An Ergonomic Continuous-Improvement Model for a Large, Multi-Facility Catering Company

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Abstract:

Many companies in the United States have been involved in ergonomics in the past 20 years. Companies have used a variety of methods to infuse ergonomics into their organization, whether in the safety/health, engineering, medical and human resources departments, or a combination thereof. In 1985, the Occupational Safety and Health Administration (OSHA) targeted the meatpacking industry for ergonomic violations and released the Ergonomics Program Management Guidelines for Meatpacking Plants. This ergonomic management program was used in meatpacking companies as a guide for implementing an ergonomics program. Some companies outside the meatpacking industry have also used the Ergonomics Program Management Guidelines for Meatpacking Plants as an ergonomic program development guide, and have built successful ergonomic programs in their plants.

This paper deals with the design and implementation of an ergonomics process for a large catering company with many small facilities. This presentation also builds on the Meatpacking Management Guidelines by developing a closed-loop system for shared hazard prevention knowledge. This presentation will illustrate a method of infusing ergonomics into a large, multi-facility company, which stresses strict recordkeeping and shared knowledge between each individual facility; thus implementing ergonomics without maintaining full-time ergonomists at each location.

Purpose of the System:

It is believed that many small organizations may not have the resources to effectively implement ergonomics. This ergonomic management model is designed to bring the best ergonomic improvement ideas into a single communication channel, where it can be distributed to others in the organization. Ergonomics, like other aspects of the business world, suffers from communication problems. If one employee or group of employees develops an ergonomic improvement, it is imperative that that idea be shared with other groups within the company. By sharing ideas - everyone benefits. Duplication of effort is minimized and everyone benefits from the efforts of one person or group, and many different problem areas can be addressed simultaneously.

Assumptions:

In order to effectively implement this model, some prerequisites must occur:

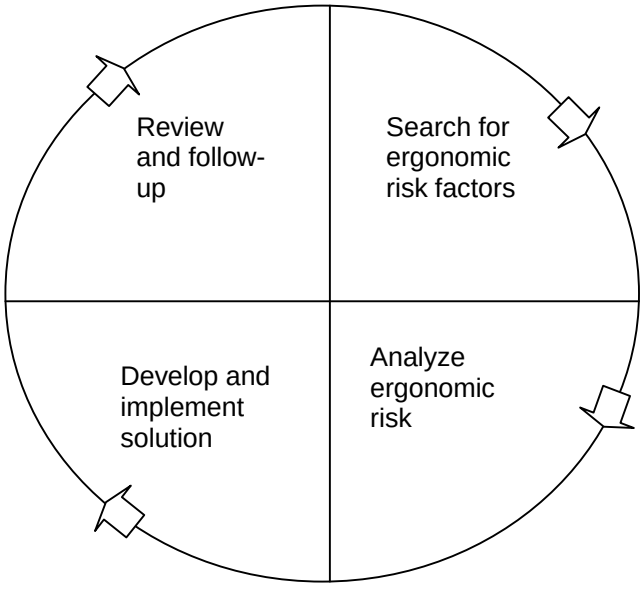
1. Management must be willing to embrace ergonomics and change the way work is performed.
2. Management must be trained in ergonomic principles.
3. A proactive leader must be chosen to lead the ergonomic effort.

Introduction:

Simply put, this ergonomic model is simply an extension of the meatpacking guidelines that were written in the 1980's [1], with some small additions. By adding a feedback loop and centralized communication point, ideas can more easily be shared and redundant effort minimized. The ergonomic model described here has been developed during 1999 and 2000, and has been beta-tested in California for six months. Our plans include further refinement and incorporation of other facilities in 2001. Facilities in states other than California have also contributed ideas for our collection of best practices.

Why Use this Model?

This ergonomic improvement model is built on the idea that ergonomic risks can be reduced or eliminated through small continuous improvements. Deming [1] and others have previously published this idea. Conceptually, an ergonomic continuous improvement model can be thought of as a wheel, with each



segment of the wheel representing a portion of the continuous-improvement model. When expanding each of the four segments of the wheel, the model shown in Figure One develops. The model provides a framework for managing ergonomics in a large corporation with many smaller facilities. The model promotes continuous ergonomic improvement, as well as idea sharing across 100 catering facilities in the United States. Full-time safety professionals are not employed at every facility, as safety may be a shared job responsibility with human resources or other department responsibility. This model attempts to create a set of ergonomic best practices that are a collection of the best ergonomic improvements from all facilities.

Model Description:

When attempting to solve any problem, one must first recognize that a problem exists. In the field of ergonomics, problem recognition can come from many sources. Most notably, an employee may have fatigue, pain or swelling in the hands, arms, shoulders or back. Increased turnover can indicate a problem. Increased mistakes or other hindrances to good quality can also indicate an ergonomics problem. A proactive examination of a work task can reveal excessive repetition, force, awkward posture, or other variables that have been suggested to increase the risk of musculoskeletal injury. Either through proactive or reactive approaches, ergonomic improvements will surface, assuming that a workforce has had even minimal training in ergonomic principles. The opportunity can be identified by anyone in the organization.

