## A Sustainable Approach: Ergonomic Success Story for Meat Processing

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## Background

This paper will explain how a long-term plan that includes traditional safety activities, a formal emphasis on ergonomic risk factor reduction, and knowledge of the cost of risk was coupled with a systems approach to injury prevention allowing a poultry processor to achieve sustainable improvements to their injury records and workplace environment.

In order for this strategy to work, the firm was able to secure executive level commitment demonstrated by funding for the injury prevention strategy, ergonomic related improvements, appropriate staffing levels and alignment with other strategic, operational initiatives like six sigma.

In 2004, the approach was launched and today the firm has reduced their overall cost of risk, decreased their overall OSHA total recordable incident rate, decreased their number and severity of workers' compensation (WC) claims related to ergonomics, and decreased their WC insurance premium. These accomplishments were achieved during a major plant expansion and corporate wide quality program launch.

## Introduction

The recent economic recession has required many businesses to reduce their operational expenses while at the same time learn how to manage essential, fixed business costs like WC insurance. Workers' compensation coverage provides payment of medical treatment, wage loss and

rehabilitation benefits to workers who experience occupational injuries or illnesses. Employers have the ability to positively influence (i.e. reduce) this expenditure by understanding the components of the insurance cost structure, injury causation, identification, and control; and deploying strategies addressing specific exposures to risk. Once the cost structure is understood, employers can develop initiatives that identify and control the cost drivers. In the present case this exercise clearly pointed to ergonomics-related exposure as the highest cost driver. A sustainable approach was developed to reduce or eliminate the associated risk factors, and thereby reduce the overall cost of risk.

# **Company Background**

Gold'n Plump Poultry is the largest producer of fresh and frozen chicken for retail, foodservice, and deli in the upper Midwest and employs approximately 1,500 employees and partners with nearly 300 family farmers. The company is a fully integrated business that is comprised of 3 processing plants, 2 feed mills, 2 hatcheries, live haul, and grow out services. An area of corporate focus is using automation to provide consistently premium grade products and a safe work environment while helping reduce labor costs. Gold'n Plump processes about 87.2 million chickens annually.

## Safety & Health Staffing & Program Overview

Gold'n Plump is committed to a culture that holds safety as a core value. This is evidenced by safety strategies and measures tied to the corporate strategy and balanced scorecard. The Gold'n Plump Health & Safety (H&S) team have responsibility for the development and implementation of safety and health programs, regulatory compliance, analysis of workplace hazards and injury rates, safety training, WC claims management, wellness, and fleet safety. In recent years (2004 to date), the H&S team have focused on strategic safety planning, including developing and building a safety culture and using continuous improvement methods and tools (six sigma, lean, rational thinking) to positively impact safety performance. Key strategies of Gold'n Plump's long-range planning include ergonomics and behavior-based safety. The H&S team includes a corporate H&S manager, 3 site H&S managers, and 4 health service technicians.

## Corporate Mission Statement

A part of the driving force behind the ergonomics initiative is the clear link to the corporate mission statement. Identifying the link between the initiative and high level corporate goals presents and frames the initiative as a key element of how business is done at Gold 'n Plump. Note how elements three and four from the published corporate mission statement below are directly linked to the present ergonomics initiative.

- 1. We supply the best quality branded chicken products in the U.S.
- 2. We deliver added value through innovation, insight, and excellent customer/consumer service.
- 3. We thrive in a satisfying work environment that places people and safety above all, and rewards performance and learning. Our safety beliefs and principles are:
  - a. We are committed to a culture that holds safety as a core value.
  - b. We are committed to providing a safe work environment and promoting wellness.
  - c. We will manage and conduct business operations in a manner that values people and safety above all.

- 4. We pursue continuous process improvement, applying principles of six sigma and rational thinking
- 5. We are a unified family of growers, team members and business partners who believe in bringing only the best to our customers' / consumers' tables

## Insurance Cost Structure—Total Cost of Risk

A commonly used term in the risk management field is total cost of risk (TCOR). The TCOR can be defined as:

- 1. Risk transfer costs such as insurance premiums, plus
- 2. Risk retention costs like retained losses (i.e. deductible) and claim adjustment costs, plus
- 3. External fees for brokers, vendors, and consultants, plus
- 4. Internal risk management claims, and safety department costs such as salary, benefits, and budget items.

