existing employee involvement programs have been evaluated to determine possible use for ergonomics issues (e.g., existing forms, documentation tools, etc.).					

Elements	Action recommended	Level of completion				
		None	Some but inactive	In progress	Complete	Estimate date of completion
Develop and document goals, objectives and action plan	The structural components of the ergonomics process have been identified and documented.					
	Clear goals have been identified and documented.					
	An action plan to accomplish those goals has been identified and documented.					
	Roles and responsibilities have been identified and documented.					
	A method is in place to hold individuals accountable for their defined responsibilities.					
	A method and timeline has been established to evaluate the action plan for needed updates.					
Inform all employees of the ergonomics process	All employees have been educated on the ergonomics process and the action plan of team.					
	A plan has been established to provide refresher training for all employees on a regular basis.					
Collect and analyze trend/ historical data	The team collects and documents data on a regular basis.					
	Data is analyzed on a regular basis to identify ergonomic related trends.					
	The team collects and analyzes various sources of data (e.g., production, quality, injury/illness, etc.) to determine ergonomic-related trends.					

Elements	Action recommended	Level of completion				
		None	Some but inactive	In progress	Complete	Estimate date of completion
Medical and claims management	Regular communication exists between health-care providers, worker's compensation personnel and injured workers.					
	A process is in place that includes: ■ Efficient record keeping; ■ Early reporting of signs and symptoms; ■ Appropriate medical evaluation; ■ Prompt treatment; ■ Aggressive return-to-work policy; ■ Efficient claims monitoring. ■ Regular communication (verbal, written or both) exists between person(s) responsible for medical management and the ergonomics team.					
Ergonomic risk factor identification and control	A method is in place (or criteria established) to prioritize jobs for ergonomics work-site analysis.					
	Ergonomic work-site analysis techniques have been established to identify existing and potential risk factors.					
	Control strategies have been developed from which solutions can be generated.					
	The team with employee input develop solutions to eliminate or reduce the identified ergonomic risks.					
	The approval process for getting ergonomic improvements implemented has been identified and documented.					
	A method of developing an implementation plan for improvements is functioning with timelines for completion identified.					
	A method to evaluate improvements is in place.					

Elements	Action recommended	Level of completion				
		None	Some but inactive	In progress	Complete	Estimate date of completion
Monitor overall process	A plan to periodically review the ergonomics process has been established.					
	Measures of effectiveness of the ergonomics process have been established (e.g., decrease in injuries/illnesses, decrease in costs, reduction of risk factors, etc.)					
	A method to update the ergonomics process has been developed.					

Resources

Ergonomic guidelines and standards

- **OSHAct Section 5.(a)(1) General Duty Clause, 1970** — the general duty clause says that each employer will furnish to each of his employees employment and a place of employment which is free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employee. For additional information, refer to the OSHA code of federal regulations, your area OSHA office or e-mail OSHA at www.osha.gov.

- **American National Standards Institute (ANSI) Human Factors Society Inc. (HFS)-100/1988; VDTs** — the ANSI and the HFS created this technical standard that specifies requirements for visual display terminal (VDTs). This standard addresses computer workstation furniture, computers and the office environment. For additional information, e-mail ANSI at www.ansi.org or call (212) 642-9400.

- **OSHA's Ergonomics Program Management Guidelines for Meatpacking, 1990** — OSHA created meatpacking guidelines as a result of an increase in the reported CTDs cases and cost of workers' compensation claims in the meatpacking industry. Meatpacking job tasks expose workers to ergonomic physical risk factors, such as repetition, awkward postures, undesirable environmental conditions and forceful exertions. The meatpacking guidelines list three elements that are designed to aid in the development and implementation of an ergonomics process. The three elements are listed below.

  1. Management commitment and employee involvement

  2. Program elements
     - Work-site analysis
     - Hazard prevention and control
     - Medical management
     - Training and education

  3. Detailed guidance and examples
     - Guidance and examples are listed within the Meatpacking Guidelines

For additional information, contact your area OSHA office or e-mail OSHA at www.osha.gov.

- **ANSI Z.365; Control of Work-Related CTDs (Draft), 1997** — this document is a working draft of the Accredited Standards Committee Z365, Control of CTDs. The ANSI Z.365 draft standard describes processes and principles for controlling work related cumulative trauma disorders. For additional information, e-mail ANSI at www.ansi.org or call (212) 642-9400.

The key elements of this proposed ANSI standard are:

- Management responsibilities;
- Training;
- Employee involvement;
- Surveillance;
- Evaluation and management of CTD cases;
- Job analysis;
- Job design and interventions;
- Program implementation.

- **The National Institute of Occupational Safety and Health (NIOSH) Elements of Ergonomics Program, 1997** — this manual provides information that assist employers and employees in designing an effective ergonomic process. Key elements of an ergonomic process are outlined within this manual and the format allows the users to tailor the program according to their specific needs. This manual also contains sample checklist and analysis forms. For further information, e-mail NIOSH at www.cdc.gov/niosh/homepage.html or call (800) 35NIOSH.

- **California Code of Regulations Title 8-Section 5110, 1997, "California OSHA Ergonomic Standard"** — this standard requires employers to evaluate affected work site and implement an ergonomic program/process if at least two employees performing identical task have been diagnosed with work-related repetitive motion injuries (RMI) within 12 consecutive months. This standard is the subject of legal challenges to eliminate language from Section, 5110 of the standard. For additional information, call the State of California Department of Industrial Relations at (916) 322-3640 or send an e-mail at http:www.dir.ca.gov

- **Ergonomics Program – Final Rule 29 CFR Part 1910.90, 2000** — the purpose of this standard is to reduce the large number and severity of work-related musculoskeletal disorders (WRMDs). To accomplish this, the company must implement an ergonomics program to identify the control hazards that are reasonably likely to be causing or contributing to the WMSDs. The proposed standard does not cover maritime, construction, or agricultural activities. The companies covered under this proposed standard are limited to workplaces in general Industry.

This standard covers you if you have:

- Manufacturing operations;
- Manual handling operations;
- A job where a WRMD is reported after effective date of this standard, a WMSD is limited to one that meets these criteria.

Ergonomics related Internet Web sites

- **ADVANCED ERGONOMICS — Ergonomic Consulting and Training** (commercial)
  http://www.advergo.com
- **Agricultural Ergonomics Research Center — UC Davis**
  http://www.engr.ucdavis.edu/~ergo
- **Alan Hedge: Human Factors and Ergonomics**
  http://www.tc.cornell.edu/~hedge
- **American Psychological Society (APS)**
  http://www.hanover.edu/psych/APS/aps.html
- **Biomechanics World Wide**
  http://www.per.ualberta.ca/biomechanics/bwwframe.htm
- **Center for Industrial Ergonomics — University Louisville**
  http://www.louisville.edu/speed/ergonomics
- **Civilian American and European Surface Anthropometry Resource Project, CAESAR Executive Summary**
  http://www.sae.org/technicalcommittees/caesumm.htm
- **CTS Intro**
  http://www.sechrest.com/mmg/cts/ctsintro.html
- **CTDNEWS**
  http://ctdnews.com
- **CybERG 1996**
  http://www.curtin.edu.au/conference/cyberg
- **Human Factors Engineering Center/Virginia Tech/Casali**
  http://hci.ise.vt.edu/hfec
- **Ergonomics (Human Factors and Human Ecology)**
  http://galaxy.einet.net/galaxy/Engineering-and-Technology/Human-Factors-and-Human-Ecology/Ergonomics.html
- **ErgoWeb**
  http://www.ergoweb.com/Pub/ewhome.shtml
- **Handglider** (commercial)
  http://www.cybertours.com/sagoma/handglider/home.html
- **Human Factors and Ergonomics Society**
  http://hfes.org
- **Injury Control Resource Information Network**
  http://www.injurycontrol.com/icrin
- **International Ergonomics Association**
  http://www-iea.me.tut.fi

- **Musculoskeletal Injuries in Construction — CPWR**
  http://info.pmeh.uiowa.edu/construc/cons10.htm

- **Occupational Overuse Syndrome (resources and information) — New Zealand**
  http://www.mcs.vuw.ac.nz/comp/General/OOS

- **PowerPause: Software Guided Stretch Breaks that Help Prevent RSI** (Commercial)
  http://gateway.possibility.com/PowerPause

- **R.S.I. Page**
  http://engr-www.unl.edu/ee/eeshop/rsi.html

- **Typing Injury FAQ Home Page**
  http://www.tifaq.org

- **UCSF/UCB Ergonomics Program**
  http://www.me.berkeley.edu/ergo

- **University of Michigan Center for Ergonomics**
  http://www.engin.umich.edu/dept/ioe/C4E

- **USERNOMICS**
  http://www.usernomics.com

- **UVA/EHS Ergonomics**
  http://www.virginia.edu/~enhealth/ERGONOMICS/toc.html

- **Work-Related Musculoskeletal Disorders: A Review of the Evidence**
  http://pompeii.nap.edu/catalog/catalog.cfm?record_id=6309

- **Yahoo — Health: Workplace: Computer Related Health Hazards**
  http://dir.yahoo.com/Health/Workplace/Computer_Related_Health_Hazards

Resources Available from the Division of Safety & Hygiene (DSH) Libraries

(800) 644-6292 (614) 466-7388
library@bwc.state.oh.us
www.ohiobwc.com

Safety training:

- Safety talks, outlines and scripts - DSH Safety leader's discussion guide, Training Center's One-hour safety presentations, reference books, web resources
- Videos – hundreds of safety and health topics
- Books and articles on training techniques

Machine and equipment safety:

- Safety standards (ANSI, NFPA, CGA)
- Books and articles on power presses, material handling equipment, lockout/tagout, etc.

Sample written programs:

- DSH program profiles and sample written programs
- Reference books
- Internet resources

Illness and injury statistics:

- Statistics from the U.S. Bureau of Labor Statistics
- National Safety Council's *Injury Facts*
- National Institute of Occupational Safety & Health (NIOSH) studies

Hazard communication and chemical safety:

- Chemical safety information
- Material safety data sheets (MSDSs)
- Sample written programs
- Videos
- Internet resources

Safety standards

- American National Standards Institute (ANSI) standards (including standards for construction, machinery and equipment, personal protective equipment)
- National Fire Protection Association (NFPA) fire codes (including the Life Safety Code and the National Electrical Code)
- Compressed Gas Association (CGA) standards

Other topics of interest (books, articles, magazines, videos and standards):

- Confined spaces
- Electrical safety
- Job safety analysis
- New employee orientation
- Powered industrial trucks
- Respiratory protection
- Scaffolds
- Spill response

Directories and lists of vendors of safety equipment

Occupational Safety & Health Administration (OSHA) regulations

Manual of Uniform Traffic Control Devices (MUTCD)

Recommendations of useful Internet sites

BWC publications

Saving You Time and Research

Requests for copies of OSHA standards, information on starting a safety committee, a video on accident investigation techniques -- these are some of the thousands of inquiries BWC's Division of Safety & Hygiene (DSH) libraries receive each year.

DSH has two libraries to serve you:

- The central library in the William Green Building in downtown Columbus;
- The resource center and video library located at the Ohio Center for Occupational Safety and Health (OCOSH) in Pickerington.

Both libraries are open 8 a.m. to 4:45 p.m., Monday through Friday. Your need for information does not require a visit to the library. You can phone, fax, or e-mail your requests and receive a quick response.

The central library provides free information services on the topics of occupational safety and health, workers' compensation and rehabilitation.

The OCOSH resource center provides similar services for those who visit OCOSH for meetings and training center classes.