Given that an improvement opportunity has been found, the problem can be solved immediately (i.e., a quick fix) or further analyzed. If the problem can be solved quickly, the department generates a solution, and the problem and solution are documented and submitted to corporate safety. Corporate safety can then determine if the solution should be incorporated into the set of ergonomic best practices and sent to all of the other facilities for consideration.

If the problem needs additional study, it is forwarded to the C.A.R.E. team (i.e., safety committee) who will get further input concerning the problem from the department supervisor or employees. A custom-designed checklist (see Figure 2) is also used to analyze the potential risk factors and document the job analysis. This information is then returned to the C.A.R.E. team.

Prioritizing Resources

Determining the priority for solving a problem can be determined, based on workers' compensation history, feedback from the department and other management or employee input. A decision can then be made to attempt to solve the problem now, or place the problem on a long-term project list. The idea here is to collect all improvement opportunities (i.e., problems) and not allow any problems to "fall through the cracks".

After a problem is selected for analysis, the C.A.R.E. (i.e., safety) team, a short-term, problem-solving team, a single individual, or any other group of employees, could analyze and improve the job. After a solution is generated, the team will present the solution to a department and management and then implement the solution. The implemented solution is then reviewed with the department for additional feedback before documenting the findings. All documented solutions are sent to the corporate ergonomic coordinator, who acts as the gatekeeper for ergonomic ideas and best practices.

Process Illustration

A good example of the use of this process involves the pushing of carts. Over time, the casters on the cart shown in the left photo can deteriorate, making the cart harder to push. Research revealed that a group in another facility had made some caster changes to their carts, and had good employee feedback on the change. However, this facility was the only one addressing the issue. When visiting other facilities, corporate safety noted that wheels were a general problem at most facilities. Informal employee feedback also told the same story. Carts were difficult to push, pull and maneuver in tight spots. Based on the findings, a second beta test was conducted in California, to determine push force and employee acceptance for new wheels and casters.

The initial push for a loaded cart was measured at 40-120 pounds, based on the condition of the casters. With the new test, push forces were far less in the 20-pound range. Employee feedback was very positive. Based on the input of the department employees, the decision was made to replace the wheels on all carts. The wheel change was developed into a best practice and suggested to other facilities. The corporate manager of safety is also the corporate ergonomics coordinator and receives copies of all job evaluations and best practice submissions.

Why Ergonomic Best Practices?

The above story illustrates the lack of communication that exists in many large companies. One facility identified an improvement opportunity, and acted on it by developing and implementing a solution. When asked, the facility maintenance manager assumed that other facilities were also making similar improvements. Now that a best practice is available for wheels and casters, each facility can learn from other facilities' previous successes. Managers that might hesitate to make a change can draw on the experience and feedback from other locations, in satisfaction that the particular request is beneficial.

Bottom Line for Best Practices:

- It's easier to sell an idea when someone else in the organization has already implemented the idea and it works.

- Best Practices distribute ideas without huge safety/ergonomics staffs at each location.

- Best Practices can always be improved. All best practices are subject to further improvement.

- Some best practices are general in nature (i.e., body mechanics), while others are specific to a particular job (i.e., loading a dishwasher).

- Best Practices can aid in training employees about Hazard Prevention. In effect, the best practices become the hazard prevention portion of the ergonomics process.

- The same mistakes are not repeated.

Conclusions:

This ergonomic process shown in Figure One was designed to create a continuous-improvement ergonomic model that will enable all facilities to draw upon the experience and expertise of each other. A custom-designed checklist is used as the primary job evaluation tool. The best practices offer a methodology for solution documentation, as well as an easy method of spreading good ideas to all parts of the organization.

References:

[1] Pyzdek, Thomas, *The Six-Sigma Handbook: A Complete Guide for Greenbelts, Blackbelts & Managers at all Levels*, McGraw-Hill, New York, 2001.