The TCOR values will vary by individual business; however the largest portion of TCOR is usually risk retention costs. The risk transfer cost for WC insurance is a fixed expense and is based in part on an organization's past loss (e.g. claim) experience. When reduced, risk transfer costs (i.e. reduced premium) will have an immediate benefit to the budget line item even though managing and controlling risk retention and related exposures could yield greater, long term benefits. Figure 1 (at the end of this paper) shows a typical example of how TCOR is depicted. It is important to note that the graphic representation will change over time as expenses and losses change.

How do you link TCOR concepts to safety activities? First you need to know what WC insurance program designs are available. Secondly, a thorough understanding of existing and potential WC risks must known. Third, knowledge of the business objectives is needed. Next, there must be a comprehensive understanding of effectiveness of the current injury prevention process and program. Finally, a future direction or vision is needed so the previously listed items can be linked and strategies deployed aligning safety activities to the stated business goals.

#### WC Insurance Program Design Options

Workers' compensation insurance program design can take many forms and some are more complex than others. A guaranteed cost program is straight forward – a business pays a premium for the WC compensation coverage provided by an insurance company. The insurance company agrees to pay for WC claims made during the policy period. The insured business is only obligated to pay the premium and all WC benefit payments are the responsibility of the insurance company. With this option the cost of risk transfer is fixed and retained losses are not part of the TCOR formula. This is a very stable cost structure however it should be noted that if loss prevention efforts are ignored and WC claims increase (cost and count) the premium will also increase.

Two other types of WC programs which are somewhat more complex are a large deductible or self insured retention (SIR) program. In this arrangement, the business agrees to take on some of the risk (deductible or SIR) up to a certain dollar amount per claim. Many times the deductible can be as high as \$500,000 per claim meaning the employer is responsible for the first half million dollars of each WC claim. Any individual claim amount exceeding this value is the responsibility of the insurance company. Again this is on a per claim basis. Knowing the claim cost distribution, financial risk tolerance, and existing and potential risk is essential when selecting this approach.

Besides knowing the financially related implications of WC claims, these types of plans require an intimate understanding of a company's safety program and the exposures present, both uncontrolled and controlled. Exposures can be thought of in terms of existing and potential physical hazards in the work environment; and the existing and potential loss or harm to workers or the financial integrity of a company. Businesses using these kinds of approaches must have effective injury prevention programs in place to manage workplace exposures to gain the greatest impact on TCOR. These types of approaches are best for firms that have solid, well run safety and claim management systems in place.

## Injury Causation, Identification, and Control

In the poultry industry one exposure to risk is poor ergonomics. Ergonomics can be defined as the study of people at work. Its objectives include designing equipment and processes to safely minimize human effort, or to fit the job to the worker. Implementing the objectives results in improved human performance (i.e. productivity), and reduction of ergonomics-related risk factors and related injury potential.

Poor ergonomics can lead to occupational related cumulative trauma disorders (CTDs) which are a group of diagnoses affecting muscles, tendons, ligament, and nerves. Cumulative trauma disorders are sometimes called musculoskeletal disorders (MSDs). Examples of CTDs are carpal tunnel syndrome, epicondylitis, over exertion of muscle groups from repetitive motion, reaching, pulling, lifting and other similar activities. Risk factors commonly attributed to poor ergonomics include: force, frequency, body position and posture, and the work environment (i.e. hot and cold ambient temperatures).

Due to the cumulative nature of CTDs identifying the root cause of these injuries has historically presented a significant challenge. Identifying jobs that present ergonomic risk factors can be accomplished though multiple methods, including reviews of OSHA 300 logs, OSHA 301 reports and insurance claim data, first aid reports, employee interviews and job task observations. Once the priority jobs have been determined a method for identifying the specific risk factors (awkward postures, high forces, etc.) is needed in order to implement effective solutions or controls. Therefore, a measurable and quantifiable system is required to help target the key ergonomic risk factors. Once identified, controls can be developed to minimize or eliminate the risk factors. Controls typically include engineering controls or design changes, administrative controls, and work practice controls (change in work technique or procedures). A quantifying risk measurement system allows the reduction in risk to be measured and documented.