The video library offers an extensive collection of videotapes to supplement your organization's safety and health training program. It is a convenient and popular source for Ohio employers to borrow quality occupational safety- and health-related training aids.

Visit our Web site at **www.ohiobwc.com.**

Central library
30 W. Spring St., Third Floor
Columbus OH 43215-2256
1-800-OHIOBWC
(614) 466-7388
(614) 644-9634 (fax)
library@bwc.state.oh.us

OCOSH resource center
13430 Yarmouth Drive
Pickerington OH 43147
1-800-OHIOBWC
Resource center (614) 728-6464
Video library (614) 644-0018

Class Handout

Ergonomics:

Developing an Effective Process

Table of Contents

Agenda

8:30	Introduction
	Overview
	Current status of Ergonomics Process in students' workplaces
	Top management commitment/union commitment
	Cost justification (or cost benefits)
	Ergonomic team
12:00	LUNCH
1:00	Blueprint (goals, objectives, action plan)
	Collect and analyze trend/historical data
	Monitor overall process
	Summary
4:30	DISMISS

There will be one morning break and two afternoon breaks.

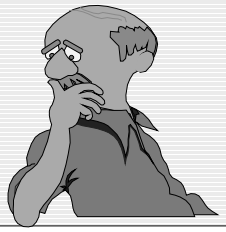
Ergonomics
Developing An Effective Process

Objectives

- Discuss the elements of an effective ergonomics process.
- Learn how to obtain commitment from the union, employees, and the top management within your organization.
- Learn how to create an effective ergonomics team.
- Learn how to create a written process.

Lets Play

Choose The Best Possible Answer To The Following Questions



What Is Ergonomics ?

- A) Selecting the right person for the job so injuries are less likely to occur.
- B) Fitting jobs and job demands to the capabilities/limitations of the population.
- C) A communist plot to make the American people weaker.
- D) Using common sense to make jobs easier.

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A Major Goal Of Ergonomics Is

- A) Reduce the frequency of injuries/illnesses and costs associated.
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On Average, Back Injuries Account For Approximately

- A) 10% of all lost-time injuries.
- B) 25% of all lost-time injuries.
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- D) 75% of the workers' compensation cases under investigation by the fraud department.

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What Job Classification Has The Highest Rate Of Back Injuries?

- A) Construction Laborers
- B) Garbage Collectors
- C) Nurses Aides
- D) Government Employees, particularly those that know a little too much about the workers' compensation system.

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- A) Carpal trauma disorder
- B) Cumulative tunnel disease
- C) Cumulative trauma disorder
- D) Call the doctor

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The Three Major Occupational Risk Factors For CTDs Are:

- A) Repetition, Force, and Posture
- B) Work ethic, Experience, and Attitude
- C) Gender, Age, and Medical History
- D) Labor Unions, Lawyers, and Poor Labor/Management Relations

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Proactive Methods To Identify Risk For CTDs Include:

- A) Reviewing OSHA 200 logs, medical records, and workers' comp data.
- B) Calculating absentee/turnover rates.
- C) Observing employees, analyzing jobs, and using symptoms surveys.
- D) Conducting pre-employment physicals, drug screening, and background checks.

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An Effective Ergonomics Process Is Characterized By:

- A) Posters and training classes that show people how to use good posture and body mechanics.
- B) Elimination of all manual work .
- C) Continuous improvements that make jobs safer and more efficient.
- D) A system for rotating workers to various jobs.

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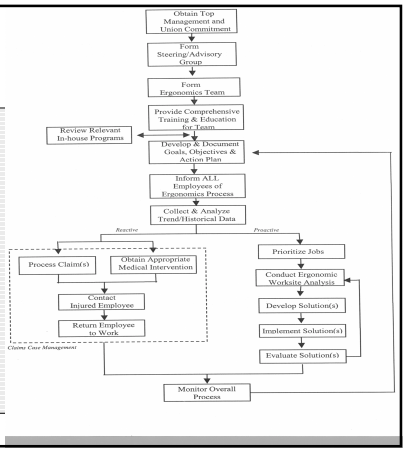
Ergonomics Process Flow Chart

Essential Elements



Ergonomics Process Flow Chart

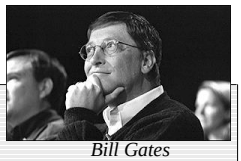
- Identifies the various steps required to develop an effective ergonomic process.
- Each box in the flow chart represents a task that must be addressed and completed.
- The flow chart is in sequential order but, you may find that your ergonomics team will not address the steps in this exact order.

Group Activity

Scenario I

- Your teenager wants a car.
- What sort of information do you need in order to make a decision?

Scenario II



Bill Gates

- You are the Top Management at your company. Your Safety Director wants to initiate an ergonomics process.
- What kind of information do you as Top Management need to know before you can make a decision?

Obtain Top Management and Union Commitment

- Top management and the union must collectively agree to support and commit to the ergonomics process.
- Top management and union leadership should have joint meeting(s) to discuss the ergonomic process and its components.

Executive Summary

- A tool that is used to inform and/or sell the ergonomics process.
- Outlines the intent of the ergonomic process and identifies expected outcomes of implementing a process.

Appendix A-1

Memorandum Of Understanding/ Letter Of Commitment

- If both parties agree to embark on the process they can show their support by drafting and signing a “memorandum of understanding” or “letter of commitment”.

Appendix A-2, B-1

Top Management And Union Commitment

- If top management and/or the union is not willing to commit to the ergonomics process we recommended that you **POSTPONE** your efforts until a firm commitment can be agreed upon by both parties.

Bottom Line

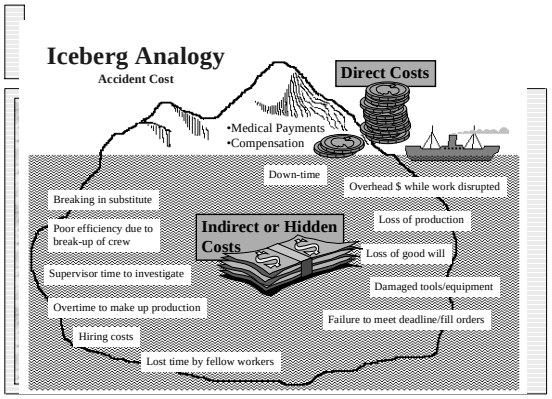
- Top Management needs cost benefit information before they can support an Ergonomics Process.

Cost And Benefits Associated With An Ergonomics Process

What Are The Costs Associated With The Implementation Of An Ergonomics Process?

The Cost Of Injuries

- The direct cost of an injury includes the medical and indemnity costs
- Indirect costs of injuries are usually 1 to 4 times as much as the direct costs



Cost Associated With The Development Of An Ergonomics Process

Costs → **Ergonomics Process** → Benefits

- Team Meetings
- Team Training
- Staff Training
- Forms & Communication Materials
- Assessment Tools & Equipment
- Ergonomic Projects
- Medical Management

Cost Of Team Meetings:

Example, based on lost production:

$$C_{LP} = W_H \times T_H$$

Where:

C_{LP} = Cost of lost production, $

W_H = Hourly wage rate, $/hr

T_H = Time (length of meeting), hr

Team Meeting Cost Continued...

Meeting cost = cost of loss production due to hourly rate + cost of salary

= ($10/hr x 1hr/meeting x 4/month x 3 associates) +

= ($25/hr x 1hr/meeting x 4/month x 5 reps)

= (120 + 500)

= $ 620/month or $7440/year due to meetings

Cost Of Team Training:

Possible costs associated with team training:

$C_{TT} = C_{LP} + C_T + C_M + C_{TR}$

where:

C_{TT} = Cost of Team training

C_{LP} = (Cost of Lost production, based on length of training time)

C_T = Training/Consultant costs

C_M= Material costs, associated with the training

C_{TR}= Travel expenses associated with the training

Team Training Costs Continued...

Training costs =

C_{LP} = ($10/hr x 8hr/mtg x 3 associates)
+ ($25/hr x 8hr/mtg x 5 associates)
= (240 + 1000)
= $1240 due to loss production

C_T = $100/hr x 8hr = $800 trainer fee

C_M = $20 x 8hr = $160 material costs

C_{TR} = $90 x 2 = $180 travel expense

Cost of Team Training = $1240 + $800 +$160 + $180
= $2380

What Are The Benefits Of An Ergonomics Process ?

Benefits Of An Ergonomics Process

Costs → **Ergonomics Process** → Benefits

- Reduced Turnover
- Reduced Replacement Costs
- Improved Training
- Reduced Absenteeism
- Increased Productivity
- Reduced Re-Work & Scrap
- Increased Wages
- Reduced Overhead
- Reduce Injuries
- Reduce Workers' Comp Cost

Ergonomics Process Impact On Profitability

- To calculate an incident's impact on your profitability, you should use your profit margin to determine the amount of sales required to pay for the incident.

Ergonomics Process
Impact On Profitability - Calculation

1) Divide your total profits by total sales to get your profit margin.

Total profits = Profit Margin
Total Sales

2) Divide the total cost of an injury/illness by your profit margin to determine how much sales your company must generate to pay for injury/illness.

Total Cost of Injury/Illness = Sales required to pay for
Profit Margin injury/illness

Ergonomics Process
Impact On Profitability - Example

The total profits for a company is $1,000,000 with the total sales volume being $25,000,000. The profit margin for the company is:

Total Profits = Profit Margin = $1,000,000 = .04
Total Sales $25,000,000

Ergonomics Process
Impact On Profitability
Example Continued...

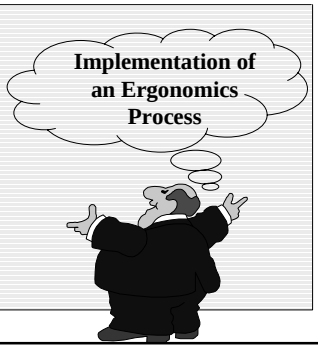
What sales amount is required to pay for one $3,000 dollar carpal tunnel syndrome?

Total Cost of an Injury/Illness = Sales to pay for an injury/illness
Profit Margin

$3,000 = $75,000 in sales required
.04

It Is More Profitable If Your Associates Do Not Incur Injuries

Now that's a good idea !



U.S. General Accounting Office Study Results

Cost Reduction/ Case Studies

- **Navistar - $1.4 Million (1993)**
  - Truck Assembly - 4,000 employees (Ohio)
    - **Reduced to $544,000 (1996)**
- **SOCHS - $100,000 (1994)**
  - Nursing Center - 780 employees (Maine)
    - **Reduced to $70,000 (1996)**
- **Texas Instruments - $2.6 Million (1991)**
  - Defense/Electronics - 2,800 employees (Texas)
    - **Reduced to $244,000 (1996)**

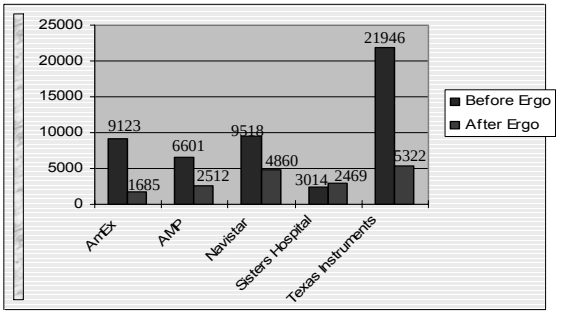
U.S. GAO Study Results

Cost Reduction/ Case Studies Continued...