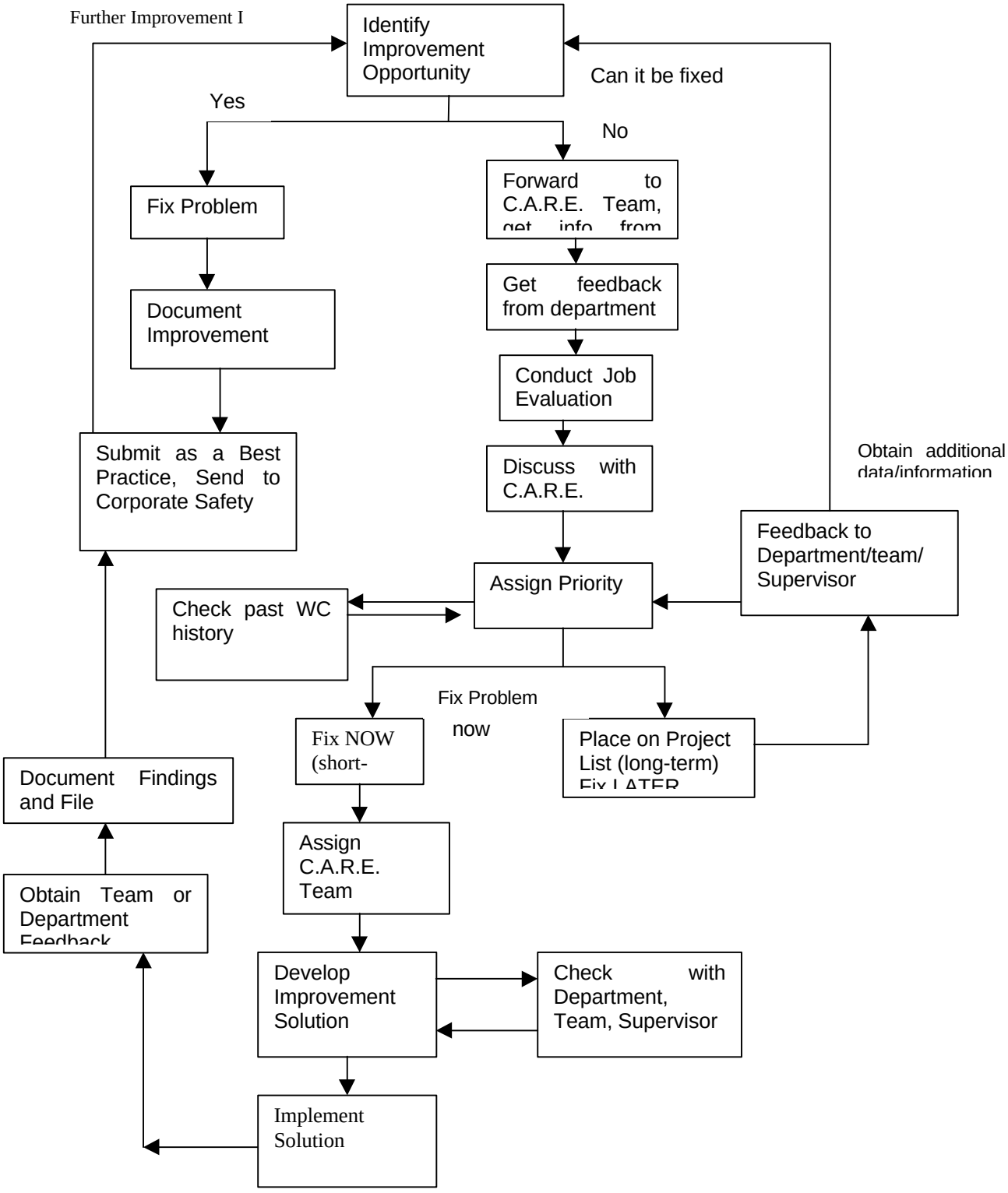

Further Improvement I
Identify Improvement Opportunity
Can it be fixed
Yes
No
Fix Problem
Forward to C.A.R.E. Team, get info from
Document Improvement
Get feedback from department
Conduct Job Evaluation
Submit as a Best Practice, Send to Corporate Safety
Discuss with C.A.R.E.
Obtain additional data/information
Feedback to Department/team/ Supervisor
Assign Priority
Check past WC history
Fix Problem now
Fix NOW (short-
Place on Project List (long-term) Fix LATER
Document Findings and File
Assign C.A.R.E. Team
Obtain Team or Department Feedback
Develop Improvement Solution
Check with Department, Team, Supervisor
Implement Solution

Figure 2: LSG Sky Chefs Ergonomic Checklist

*Workstation*_____ *Date*_____

*Department*_____ *Supervisor*_____

Ergonomic Questions	***YES***	***NO***	***N/A***	***COMMENTS***
Is the walking surface clean and free of clutter?	____	____	____	_____
Are large push/pull forces needed to get a load started?	____	____	____	_____
Is the push/pull on an incline?	____	____	____	_____
Can the distance between the body and the object be reduced?	____	____	____	_____
Can the weight of the load be reduced or placed in smaller containers?	____	____	____	_____
Are the loads placed between knee and mid-chest height?	____	____	____	_____
Is the work surface at approx. waist level, Is the employee bending?	____	____	____	_____
Are the elbows elevated up and out away from the body?	____	____	____	_____
Are standing reaches above 18 inches?	____	____	____	_____
Are sitting reaches above 16 inches?	____	____	____	_____
Does the job task require pinch gripping or bending of the wrist?	____	____	____	_____
Are footrests or footprops used at the workstation?	____	____	____	_____
Are anti-fatigue mats used at the workstation?	____	____	____	_____
Is the proper footwear and other PPE used?	____	____	____	_____
Are forceful hand exertions used?	____	____	____	_____