The Joint Poultry Industry Safety and Health Council recently released a white paper outlining the history of ergonomic risk improvement for their industry. This council is an industry specific safety group made up of members from the National Chicken Council, the National Turkey Federation, and the U.S. Poultry & Egg Association. As a whole, the associations listed comprise nearly 95% of all U.S. poultry processors. Their white paper reports that the poultry industry has experienced a 75% reduction of MSDs rates since 1992. This achievement has been accomplished with a strategy that includes staff training, medical intervention, risk factor identification, information sharing among industry members, partnering with regulators, participating in research projects with colleges, and documenting the related activities for others to use.

Integrating the industry best practices along with these essential steps, job and task prioritization, risk identification, control development, control implementation, and quantification was the goal of the initiative at Gold 'n Plump.

## **Strategic Planning**

It is common for organizations without an ergonomic injury prevention plan to experience occupational related ergonomic claims in excess of 30% of frequency and cost. Comparing loss data, business objectives, safety program performance and processes must be done part of strategic planning. The result of these comparisons aligned with TCOR is a key step in devising the strategy. Drafting the strategy is the easy part, communicating, implementing and sustaining the approach is the challenge.

Jim Fishbein wrote, in his article *Three Deadly Sins In Strategic Planning*, "When clients aren't getting the results they expect from their strategic plans, I often see three overlooked causes – incomplete planning, inadequate links between strategy and action, and poor communication.". When strategic planning concepts are used by safety professionals, the resulting injury frequency and severity reduction achievements are tremendous. Combining the concepts of TCOR, injury prevention, and strategic planning is one way to directly benefit a firm's bottom line.

Figure 2 (at the end of this paper) contains an illustration of a strategic plan used by Gold'n Plump's corporate safety manager to communicate the alignment of the company's mission and core values to injury prevention activities and related metrics. Using this visual along with the balanced scorecard showing current state metrics promoted leadership support of safety. The documents helped business leaders (who are not safety professionals) comprehend the links among business objectives, TCOR and safety. This is critical for continued funding of initiatives.

#### **Business Objectives**

All companies have business plans and some are more formal than others. Whatever format is used by the business, safety and health professionals should understand how their action plan and tasks will impact the businesses bottom line of profitability. Many articles have been published advocating the concept of the safety professional becoming more informed about their companies business plans. In the *Professional Safety* article, "SH&E Strategic Planning", published in October 2009, the authors encouraged asking the question "What will benefit this organization the most?" This would be in addition to the routinely asked safety related program questions like:

- 1. What processes and programs need to be improved?
- 2. What new programs need to be developed to address regulatory requirements?
- 3. What areas need more attention?

## Current Safety Program Knowledge

Injury causation, identification and control are the cornerstones of an effective safety program. Injury related data, incident investigation reports, employee interviews, and job or task evaluations will help quantify and identify injury causes. Reviewing programs, policies, post injury processes, inspection results and alike will validate if control measure are effective. Gold'n Plump continues to use these techniques.

## Plant Level Ergonomics Injury Prevention Program

In 2004, Gold'n Plump launched a new approach to their injury prevention planning process that included TCOR and WC loss analysis. Under the new approach a detailed WC claim loss analysis was completed for each site and TCOR information was shared with operational business unit leaders. Other assessment tasks completed promoting Gold'n Plump's new approach included formal interviews with site H&S professionals, insurance company representatives, and safety committee members; poultry industry safety research, etc. Also the existing safety mission statement was resurrected. The tasks were completed by the corporate H&S manager or Aon, Gold'n Plump's insurance broker. The results of the analyses previously mentioned identified key strategies for Gold'n Plump's long-range plan which were, and continue to be ergonomics and behavior-based safety.