- **American Express Financial Advisors - $484,000 (1992)**
  - Financial planning/investment - 5,300 employees (Minnesota)
    - **Reduced to $98,000 (1996)**
- **AMP Inc. - $73,000 (1993)**
  - Electronic Assembly - 300 employees (Pennsylvania)
    - **Reduced to $28,000 (1996)**

U.S. GAO Study Results

Benefits: Average $ per CTD Claim



U.S. GAO Study Results

To Receive a Copy of the GAO Study:

Call US General Accounting Office or access their website

- Report # **GAO/HEHS-97-163**
  - phone (202) 512-6000
  - www.gao.gov

U.S. GAO Study Results

Form Ergonomics Team

Ergonomics Team

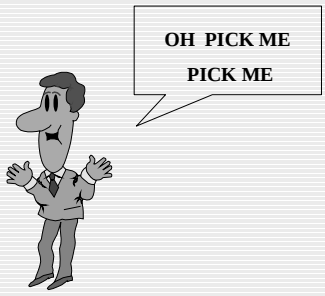
- Steering/Advisory Group role
- In general, most teams are comprised of 6-10 members.
- Some teams have an “open seat” or sub-teams.

Who Should Serve On The Ergonomics Team ?

Possible Ergonomic Team Members Should Be Considered From The Following Departments

- Management
- Union Representatives
- Supervisors
- Affected Employees
- Human Resource/Benefits Compensation Personnel
- Engineers/Facilities Planning
- Maintenance Personnel
- Plant Safety Representative
- Health Care Provider
- Purchasing Personnel

How Do You Solicit Volunteers To Serve On The Ergonomics Team ?



Solicit Volunteers

- Criteria for soliciting and choosing ergonomic team members should be created.
  - Specific qualifications and characteristics should be considered
    - works well with others
    - is a good listener
    - willing to share ideas

Ergonomics Team Members

- Consider using an application form to solicit volunteers (sample form located in Appendix H-4).
- Prospective Ergonomic team members must be solicited and asked to serve on the team on a voluntary basis, they should not be mandated to serve on such a team.

Appendix H-4

Lets Play

One Employee Responsibility In The Ergonomics Process Is:

- A) Promptly report concerns and suggestions to supervisors.
- B) Always use the squat lift technique.
- C) If your back starts to hurt, go to the store and get a back support belt.
- D) Resist any changes to the way the job has always been done.

One Employee Responsibility In The Ergonomics Process Is:

- A) Promptly report concerns and suggestions to supervisors.
- B) Always use the squat lift technique.
- C) If your back starts to hurt, go to the store and get a back support belt.
- D) Resist any changes to the way the job has always been done.

One Supervisor Responsibility In The Ergonomics Process Is:

- A) Discipline people who don't lift properly or use good body mechanics.
- B) Encourage workers to promptly report aches and pains and suggestions.
- C) Convince associates not to worry about things like back pain and wrist pain because they usually just go away.
- D) Avoid mentioning words like ergonomics and carpal tunnel syndrome.

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A Management Responsibility In The Ergonomics Process Is:

- A) Deny all back injury and cumulative trauma claims.
- B) Define responsibilities and hold people accountable for ergonomics.
- C) Make people afraid to report symptoms.
- D) Eliminate all lifting and repetition from jobs.

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Ergonomic Improvement Projects Should Be Prioritized

- A) Based on the number of people that will be affected by the change.
- B) Based on the frequency and cost of injuries in the operations.
- C) Based on the cost and ease of making the modifications.
- D) Based on any of the above.

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Ways To Get All Employees Involved In An Ergonomics Process Are:

- A) Tell a few employees and ask them to spread the word.
- B) Use cash rewards and incentives.
- C) Through frequent communication and involvement opportunities.
- D) Through coersion and intimidation.

Ways To Get All Employees Involved In An Ergonomics Process Are:

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Decisions That An Ergonomics Team Should Make During Formation:

- A) When, where, and how often the team will meet.
- B) Who will be on the team and what are each person's responsibilities.
- C) How to communicate information throughout the organization.
- D) All of the above

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Important Criteria For Ergonomics Team Members To Possess Are:

- A) Poor communication skills, but a nice person.
- B) Does not play well with others.
- C) Good communication skills and ability to work as a team player.
- D) Is the brother of the CEO

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An Ergonomics Team Should Be Comprised Of:

- A) Only consultants
- B) Only Management
- C) The safety coordinator and his/her assistant.
- D) Associates that represent the various departments throughout your company.

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Ways To Keep All Employees Informed Of The Team Progress Is:

- A) Encouraging informal discussions between employees and team members.
- B) Posting meeting minutes and project logs on bulletin boards.
- C) Company newsletter
- D) All of the above

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Develop & Document Goals, Objectives, & Action Plan

- In order to make your process a SUCCESS, the team must develop and document the structural components of the Ergonomic Process.
- The documentation will help establish
  - clear achievable goals
  - objectives
  - action plan

Blueprint For Success

- Team generates their written plan by discussing and documenting the answers to a series of questions located in the Blueprint for Success.
- The questions in the Blueprint for Success are discussed and answered using a who, what ,when, where, and why format.

Appendix D

Blueprint For Success Continued...

- The Blueprint contains example answers for each question .
- The examples are intended to guide the team through the process, and are to serve as discussion points by the team.
- The Blueprint is a fluid document; meaning that as modifications and changes are made to the process, the written plan should be updated to reflect those changes.

Appendix D

Blueprint Group Activity

Blueprint Group Activity

- You are an Ergonomics Team that will address the following steps from the Blueprint for Success to create your written program.
  - Steps 1 & 2
  - Steps 3,4,5, & 6
  - Step 7

Appendix D

Summary of Blueprint

- Step 1 - Mission Statement
- Step 2 - Goals
- Step 3 - Ergonomics Team Personnel
- Step 4 - Roles & Responsibilities
- Step 5 - Unexecused Absences
- Step 6 - Vacant Team Positions
- Step 7 - Training and Education

Table 1

Summary of Blueprint **(continued)**

- Step 8 - Trend data collection/analysis
- Step 9 - Prioritize jobs
- Step 10 - Ergo worksite analysis
- Step 11 - Solution development
- Step 12 - Approval process

Table 1

Summary of Blueprint (continued)

- Step 13 - Solution implementation
- Step 14 - Solution evaluation
- Step 15 - Medical management
- Step 16 - Process monitoring

Table 1

Data Collection And Analysis Group Activity

Collect & Analyze Trend/Historical Data

- What kind of data do you use to analyze ergonomic trends?
- Where do you find the data?

Appendix E

Trend/Historical Data

- Provides team with historical injury, illness, and production information.
- Data allows the team to identify trends in areas or departments that may pose ergonomic concern(s) to the workforce.
- Narrows the focus from the overall facility view to a department or job specific view.

Appendix E

Prioritize Your Efforts

Where do you target your prevention efforts?

Monitor Overall Process

- Monitor the overall ergonomics process to gauge its effectiveness and determine if the process needs modifications.

Monitor Overall Process Continued...

- Use the Process Monitoring Checklist in Appendix H-26, to assess your company's current ergonomics process.

Appendix H-26

Any Questions ?

Thank You

ERGONOMICS PROCESS IMPACT ON PROFITABILITY

◆ IMPACT ON PROFITABILITY:

To calculate an incident's impact on your profitability, you should use your profit margin to determine the amount of sales required to pay for the incident.

Divide your total profits by total sales to get your profit margin.

$$\frac{\text{Total Profits}}{\text{Total Sales}} = \text{Profit Margin}$$

Divide the total cost of an injury/illness by your profit margin to determine how much sales your company must generate to pay for the injury/illness.

$$\frac{\text{Total Cost of Injury/Illness}}{\text{Profit Margin}} = \text{Sales required to pay for injury/illness}$$

$$\frac{\$10{,}000}{.04} = \$250{,}000 \text{ in sales required}$$

ERGONOMICS PROCESS COST/BENEFIT CONSIDERATIONS

- MEETINGS
  - Lost production
  - Other

- TRAINING
  - Lost production
  - Trainer/consultant costs
  - Materials
  - Other

- MEDICAL MANAGEMENT
  - PT/OT, nurse (specific to program)
  - Lost production
    - > consultation
    - > treatment (including materials)
  - Other

- ONE-TIME COSTS (such as initial project costs)
  - Equipment
  - Jigs and fixtures
  - Installation
  - Engineering time
  - Operator training
  - Other

- DIRECT MATERIALS (not listed above)
  - itemize

- OVERHEAD
  - itemize:

- TURNOVER and TRAINING/REPLACEMENT
  - Acquisition
    - > Recruitment
    - > Selection
    - > Hiring
  - Development
    - > Orientation
    - > On-the-job training
      (lost production due to lack of proficiency)
      (overtime to compensate for lost production)
    - > Off-the-job training
  - Separation
    - > Severance
    - > Productivity decrement
    - > Open position

- PRODUCTIVITY
  - Permanent changes
  - Temporary changes

- REWORK and SCRAPPED PRODUCT
  - Rework
    - > direct labor
    - > lost production or Overtime
    - > direct materials
    - > other
  - Scrapped Product
    - > direct labor lost
    - > overtime
    - > direct material loss - salvage value
    - > other

- ABSENTEEISM
  - Compensation costs
    - > Wages (including taxes, fringe)
    - > Insurance charges or fees
  - Medical Costs
    - > Payments to providers
    - > Insurance charges or fees
  - Replacement Costs (see above)

- WAGES
  - Direct labor, including benefits taxes/insurance
  - Supervisory and admin charges

ERGONOMICS PROCESS COST EXAMPLES

◆ COST OF TEAM MEETINGS:

Example: Company ABC's ergonomics team meets once a week for 1 hour. There are 3 hourly associates (at $10/hr), and 5 salary representatives (one engineer, the plant nurse, the plant manager, the human resource manager, and one first line supervisor (at $25/hr).

$$C_{LP} = W_H \times T_H$$

C_{LP} = cost of lost production
W_H = hourly wage rate (including pay and fringe benefits)
T_H = time (length of meeting)

Meeting cost = cost of loss production due to hourly + cost of salary
= ($10/hr x 1hr/meeting x 4/month x 3 associates) +
($25/hr x 1hr/meeting x 4/month x 5 reps)
= (120 + 500)
= $620/month or $7440/year due to meetings

◆ COST OF TEAM TRAINING:

Example: The ergonomics team as described above will go through 8 hours of comprehensive ergonomics training. A consultant will provide the training at a rate of $100/hr plus $20 per attendee for manual. The consultant will be spending the night before; therefore, per diem for consultant will be paid for 2 days ($90/day). The meeting room and supplies will be furnished by the company (not out of ergo budget).

$$C_{TT} = C_{LP} + C_T + C_M + C_{TR}$$

C_{TT} = cost of team training
C_{LP} = cost of loss production (based on length of training time)
C_T = trainer/consultant costs
C_M = material costs associated with training
C_{TR} = travel expenses associated with training

CLP = ($10/hr x 8hr/meeting x 3 associates) +
($25/hr x 8hr/meeting x 5 reps)
= (240 + 1000)
= $1240 due to loss production
CT = $100/hr x 8hr = $800 trainer fee
CM = $20 x 8 attendees = $160 material costs
CTR = $90 x 2 = $180 travel expense

Cost of team training = $1240 + $800 + $160 + $180
= $2380

Courses Available through the BWC - Ohio Center for Occupational Safety & Health (OCOSH) to Assist in the Development of an Effective Ergonomics Process

PROCESS DEVELOPMENT STEPS	RELATED OCOSH COURSES
Steps 1 & 2: Develop Mission Statement and Goals	Winning Management Commitment (GEN127)
Steps 3 & 4: Select Ergonomics Team Members and Specify Roles & Responsibilities	Developing Safety Involvement Teams (GEN370)
Step 5: Develop Operating Rules and Meeting Format	Facilitating Safety Meetings (GEN122)
Step 6: Determine Procedures related to Documentation And Communication	
Step 7: Provide Team Training/Education	Fundamentals of an Effective Safety & Health Program (GEN101)
Step 8: Determine how to Collect & Analyze Data	Ergonomics Applied (ERG218)
Step 9: Prioritize Jobs	Ergonomics for Office (ERG215)
Step 10: Develop Procedures for Ergonomic Job Analysis	
Step 11: Establish Process for Developing Solutions	
Step 12: Determine Process for Approval of Modifications	Ergo & Safety for Healthcare (ERG125)
Step 13: Specify Process for Solution Implementation	
Step 14: Identify Metrics for Evaluating Solutions	
Step 15: Develop Protocols for Medical Management	Controlling Costs through Claims Management (GEN310)
Step 16: Determine Methods for Process Mo nitoring	Measuring Safety Performance (GEN126)

ERGONOMICS PROCESS MONITORING CHECKLIST

ELEMENTS	ACTION RECOMMENDED	LEVEL OF COMPLETION				
		None	Some but Inactive	In Progress	Complete	Estimate date of completion
Top management & union Commitment	Top management and the union (if applicable) visibly support the ergonomics process (e.g., written support).					
	Top Management approves resources (e.g., time and money) needed to support the process.					
Form Steering/Advisory Group (if applicable)	A group of people or person has been assembled to govern the ergonomics process.					
	A plan has been established to form the initial team if does not exist.					
Form Ergonomics Team	The ergonomics team members' names and department/work area have been identified and documented.					
	Individuals/departments who serve as a resource to the team have been identified and documented.					
Comprehensive Team Training	Ergonomics Team members have received ergonomics training.					
	A method of training new Ergonomics Team members to the Team has been identified.					
Review Relevant In-house Program	Existing employee involvement programs have been evaluated to determine possible piggybacking for ergonomics issues.					

ELEMENTS	ACTION RECOMMENDED	LEVEL OF COMPLETION				
		None	Some but Inactive	In Progress	Complete	Estimate date of completion
Develop & Document Goals, Objectives & Action Plan	The structural components of the ergonomics process have been identified and documented.					
	Clear goals have been identified and documented.					
	An action Plan to accomplish these goals has been identified and documented.					
	Roles and responsibilities have been identified and documented.					
	A method is in place to hold individuals accountable for their defined responsibilities.					
	A method and timeline has been established to evaluate the action plan for needed updates.					
Inform All Employees of the Ergonomics Process	All employees have been educated on the ergonomics process and the action plan of team.					
	A plan has been established to provide refresher training for all employees on a regular basis.					
Collect & Analyze Trend/Historical Data	The team collects and documents data on a regular basis.					
	Data is analyzed on a regular basis to identify ergonomic related trends.					
	The team collects and analyzes various sources of data (e.g., production, quality, injury/illness, etc.) to determine ergonomic-related trends					

ELEMENTS	ACTION RECOMMENDED	LEVEL OF COMPLETION				
		None	Some but Inactive	In Progress	Complete	Estimate date of completion
Medical Management	Regular communication exists between healthcare provider(s), worker's compensation personnel, and injured workers.					
	A process is in place that includes: • Efficient record keeping • Early reporting of signs and symptoms • Appropriate medical evaluation • Prompt treatment • Aggressive return to work policy • Efficient claims monitoring; • Regular communication (verbal, written or both) exists between person(s) responsible for medical management and the ergonomics team.					
Ergonomic risk factor identification and control	A method is in place (or criteria established) to prioritize jobs for ergonomics worksite analysis.					
	Ergonomic worksite analysis techniques have been established to identify existing and potential risk factors.					
	Control strategies have been developed from which solutions can be generated.					
	The team along with employee input develop solutions to eliminate or reduce the identified ergonomic risks.					
	The approval process for getting ergonomic improvements implemented has been identified and documented.					
	A method of developing an implementation plan for improvements is functioning with timelines for completion identified.					
	A method to evaluate improvements is functioning with timelines for completion identified.					

ELEMENTS	ACTION RECOMMENDED	LEVEL OF COMPLETION				
		None	Some but Inactive	In Progress	Complete	Estimate date of completion
Monitor Overall Process	A plan to periodically review the ergonomics process has been established.					
	Measures of effectiveness of the ergonomics process have been established (e.g., decrease in injuries/illnesses, decrease in costs, reduction of risk factors, etc.)					
	A method to update the ergonomics process has been developed.					

One Hour Safety Presentation

One Hour Safety Presentation

The main goal of the Division of Safety & Hygiene is the reduction of accidents and illnesses in the workplace. Toward this goal, the *One Hour Safety Presentation* is designed to support the delivery of a presentation to co-workers in your workplace to help them understand and promote safer and healthier work environments. It is recommended that you take the DSH Training Center course as a background for using *One Hour Safety Presentation* to train others at your workplace. Call 1-800-OHIOBWC, option 2, 2, 3, for class dates and locations.

The *One Hour Safety Presentation* contains:

- **Transparency Masters** from which films can be made to use on an overhead projector,
- **Instructor Notes** which gives the instructor suggestions and script notations to use during the presentation, and
- **Student Handouts** which can be copied for those attending the presentation.

Materials are included for a one-hour presentation on each of these topics:

- ✓ Accident Analysis
- ✓ Bloodborne Pathogens
- ✓ Developing an Ergonomics Process
- ✓ Hazard Communication
- ✓ Lockout/Tagout
- ✓ Respiratory Protection
- ✓ Violence in the Workplace

Applications used:

1) Text documents (ending in **.txt**) can be opened with any word processing program.
2) Microsoft PowerPoint slides (ending in **.ppt**) can be opened with the Microsoft PowerPoint program. If you do not have PowerPoint and you do have Windows 95, 98, 2000 or Windows NT operating system, you can view the PowerPoint slides by downloading a free PowerPoint Viewer from the following website: http://office.microsoft.com/downloads/default.aspx?Product=PowerPoint&Version=95|97|98|2000|2002&Type=Converter|Viewer
3) Adobe Reader document (ending in **.pdf**) contains the *One Hour Safety Presentation* in read-only format. It can be opened when you download Adobe Reader, which is available free of charge at the following website: http://www.adobe.com/products/acrobat/readstep2.html

If you have comments or questions about these materials for *One Hour Safety Presentation*, please e-mail us: OCOSHTrng@bwc.state.oh.us

Transparency Masters

Ergonomics
Developing An Effective Process

Objectives

- The benefits of an effective ergonomics Process
- Discuss the elements of an effective ergonomics process.
- The importance of commitment from the union, employees, and the top management within the organization.

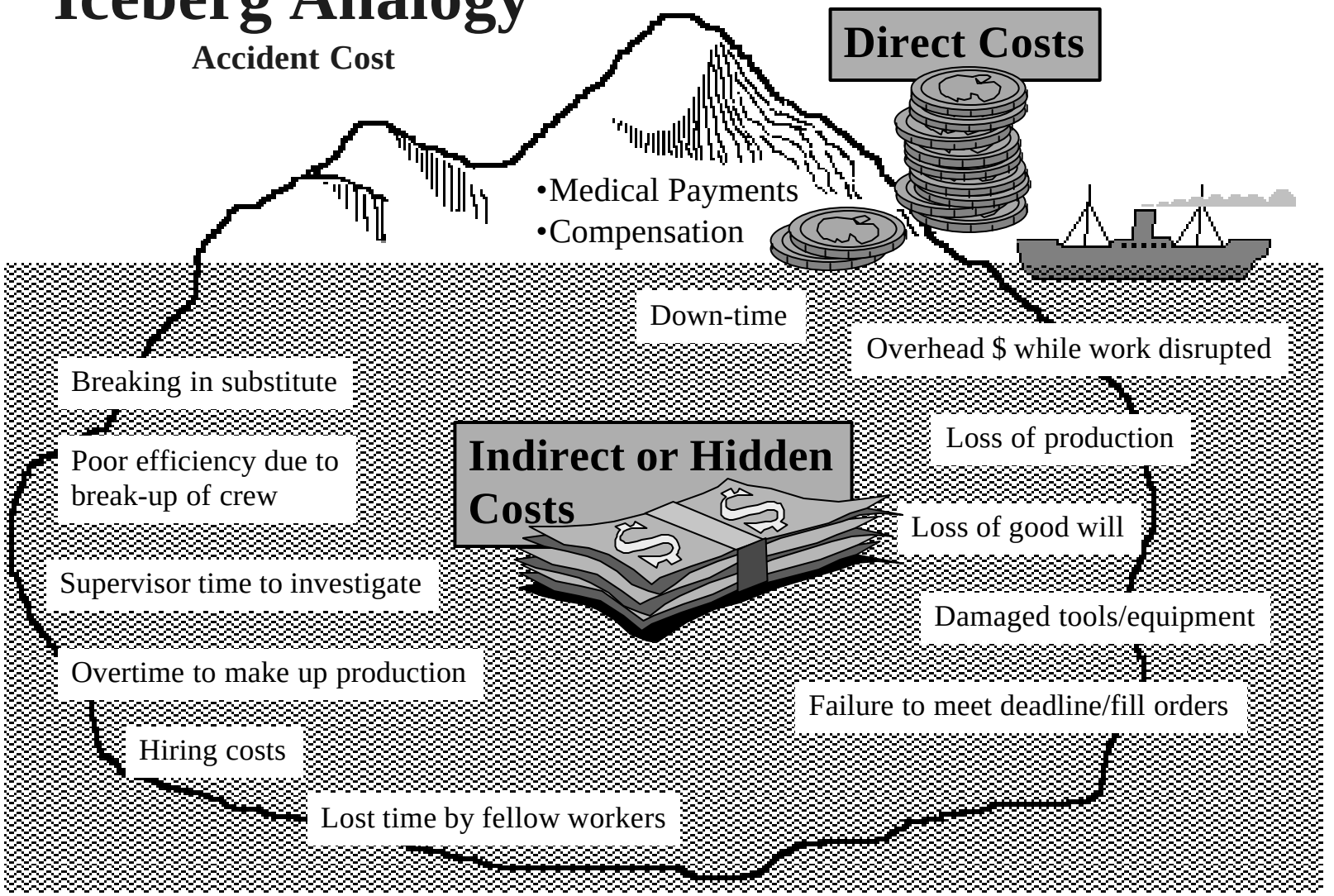
Cost And Benefits Associated With An Ergonomics Process

The Cost Of Injuries

- The direct cost of an injury includes the medical and indemnity costs
- Indirect costs of injuries are usually 1 to 4 times as much as the direct costs