All recommended initiatives contained in the strategy had a simple return on investment (ROI) calculated to assist with establishing priorities. This helped set corporate performance goals for business unit leaders (i.e. OSHA incident rate reduction), allowed the sites to devise action plans acceptable for their cultures, and sequenced corporate injury prevention initiatives for the sites (i.e. behavioral based safety and ergonomics). Risk assessment results, ROI calculations, and knowledge of proposed corporate production related initiatives were very important is determining the sequence of the ergonomics launch for Gold'n Plump.

Based on experience with other manufacturing and food service clients, it was recommended that an ergonomics injury prevention program be established at each of the Gold 'n Plump facilities. The program is centered on the activities of an ergonomics committee made up of plant personnel that evaluate jobs to identify ergonomic risk factors, develop solutions, implement solutions, and measure successes. One of the most critical elements to ensuring a successful ergonomics process is the selection and development of the ergonomics committee or task force. A successful ergonomics committee is made up of motivated individuals having specific knowledge in their respective areas of expertise and is the cornerstone of an effective ergonomic process. The task force at Gold'n Plump therefore included the following experts:

- 1. **Employees** (2 minimum): Provide job specific information critical to the analysis and task design processes.
- 2. Department supervisor: Contributes important product processing and flow information.
- 3. **Engineer/manufacturing**: Furnishes design experience and technical processing information for engineering ergonomic changes.
- 4. **Maintenance representative**: Contributes practical application and implementation information.
- 5. **Human resource representative**: Supplies important data concerning cumulative trauma injuries and employee relations.
- 6. **Health and safety representative**: Contributes knowledge of occupational health and safety practices, procedures, and facility issues and challenges.
- 7. **Plant staff management**: Provides information on facility policies and assures support and commitment for the committee.

Ergonomics Committee Development and Training

A two-day interactive course was provided for the teams to establish a practical knowledge base in ergonomics. The instruction was designed to create a self-sufficient ergonomics injury prevention program by developing sound ergonomic expertise within the committee. The training emphasized:

- 1. Ergonomics awareness,
- 2. Musculoskeletal disorder identification and causation,
- 3. Risk factor identification (using Ergonomic Job Measurement System tool),
- 4. Root cause analysis, including behaviors and conditions,
- 5. Ergonomics control deployment,
- 6. Data collection and evaluation,
- 7. Ergonomics integration into equipment, workstation, and process designs, and
- 8. Ergonomics problem solving process and documentation.

During the course participants performed hands-on ergonomic evaluations in the plant, develop solution ideas, built an initial action plan, and presented their findings to plant leader representatives. Again, the participation of plant leaders demonstrated commitment on the part of Gold'n Plump and reinforced their core value of safety to the task force members. In the course of two days they experienced first hand the majority of the ergonomic problem solving process. After the course the ergonomic committee has the knowledge and tools to operate an effective injury prevention program.

For an ergonomic committee to be successful there are certain actions that must be completed. Those actions are outlined here:

- Presentation to management to get approval to proceed with task force development
- Identify key staff functions needed on the task force
- Identify specific task force members
- Determine task force member roles for:
  - o Chairperson (not safety manager)
  - o Administrator/secretary
  - Task force members
  - o Plant leadership
  - o Technical advisors like insurance broker staff
- Set goals and objectives for the task force
- Establish action item tracking system
- Conduct training
- Assign tasks and hold members accountable for:
  - o Job evaluations
  - Solution development exercises
  - Solution implementation assistance
  - o Documentation
- Goal tracking
- Formal reports to management

Once the team is trained and roles are defined goals must be established. The teams were instructed to develop goals that measure the process more than the outcome. Goals should be used that track the ergonomic committee performance and function. Measuring only the desired

outcomes (i.e. 15% reduction in ergonomic incident rate) does not do anything to ensure that the outcome is achieved. Samples of the process goals typically established include:

- 90% attendance rate for committee meetings,
- Minutes distributed within 3 working days of the meetings,
- Number of jobs or tasks to be evaluated per month,
- Number of solutions implemented per quarter,
- Percent reduction in ergonomic risk score, and
- Management updates provided quarterly.