Iceberg Analogy

Accident Cost



Costs Associated With The Development Of An Ergonomics Process

Costs

Team Meetings

Team Training

Staff Training

Forms & Communication Materials

Assessment Tools & Equipment

Ergonomic Projects

Medical Management

Ergonomics Process

Benefits

Benefits Of An Ergonomics Process

Costs

Ergonomics Process

Benefits

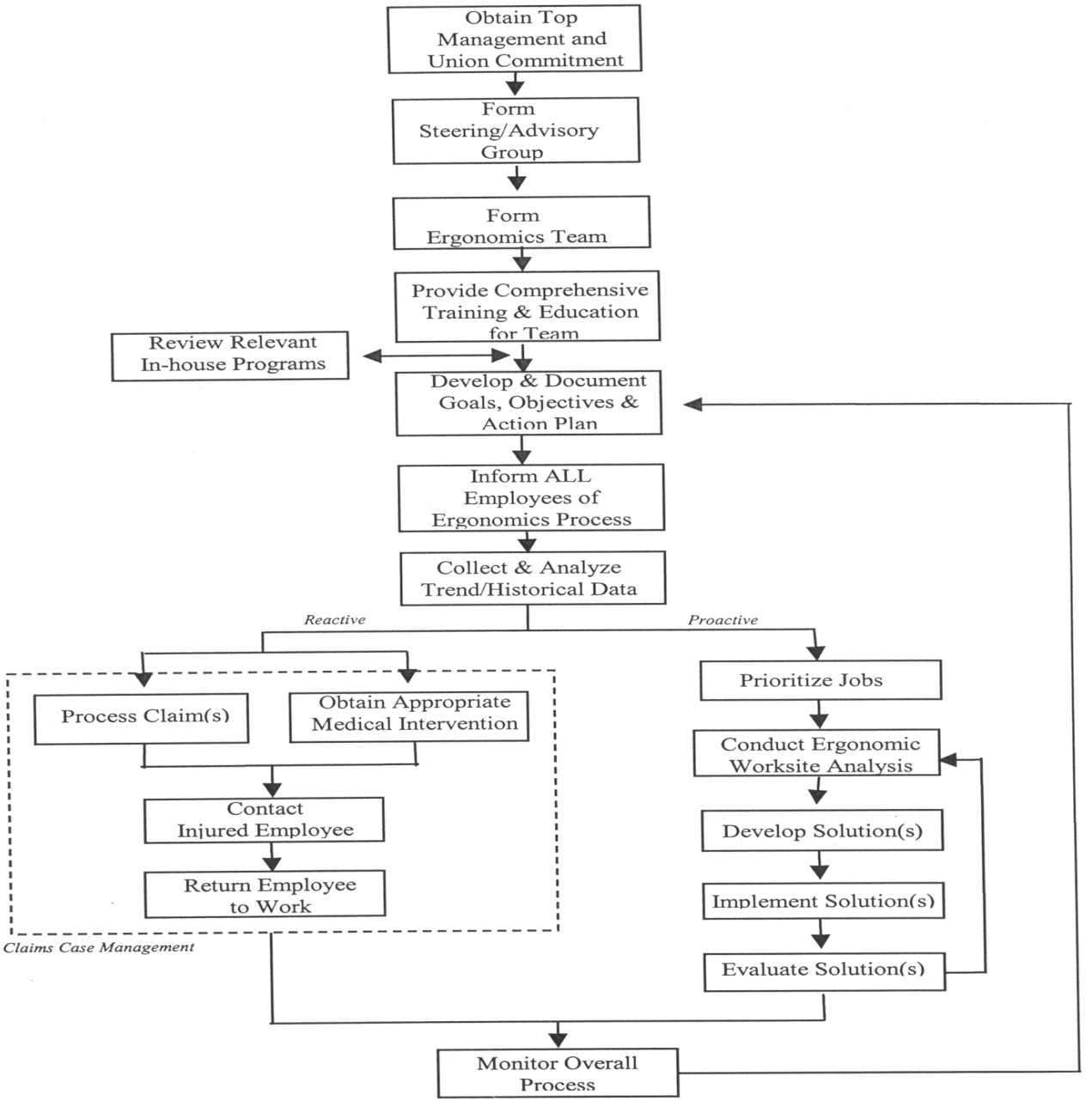
Reduced Turnover
Reduced Replacement Costs
Improved Training
Reduced Absenteeism
Increased Productivity
Reduced Re-Work & Scrap
Increased Wages
Reduced Overhead
Reduce Injuries
Reduce Workers' Comp Cost

Ergonomics Process Impact On Profitability

- To calculate an incident's impact on your profitability, you should use your profit margin to determine the amount of sales required to pay for the incident.

Ergonomics Process Flow Chart

Essential Elements



Obtain Top Management and Union Commitment

- Top management and the union must collectively agree to support and commit to the ergonomics process.
- Top management and union leadership should have joint meeting(s) to discuss the ergonomic process and its components.

Memorandum Of Understanding/ Letter Of Commitment

- If both parties agree to embark on the process they can show their support by drafting and signing a “memorandum of understanding” or “letter of commitment”.

Appendix B-1, B-2

Ergonomics Team

- Steering/Advisory Group role
- In general, most teams are comprised of 6-10 members.
- Some teams have an “open seat” or sub-teams.

Possible Ergonomic Team Members Should Be Considered From The Following Departments

- Management
- Union Representatives
- Supervisors
- Affected Employees
- Human Resource/Benefits Compensation Personnel
- Engineers/Facilities Planning
- Maintenance Personnel
- Plant Safety Representative
- Health Care Provider
- Purchasing Personnel

Develop & Document Goals, Objectives, & Action Plan

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- The documentation will help establish
  - clear achievable goals
  - objectives
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Blueprint For Success

- Team generates their written plan by discussing and documenting the answers to a series of questions located in the Blueprint for Success.
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Blueprint For Success Continued...

- The Blueprint contains example answers for each question .
- The examples are intended to guide the team through the process, and are to serve as discussion points by the team.
- The Blueprint is a fluid document; meaning that as modifications and changes are made to the process, the written plan should be updated to reflect those changes.

Appendix D

Collect & Analyze Trend/Historical Data

- What kind of data do you use to analyze ergonomic trends?
- Where do you find the data?

Trend/Historical Data

- Provides team with historical injury, illness, and production information.
- Data allows the team to identify trends in areas or departments that may pose ergonomic concern(s) to the workforce.
- Narrows the focus from the overall facility view to a department or job specific view.

Appendix E

Monitor Overall Process

- Monitor the overall ergonomics process to gauge its effectiveness and determine if the process needs modifications.

Instructor Notes

Thank you for your interest in teaching the basics of Developing an Ergonomic Process to your employees and for promoting self-sufficiency on behalf of the Division of Safety & Hygiene.

A few points to keep in mind while teaching this class to your employees.

Try to do everything you can to get your students "involved" with the information that you will be presenting. This means using actual work place examples wherever possible. Try to use your own cost figures, your own ergonomics forms, and certainly refer to your company specific jobs and procedures when at all possible.

If possible, incorporate some exercises into your training. These exercises might be as simple as small groups identifying potential ergonomic risks, or having people actually perform a job task inventory for their immediate work area. The key is to get your class involved so that they are not just listening to you lecture.

Encourage questions and repeat questions for clarity to be sure that everyone has heard and understood. Even if you know the answer, a good technique is to ask the class if anyone can answer the question. On questions where you're not sure of the answer or there is disagreement within the class, tell the class that you'll check on it during a break or as soon after the class as possible. Follow-up and make sure everyone gets the information.

Remember, your goal is to teach your employees to be safe and to provide accurate information about ergonomics and developing an ergonomics process for your company.

Ergonomics
Developing An Effective Process

Objectives

- The benefits of an effective ergonomics Process
- Discuss the elements of an effective ergonomics process.
- The importance of commitment from the union, employees, and the top management within the organization.

Briefly introduce yourself.

Go over objectives and ask if there are any questions.

Explain that some of the Appendices mentioned at the bottom of the overheads refer to the Ergonomics Process manual. Have your manual available if someone wants to review it in depth.

Cost And Benefits Associated With An Ergonomics Process

Here begin the discussion of why you are looking at an ergonomics process.

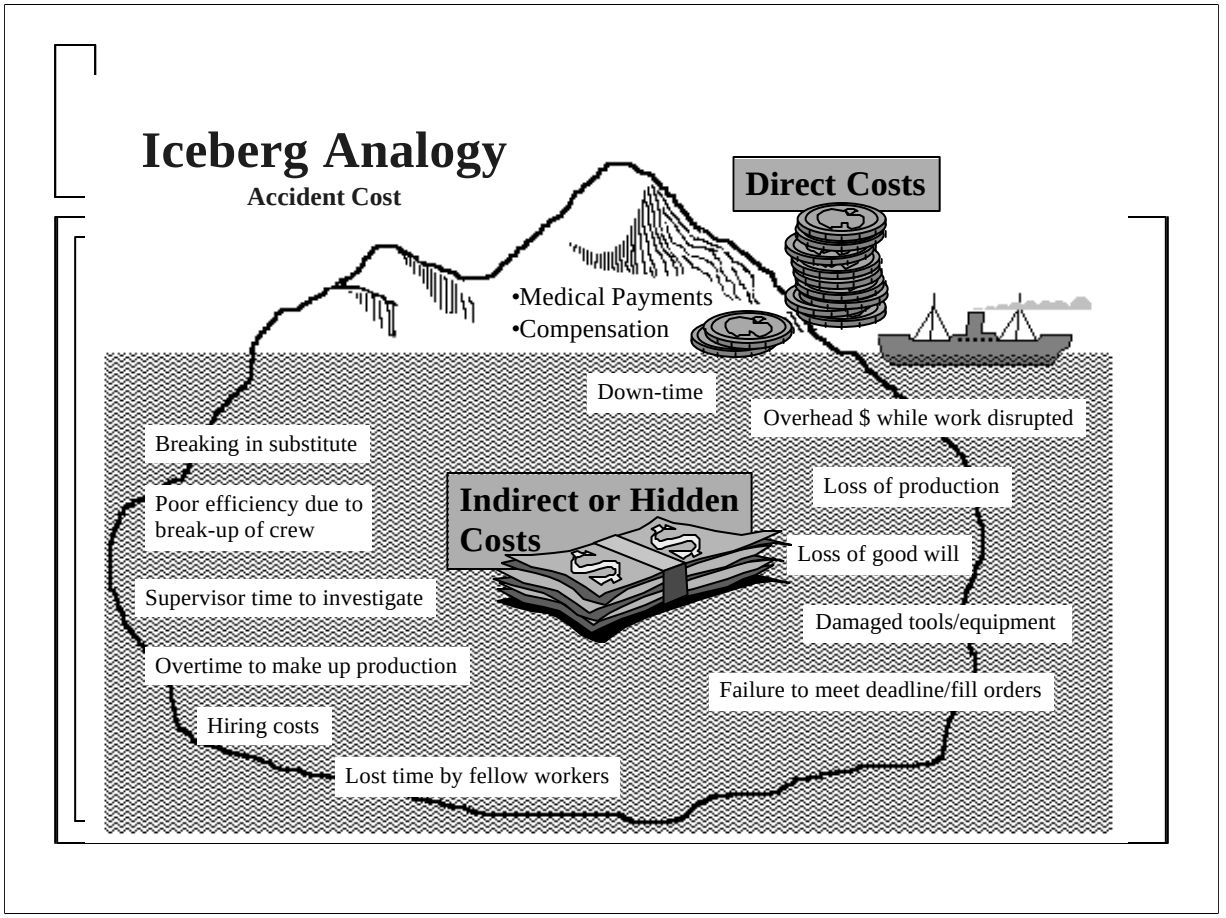
The Cost Of Injuries

- The direct cost of an injury includes the medical and indemnity costs
- Indirect costs of injuries are usually 1 to 4 times as much as the direct costs

Insert your real data. Let the people know how much ergonomic related injuries are costing the company. Most of the time they will be shocked!

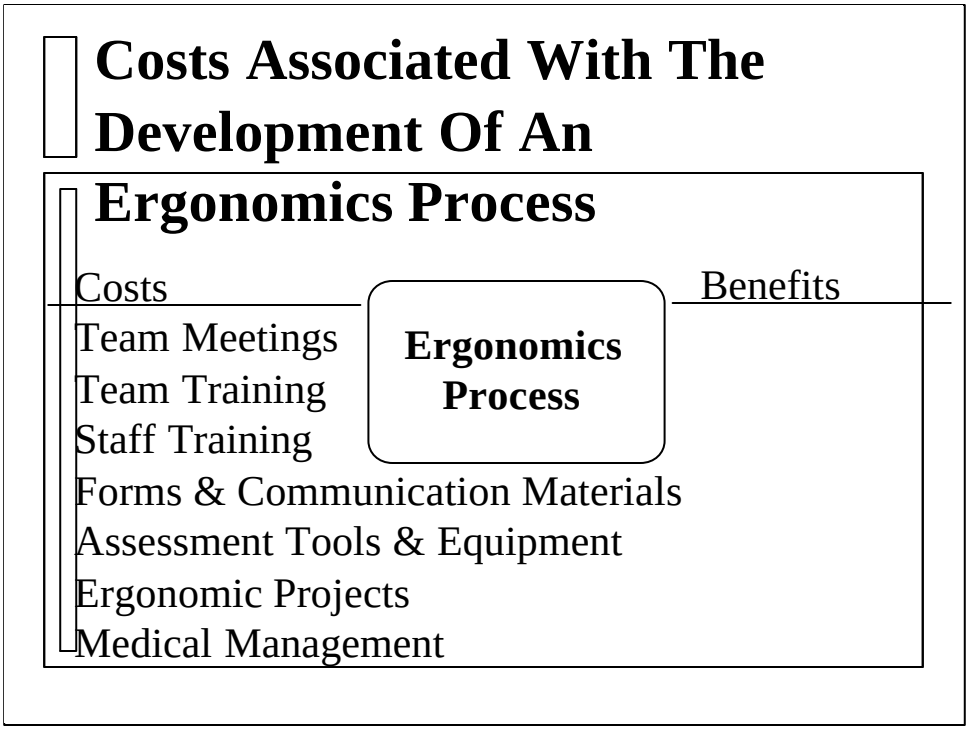
Ask if anyone knows what indirect costs of injuries are.

If you have a flipchart or whiteboard available you might want to write down the answers.



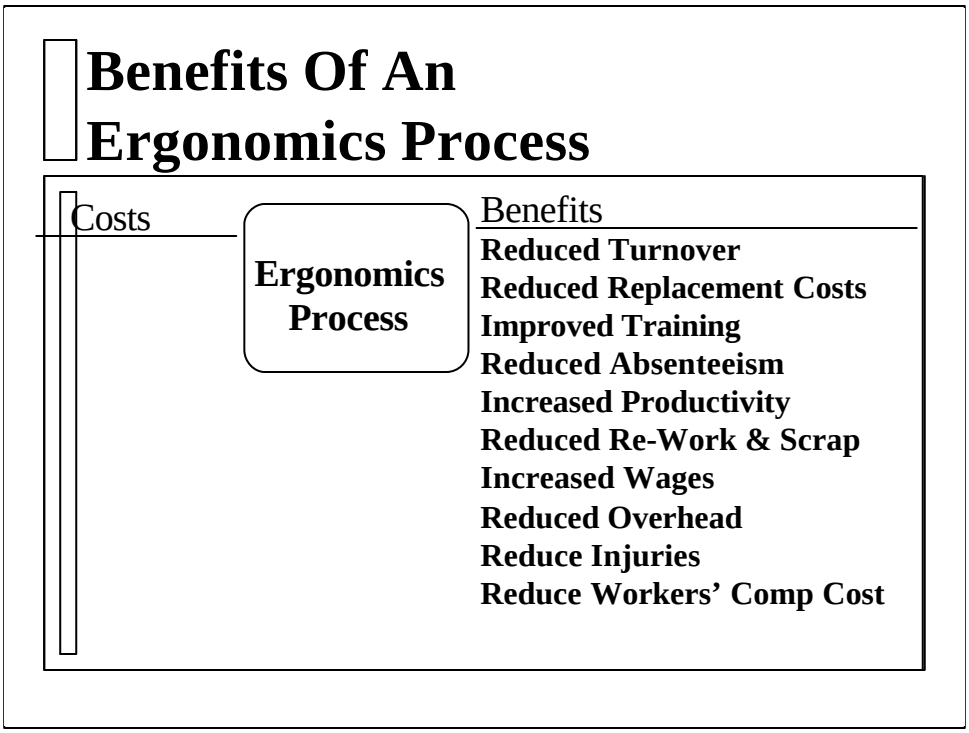
Review the indirect or hidden costs shown and compare with the answers you received

Provide any available data on your company.



Briefly review the costs. Ask if anyone can think of other costs that aren't listed.

Customize a list ahead of time with estimates if you go ahead with the process.



Review the benefits. Note how many of the benefits account for what otherwise might be indirect or hidden costs from the iceberg example.

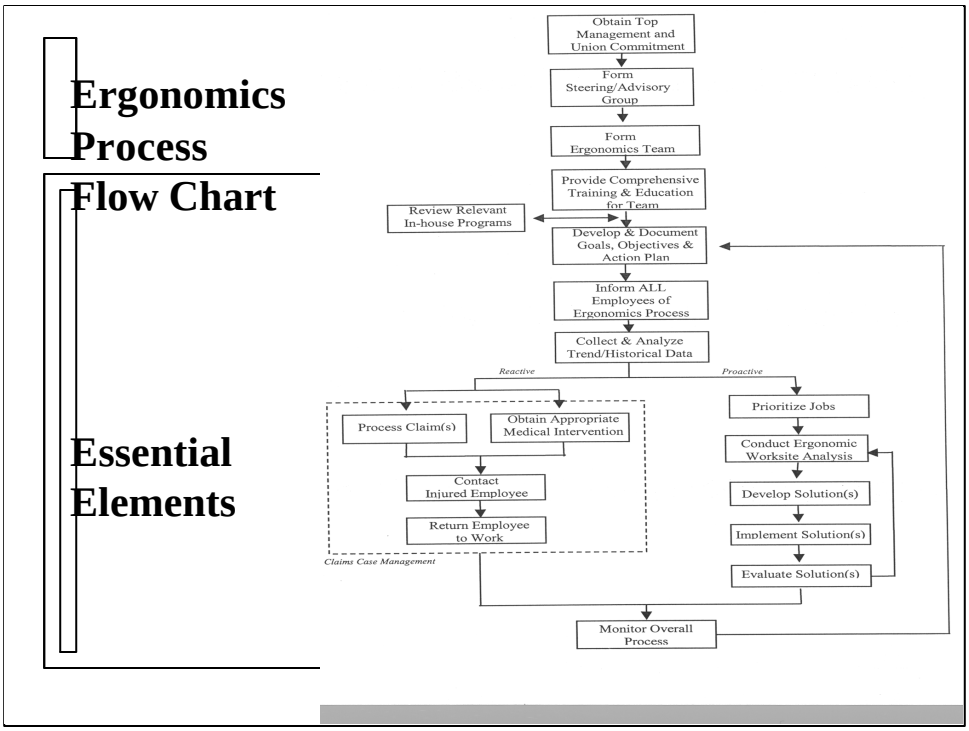
Give estimates here as well.

Ergonomics Process Impact On Profitability

- To calculate an incident's impact on your profitability, you should use your profit margin to determine the amount of sales required to pay for the incident.

Calculate the real data from the previous slides and discuss the practical implications of your numbers.

Point out that even though we might not know the specifics about our profit margins, the following examples will give us an idea of how profitability and an ergonomics process can be beneficial.



Before going into the chart in detail, ask the group for a definition of Ergonomics.

Answers will vary but basically should be something like fitting jobs and job demands to the capabilities and limitations of the population.

Point out that the major goal of Ergonomics is to reduce the frequency of injuries and illnesses in the workplace and the associated costs that go along with those injuries and illnesses.

Then step through the process to give the students an overview of the steps involved.

Each box in the flow chart represents a task that must be addressed and completed.

Remember: The flow chart is in sequential order but, you may find that your ergonomics team will not address the steps in this exact order.

Obtain Top Management and Union Commitment

- Top management and the union must collectively agree to support and commit to the ergonomics process.
- Top management and union leadership should have joint meeting(s) to discuss the ergonomic process and its components.

The ergonomics process goal is to reduce the frequency and severity of injuries and the cost of workers' compensation claims.

In order for a positive and effective process to occur, there must be a commitment between top management and the union. This commitment is shown through open communication, joint problem identification, and solution development.

Memorandum Of Understanding/ Letter Of Commitment

- If both parties agree to embark on the process they can show their support by drafting and signing a “memorandum of understanding” or “letter of commitment”.

Appendix B-1, B-2

If no union exists then top management can perform this function. The important point is that there is a visible show of support for the ergonomics process.

Ergonomics Team

- Steering/Advisory Group role
- In general, most teams are comprised of 6-10 members.
- Some teams have an “open seat” or sub-teams.

We’ve seen the importance of the ergonomics process from a financial point of view, now let’s talk about the team itself.

The ergonomics team is the driving force of the process.

Ideally, an equal number of management and employee representatives should be on the team and although 6-10 members is a good manageable size for a team, this number may vary in accordance with the size of the company.

Possible Ergonomic Team Members Should Be Considered From The Following Departments

- Management
- Union Representatives
- Supervisors
- Affected Employees
- Human Resource/Benefits Compensation Personnel
- Engineers/Facilities Planning
- Maintenance Personnel
- Plant Safety Representative
- Health Care Provider
- Purchasing Personnel

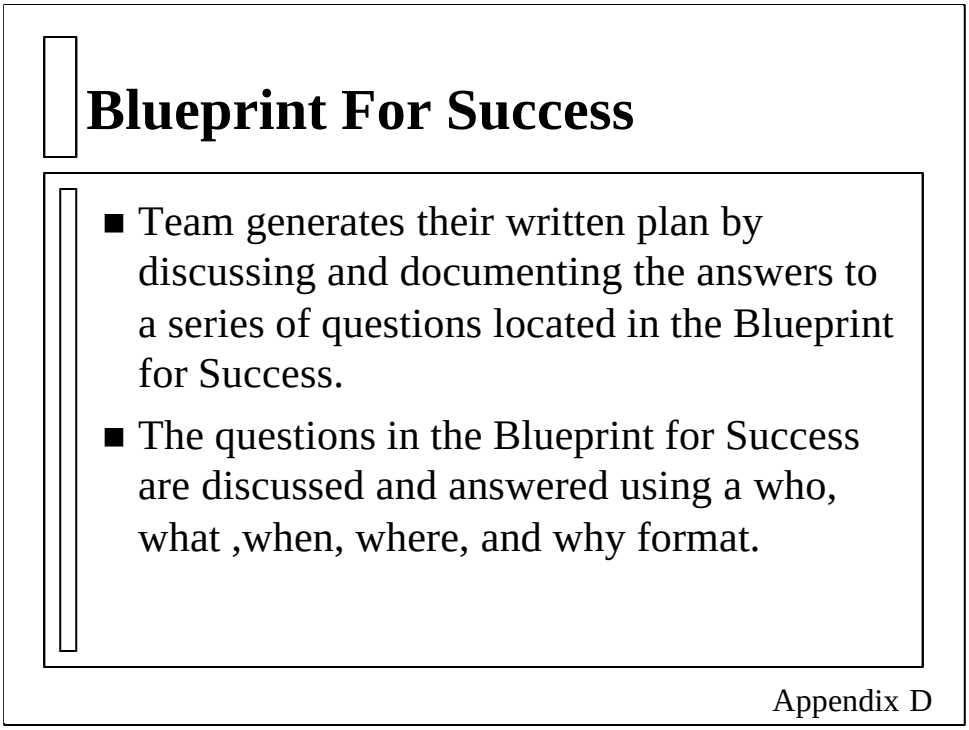
Stress the importance of including members from all aspects of the organization. This helps with communication, gathering of solutions, and effectiveness of implementation. It also helps avoid duplicate or counter productive efforts.