If these process goals are achieved, then the outcome goals (incident rate and severity reduction) will fall into place. All of these goals are tracked and reported to corporate management on a quarterly basis. This regular reporting ensures that corporate Gold 'n Plump and their insurance broker risk control staff can provide the support needed for the teams on a timely basis.

#### Follow-Up Support

Once the team is established and functioning, all results and team meeting minutes are shared with the corporate H&S manager, as well as with their insurance broker, Aon. When further support is needed, Aon has provided specific training to address the presented need. One example is solution development training. This session was provided approximately three years after the initial task force team member training and focused solely on the development and implementation of workplace improvements. Another example where Aon assisted Gold'n Plump is with new committee member and supervisor training. New task force members and newly assigned supervisors were trained in risk factor identification on how to use the risk factor assessment tool. Providing follow-up support to the team has been found to be effective because it reinforces the subject matter by allowing the individuals to actually use the tools in a real-world environment and then have the opportunity to ask questions concerning the evaluation process, solution development, action tracking, etc. The goal of follow-up training sessions was to ensure the ergonomics committee is comfortable and proficient using the ergonomic methodologies presented in the original course. This is especially important because over time committee members change and the process evolves. It is essential the committee members know they are supported and can get additional assistance when they feel challenged.

## **Common Challenges and Keys to Success**

Every initiative has challenges and it is important to note the experiences faced by Gold 'n Plump. The obstacles encountered by one site's committee were shared with the other sites. Often challenges and resulting actions have pointed the other teams towards success. Therefore it is critical to note the challenges arising with the development of a program and use the information as a learning tool. The sequence and some of the most important challenges and keys to success are outlined here.

#### Site Launch Sequence

Since 2005 ergonomics programs had been initiated at all sites. The launch schedule was as follows:

- Cold Spring, MN: April 2005
- Arcadia, WI: November 2005
- Cold Spring (expanded to non-plant operations), MN: October 2006
- Luverne, MN: October 2006

#### Challenges Encountered

The events listed below tested the strategy:

- Initial site team training was scheduled without approval from plant manager; once the site leadership team learned how the program would benefit the site, the classes were scheduled within 45 days.
- Initial site lacked stability in retaining a consistent committee team leader role due to job changes and other factors.
- Committee activities focused on assessment tasks, not on solution development and improvement.
- Committee had set goals, but an action plan was not established to ensure goals would be met.
- Overall injury rates and claim counts were stable or improving slightly, making the committee a low priority at the sites.
- Some site teams evolved to have only hourly workers which resulted in not having the balance of input needed to develop the best solutions and then get them implemented.

#### Keys to Success

During this period Gold 'n Plump also launched an ergonomic policy to formalize the ergonomic program, titled "Ergonomic Policy & Practice Guidelines." This policy was developed to document the program's process and to ensure the company was adhering to the OSHA document "Guidelines for Poultry Processing —Ergonomics for the Prevention of Musculoskeletal Disorders" (2004).

The document served several functions. First it raised the importance of ergonomics within the company by documenting the process. Secondly, the guideline became a reference for the committee, site managers and H&S team members. Finally, the document was positively recognized by a local OSHA compliance officer. Figure 3 (at the end of this paper) lists the items contained in Gold'n Plump's ergonomic guideline.

From the collective experience of all three plants, the following points have been identified as being essential to the success of the program:

- 1. Effective action item monitoring. The monitoring focused on the essential assignments made to committee members. The assignments must be clearly defined, designated to a specific person, assigned a due date, and are easily available to all team members to assist as needed. This step has been found to be a vital element in ensuring accountability.
- 2. Employee involvement. This item is reinforced by the action item monitoring previously mentioned.
- 3. Management support. Items 1 and 2 reinforce this item.
- 4. Active tracking of goals so challenges can be identified and solved quickly.
- 5. Measure and show productivity gains resulting from ergonomic solution implementation. This will earn management support and continue to promote team member accountability.
- 6. Publish success stories at the site level and among various leadership levels and within the H&S team.
- 7. Availability to technical experts from their insurance broker's risk control staff to design specialized training and refresher courses.
- 8. Combining ergonomic initiative projects with other key initiatives in the plant, such as behavior based safety and six-sigma.