Develop & Document Goals, Objectives, & Action Plan

- In order to make your process a SUCCESS, the team must develop and document the structural components of the Ergonomic Process.
- The documentation will help establish
  - clear achievable goals
  - objectives
  - action plan

Without a clear written program, ergonomics teams tend to encounter frustration, lack of interest, and will no doubt be doomed to failure.

The written document both ensures stability and protects the efforts of everyone since all duties and responsibilities are spelled out. This also allows for everyone in the organization to understand and assist with the process.



To assist in the documentation, a Blueprint for success was developed by the BWC Division of Safety & Hygiene.

You can either have a copy of Appendix D to pass around or you can make multiple copies to hand out.

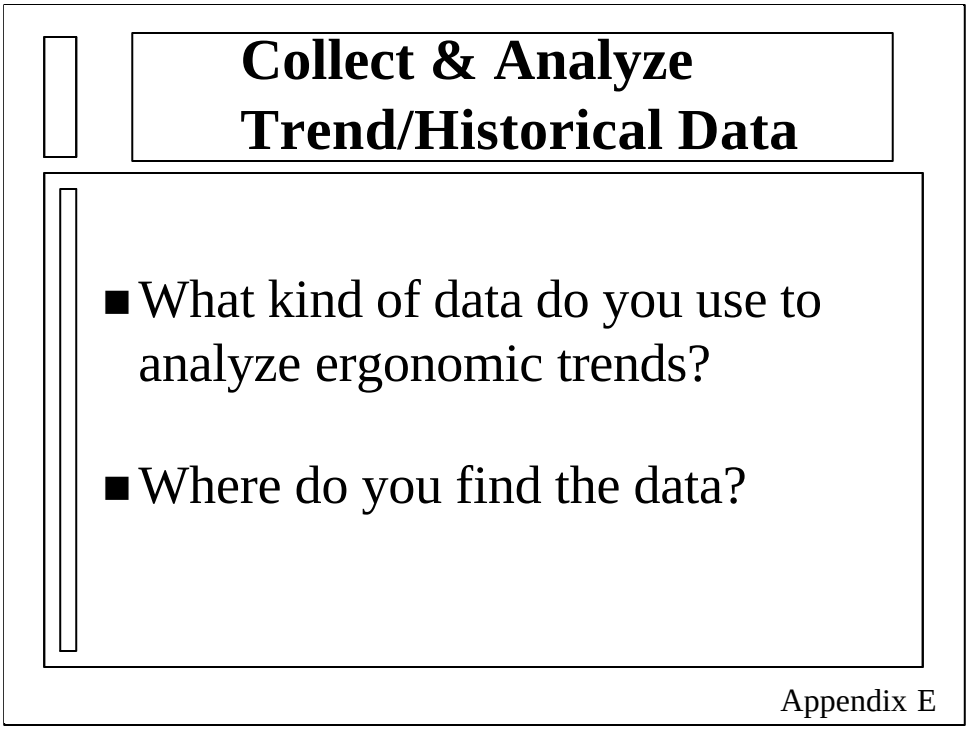
The Blueprint is designed to guide the ergonomics team through the process as well as provide discussion points as the process develops.

Blueprint For Success Continued...

- The Blueprint contains example answers for each question .
- The examples are intended to guide the team through the process, and are to serve as discussion points by the team.
- The Blueprint is a fluid document; meaning that as modifications and changes are made to the process, the written plan should be updated to reflect those changes.

Appendix D

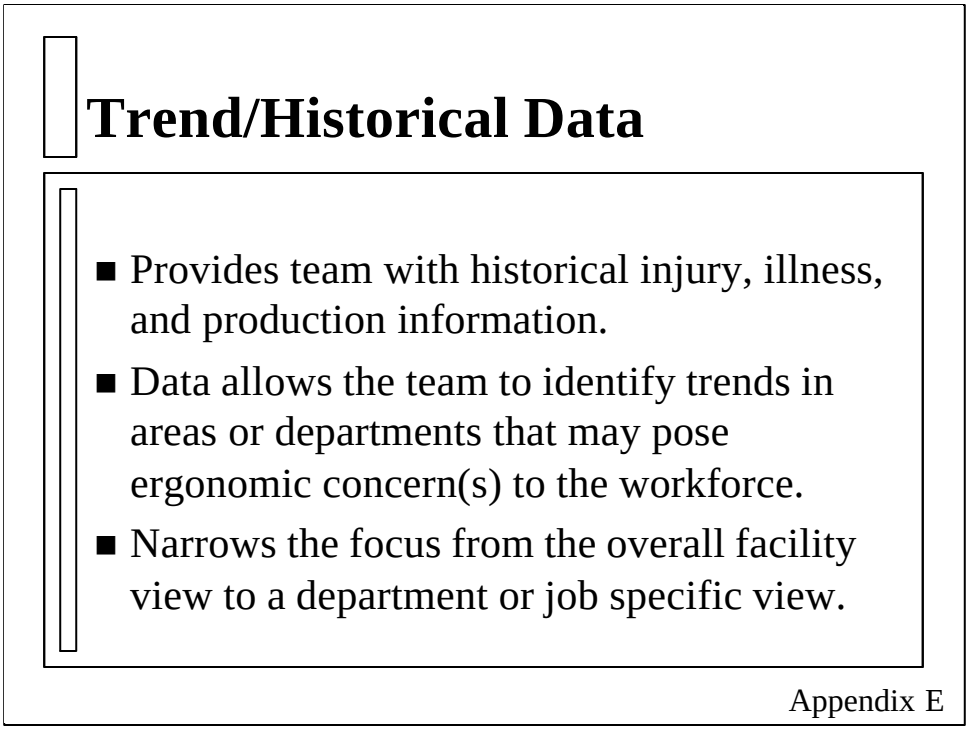
You may want to talk through the first two or three steps in the process to give everyone an idea of just what the Blueprint is and how it is to be used.



Ask questions of the participants. General answers should include: injury and illness records, production information, and personnel records.

Specific data should include: internal safety and accident reports, OSHA 300 logs, Workers' Compensation records, first aid logs, quality control records, production records, turnover rates, etc.

See how many different examples the participants can come up with.



All of the information taken from various sources can help us establish a baseline from which we can monitor and evaluate our ergonomics process.

The data can also help us to prioritize those areas requiring ergonomic interventions.

Monitor Overall Process

- Monitor the overall ergonomics process to gauge its effectiveness and determine if the process needs modifications.

Monitoring the effectiveness of an ergonomics process can be done in a variety of ways using a variety of measures.

Some of the measures are:

number of lost workdays for ergonomics reasons;
OSHA 300 log ergonomics related cases;
first aid for ergonomics reasons;
medical costs for ergonomics reasons;
compensation costs for ergonomic reasons;
number of people trained on ergonomics principles;
number of ergonomics projects implemented;
number of suggestions received;
production impact due to ergonomics interventions;
quality impact due to ergonomics interventions.

Can you think of any other measures that we might want to consider?

ERGONOMICS
FREQUENTLY ASKED QUESTIONS

What is ergonomics?

Ergonomics is the science and practice of designing jobs or workplaces to match the physical and psychological capabilities and limitations of the human body. Ergonomics also helps employers identify jobs and tasks in the workplace that may pose a hazard for work-related musculoskeletal disorders (WMSDs).

What are work-related musculoskeletal disorders (WMSDs)?

Ergonomic injuries (WMSDs) are among the most common and costly occupational injuries and illnesses in U.S. They include disorders and injuries of the muscles, nerves, tendons, ligaments, joints, cartilage and spinal discs. They do not include injuries resulting from slips, trips, falls or similar accidents. Examples include carpal tunnel syndrome, tendinitis, sciatica, herniated disc, back strain, and low back pain. They result in more than 50,000 workers' compensation claims each year and cost $411 million annually.

What causes WMSDs?

WMSDs occur most often when the physical demands of work cause harmful wear and tear on the body. Symptoms include pain, motor weakness, sensory deficits and restricted ranges of motion. For example, applying excessive force, lifting heavy loads, working in awkward postures or performing certain repetitive motions over time can lead to injury.

How serious a problem are work-related MSDs?

According to OSHA, work-related musculoskeletal disorders account for more than 1/3rd of all occupational injuries and illnesses that are serious enough to result in days away from work. These injuries cost business over $15 billion in workers' compensation costs each year. Total direct costs may run as high as $45 billion or more. Women suffer high rates of work-related MSDs because of the types of jobs in which they often work. A large number of women work in jobs associated with high levels of repetitive motions, heavy lifting, awkward postures, and other

physical work activities such as lifting patients in nursing homes, sewing clothing and other apparel, or using a keyboard.

What are the solutions to eliminate or reduce WMSDs and related costs?

WMSDs are often easy to prevent. Adding a book under a monitor, or padding a tool handle are typical of the fixes used in ergonomics programs. Solutions that fit the work to the worker are achieved by companies that implement an ergonomics program.
Ergonomic solutions may include:

- Adjusting the height of working surfaces to reduce long reaches and awkward postures.
- Putting work supplies and equipment within comfortable reach.
- Providing the right tool for the job and the right tool handle for the worker.
- Varying tasks for workers (e.g., job rotation).
- Encouraging short authorized rest breaks.
- Reducing the weight and size of items workers must lift.
- Providing mechanical lifting equipment.
- Using telephone headsets.
- Providing ergonomic chairs or stools.
- Supplying anti-fatigue floor mats.

Is there scientific evidence that ergonomics will solve musculoskeletal problems?

Yes. Scientific research on the effectiveness of ergonomic solutions, known as intervention studies, have been done in a number of different industries, including manufacturing, food processing, computerized offices and health care. Equally convincing evidence comes from employers themselves. There are examples of companies in a broad range of industries that have benefited from ergonomics.

What kinds of controls can employers use to fix jobs?

Employers may use any combination of engineering, administrative and work practice controls to reduce hazards. Employers are also free to supplement these controls with personal protective equipment (PPE), such as vibration-reduction gloves or palm pads, at no cost to employees. However, PPE can only be used alone where other controls are not feasible.

Are exercises important during a work day?

If you take just two to three minutes every hour to perform some very simple stretching exercises, the likelihood of you feeling pain at the end of the day greatly decreases. Exercise helps restore blood flow to working tissues, allowing the muscle greater endurance to perform the work at hand.

Do stretching exercises help prevent work-related musculoskeletal disorders?

Modifying jobs to eliminate risk factors is more effective than relying on stretching exercises. Stretching can be helpful in maintaining flexibility and warming up muscles so they work more efficiently. However, stretching alone will not adequately protect against injury.

How frequent and long should rest periods be?

Studies on the effectiveness of rest breaks at work have shown that short breaks taken more frequently are more beneficial than a few breaks of longer duration. Shorter frequent breaks give the tissues of the body time to recover immediately after use. Think of these breaks as "recovery' breaks rather than "rest" breaks. Recovery breaks are more likely to happen if an employer designs them into jobs rather than just telling employees to take breaks. Supervisory and peer pressure could discourage taking recovery breaks unless they are an integral part of the work process.

My body is not in any great pain after working at a computer for the last five years. Why should I change my work habits now?

Many injuries that develop at a computer are Microtrauma injuries. This type of injury is the result of repeated small stresses over a period of time. Suddenly, the day comes when you're in a lot of pain. This type of injury is not like a broken arm or leg, which happens suddenly. You might not feel any pain now but you could easily be on your way to a repetitive stress injury. It is important to realize this and to change your work habits now before it is too late.

I find computer work very stressful. Can this be causing the muscle knots in my neck?

You could do absolutely nothing physical all day with the exception of thinking stressful thoughts and the likelihood of you obtaining a muscle knot in your neck is

just as great as if you work in front of a computer all day. Combine the two together and you have big problems. Stress decreases the blood flow to your muscles causing irritating waste products to accumulate. If the stress is not stopped, the muscle has no time to rest and repair.

Why do you get neck and shoulder pain?

A Forward Head Posture causes a decreased blood supply to the neck region and increases the weight of the head on the postural muscles of the neck threefold. Rounded Shoulders Posture compresses the tendons in the front of the shoulder, causing pain in the shoulder and arm.

Why do frequent headaches occur during and after working at the computer?

The Forward Head Posture can be the result of the computer monitor being placed too far away. As a result, computer users move their heads forward over their neck to see the screen. Visual glare from a computer monitor can also cause headaches.

Is it okay to have the computer monitor off to my left side?

Having the monitor off to the left will cause the postural muscles on the left side of your neck to tighten and on the right side to elongate. This muscular imbalance will eventually lead to difficulty turning your head to the right. Pain and discomfort may also result if a nerve impingement ensues.

Why do hands hurt from using a computer?

Typing and using a mouse involve repetitive movement at the wrists and hands. This results in decreased blood supply to the muscles of your hands and wrists, causing them to cramp. It can possibly lead to Carpal Tunnel Syndrome.

How does one diagnose Carpal Tunnel Syndrome?

If you experience pain, tingling and numbness in the thumb, index and middle fingers or weakness and swelling in the wrist and hand, please consult your Physician, or Physical Therapist.

Are wrist splints effective in reducing injuries? Can they be used as personal protective equipment?

No. Wearing a wrist splint in jobs with risk factors may transfer the stress to the elbow or shoulder and cause injury. If a person wears a wrist splint and the job still requires wrist motion, bending will still occur. Now, however, the person has to bend the wrist against resistance (the splint), causing increased stress on the wrist joint. Wrist splints are not considered personal protective equipment. They should only be worn if prescribed by a medical practitioner. The most effective way to reduce incidence of wrist injuries is to eliminate or reduce the need to bend the wrist.

Why should I use a wrist rest?

When positioned correctly, a wrist rest helps encourage a neutral wrist position where the forearms, wrists and hands are in a straight line. Most experts recommend keying or typing with the wrists elevated off the rest, and resting the wrists and palms on the rest during pauses. If they don't have a wrist rest, people often rest their wrists on a sharp desk edge or on the hard edge of a keyboard tray. This can actually create pressure points that aggravate hand and wrist problems.

How do I know if I need lumbar support?

Everyone should have lumbar support. The lumbar region of your back is the area just above your waistline where your spine gently curves inward (sometimes called the small of your back or your lower back). If the backrest of your chair doesn't support this area, you should consider adding an auxiliary lumbar support.

I have the perfect chair to sit in, yet I still get muscle aches and pains. How should I sit while working?

The most perfect chair is useless if you do not sit in it properly. Always try to sit tall with a slight arc in your low back and your chin tucked in. Do not slouch nor round your shoulders and head forward.

Are back belts effective in reducing injuries? Can they be used as personal protective equipment?

No. Scientific studies examining the effectiveness of back belts in preventing back injuries are inconclusive. For this reason, the Department of Labor does not consider back belts to be personal protective equipment. The most effective way to reduce incidence of back injury is to eliminate or reduce the lifting hazard.

What is the best way to relax the muscles of my lower back after a long, hard day's work?

The least stressful position for the body is lying on your back with your hips and knees bent at a ninety-degree angle. Lay on the floor with your calves and feet on the seat of a chair. This is a great way to reduce the stress of a long, hard day.

How do I know if I need a footrest?

If your chair is adjusted to the proper height and your feet aren't flat on the floor, you should consider using a footrest. Foot rests can also help individuals who have experienced problems with their lower backs keep positioned against the back rest of their chair. That way the chair back, instead of their lower back muscles, is providing the support they need.

How do I know if I need an office air cleaner?

If you are one of the estimated 20% of the population who suffers from allergy problems or you are concerned about the indoor air quality in your area, an office air cleaner can significantly help reduce the concentration of allergy-aggravating particles in your office air.

After looking at a computer screen my eyes start to hurt. What can I do to prevent this pain?

You can either place a protective screen over your computer or periodically change the monitor angle to reduce glare.

If I work at a computer, how often should I have my eyes checked?

At a minimum, once every two years. When you make an appointment with your eye care professionals, you should mention that you work at a computer and ask if

they need any further information. They may want to know how much time you spend at the computer and how far your monitor is from your eyes. If you are a heavy computer user, they may offer you glasses that are optimized for computer work.

What is the best way to organize my workstation?

You should keep the most frequently used items within easy arms reach and on the side of your dominant hand. For instance, if you spend a lot of time on the phone and are right-handed, you should have your phone within easy arm's reach on the right side of your workstation. Avoid awkward reaching, bending, or stretching to reach frequently used items.

If my monitor is too high or too low according to the ergonomic guidelines, what can I do?

If you are the only one using your equipment, you can raise the monitor using telephone books, monitor blocks or reams of paper. If you share your equipment, you should consider using an articulated monitor arm that easily adjusts the monitor position to meet each person's requirements. People who need to lower their monitors typically have them sitting on top of their computers. Placing the monitor directly on the work surface usually solves that problem.

Do I need to sit in the same perfect posture all day?

No. You should try to vary your activities and position during the day to stimulate circulation and rest overworked muscles. Find a couple of low-risk positions that offer support and comfort and shift between them. If you plan to do a repetitive task such as work at your desk for an extended period, many experts feel that you should take frequent mini-breaks of a few minutes each hour. During these breaks, you could do some filing, sort your mail, do some stretches, tidy up your office, or walk to the copier and make copies.

If I maintain a perfect posture will all aches and pains go away?

Even perfect posture is not good if it is maintained all day. Sustained posture, although perfect, will cause the postural muscles to fatigue because the muscles never receive a break from posturing the body all day. If you sit all day, occasionally stand or adjust your seat or desk height ever so slightly to change the postural position of the body.

I just started sitting with better posture and my muscles now hurt. Why is this?

Do not be alarmed. Whenever muscles work in a different fashion it takes time for the specific muscles to adapt to a different work demand. Pain and soreness may occur initially. However, once the muscles get used to sitting with your improved posture the pain and soreness will go away.

Why do occasional muscle spasms occur?

A muscle spasm is a protective mechanism your body employs to prevent an injury from occurring. A spasm is caused by an insufficient blood flow to the working muscles. It is your body's way of telling you to slow down or stop what you are doing in order to rest the muscle.

Is proper nutrition important to avoid aches and pains?

If you eat a proper diet your blood flow will be rich with the necessary vitamins, minerals and nutrients to take away the irritating waste products that accumulate and help repair any damaged muscle. If your diet is filled with fatty foods the blood supply will no longer be like the supreme gas you fuel your car with. Your body will now be fueled by cheap unleaded gas. Use the good stuff. It will improve the effectiveness and efficiency of your blood supply.

I smoke frequently. Can this affect the endurance of my muscles?

Smoking places poisonous carbon monoxide in your blood stream, decreasing the ability of your body to supply an adequate amount of blood to your muscles. Smoking also decreases the strength of the connective tissue in muscles, increasing the chance for muscle injury.

Student Handouts

Ergonomics
Developing An Effective Process

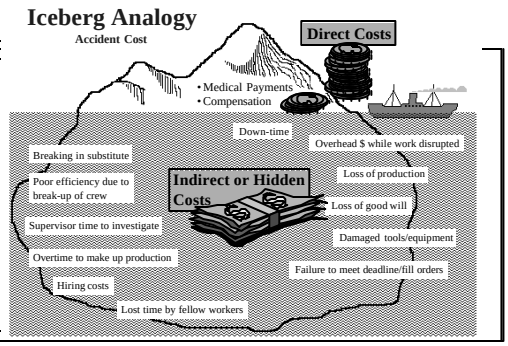
Objectives

- The benefits of an effective ergonomics Process
- Discuss the elements of an effective ergonomics process.
- The importance of commitment from the union, employees, and the top management within the organization.

Cost And Benefits Associated With An Ergonomics Process

The Cost Of Injuries

- The direct cost of an injury includes the medical and indemnity costs
- Indirect costs of injuries are usually 1 to 4 times as much as the direct costs



Costs Associated With The Development Of An Ergonomics Process

Costs		Benefits
Team Meetings Team Training Staff Training Forms & Communication Materials Assessment Tools & Equipment Ergonomic Projects Medical Management	**Ergonomics Process**	

Benefits Of An Ergonomics Process

Costs

Ergonomics Process

Benefits

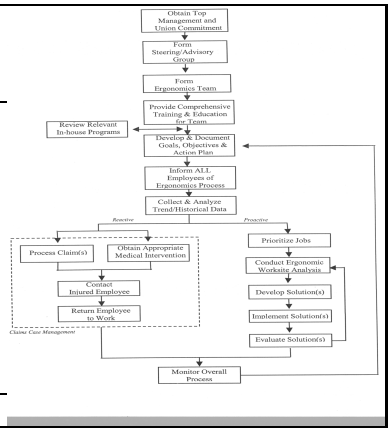
Reduced Turnover
Reduced Replacement Costs
Improved Training
Reduced Absenteeism
Increased Productivity
Reduced Re-Work & Scrap
Increased Wages
Reduced Overhead
Reduce Injuries
Reduce Workers' Comp Cost

Ergonomics Process Impact On Profitability

- To calculate an incident's impact on your profitability, you should use your profit margin to determine the amount of sales required to pay for the incident.

Ergonomics Process Flow Chart

Essential Elements



Obtain Top Management and Union Commitment

- Top management and the union must collectively agree to support and commit to the ergonomics process.
- Top management and union leadership should have joint meeting(s) to discuss the ergonomic process and its components.

Memorandum Of Understanding/ Letter Of Commitment

- If both parties agree to embark on the process they can show their support by drafting and signing a "memorandum of understanding" or "letter of commitment".

Appendix B-1, B-2

Ergonomics Team

- Steering/Advisory Group role
- In general, most teams are comprised of 6-10 members.
- Some teams have an "open seat" or sub-teams.

Possible Ergonomic Team Members Should Be Considered From The Following Departments

- Management
- Union Representatives
- Supervisors
- Affected Employees
- Human Resource/Benefits Compensation Personnel
- Engineers/Facilities Planning
- Maintenance Personnel
- Plant Safety Representative
- Health Care Provider
- Purchasing Personnel

Develop & Document Goals, Objectives, & Action Plan

- In order to make your process a SUCCESS, the team must develop and document the structural components of the Ergonomic Process.
- The documentation will help establish
  - clear achievable goals
  - objectives
  - action plan

Blueprint For Success

- Team generates their written plan by discussing and documenting the answers to a series of questions located in the Blueprint for Success.
- The questions in the Blueprint for Success are discussed and answered using a who, what ,when, where, and why format.

Blueprint For Success Continued...

- The Blueprint contains example answers for each question .
- The examples are intended to guide the team through the process, and are to serve as discussion points by the team.
- The Blueprint is a fluid document; meaning that as modifications and changes are made to the process, the written plan should be updated to reflect those changes.

Appendix D

Collect & Analyze Trend/Historical Data

- What kind of data do you use to analyze ergonomic trends?
- Where do you find the data?

Appendix E

Trend/Historical Data

- Provides team with historical injury, illness, and production information.
- Data allows the team to identify trends in areas or departments that may pose ergonomic concern(s) to the workforce.
- Narrows the focus from the overall facility view to a department or job specific view.

Appendix E

Monitor Overall Process

- Monitor the overall ergonomics process to gauge its effectiveness and determine if the process needs modifications.