Since 2007, each site was able to refine their ergonomic initiative using the lessons and successes from the other sites. Today each site has an active ergonomic committee that is aligning with their behavior based safety team, sharing information and formally reporting workplace improvements to the workers regularly.

## Results

By 2009, the ergonomics teams have been seeing a consistent reduction in ergonomics related incidents. Data from the Arcadia plant is presented as a sample of the impact that can be achieved through this type of continuous improvement ergonomics initiative.

#### Injury-Related Trends

In Table 1 below it can be seen that, during the first two years after initiating the ergonomics initiative, there was a slight increase in ergonomics related cases. This is a common result of encouraging employees to report ergonomics-related symptoms as early as possible. In the long run these numbers tend to trend down, along with a similar reduction in severity.



# Table 1. OSHA recordable performance history relative to the initiation of the ergonomics initiative.

Table 2 shows the reduction in ergonomics related injuries broken out by body part. Analyzing injury data by breaking it out into body parts, departments, and specific jobs helps the initiative focus on where there is greatest opportunity.



Table 2. Ergonomic OSHA recordable performance by body part.

Table 3 shows the severity measure of LWDII/DART for only ergonomic cases. Using initiative specific measures helps the task force demonstrate their successes, offers opportunities to refine action plans, and reward achievements.



#### Table 3. Ergonomics related LWDII/DART

#### Insurance-Related Trends

Historical WC insurance premium information available for Gold'n Plump is outstanding. Comparing the 2008 policy year to 2004, the WC per \$100 of payroll was 28% lower and the WC premium was 24% less according to their insurance broker. The success of their strategy provides a competitive advantage since the TCOR elements of risk transfer and risk retention have been reduced. These reductions in incident rate, OSHA recordable cases, and insurance costs are the result of a well planned and targeted strategy. This case study demonstrates that success can be achievable in the meat packing industry, where ergonomics-related injuries have long impacted the productivity and safety of workers. This type of initiative is not likely unique to Gold 'n Plump. In fact a significant reduction in injury and illness incident rates has been observed across the industry and various business segments.

#### Decline in MSDs in the Poultry Industry

The impact of targeted actions can be seen in the significant decline in MSDs in the poultry industry in general and with Gold'n Plump. Gold'n Plump was able to duplicate the industry's success with ergonomics initiatives at their sites. This paper noted that MSD injury rates in the industry have declined by 75% since 1992 and Table 4 below lists the number of MSDs recorded by Bureau of Labor Statistics (BLS) involving days away from work from 1992 through 2007.

Year	Sprains, strains	Carpal Tunnel Syndrome	Tendonitis	Soreness, pain	Back pain	Total
1992	2601	503	390	558	115	4167
1993	2153	542	275	446	130	3546
1994	1862	406	313	553	170	3304
1995	1610	284	230	488	52	2664
1996	1904	356	161	420	82	2923
1997	986	232	145	292	98	1753
1998	838	162	87	275	47	1409
1999	952	159	95	278	108	1592
2000	736	138	126	178	51	1229
2001	989	185	58	174	45	1451
2002	786	149	77	326	55	1393
2003	410	100	20	220	40	790
2004	580	120	20	210	40	970
2005	430	90	40	160	30	750
2006	470	70	30	120	40	730
2007	410	70	30	200	50	760

 Table 4: Number of nonfatal occupational injuries and illnesses involving days away from work in the poultry processing industry 1992-2007.

## Conclusion

As an industry, poultry processors have been aggressive in their efforts to reduce the most common occupational injury type faced by their business sector: CTDs. Gold 'n Plump has successfully demonstrated that a well-developed strategy that focuses on TCOR, risk identification and control deployment can have a significant impact on a company's bottom line. Also, Gold'n Plump was able to show that the incorporation of ergonomics into the continuous

improvement model integrates safety initiatives with other business plans. The results of Gold'n Plump's initiative can be seen in the significant decline in their CTDs claims and related costs. Gold'n Plump was able to connect the technical principles of ergonomics, reinforce their corporate safety values, and comprehend how TCOR knowledge could be leveraged assisting company leadership's understanding of safety and the importance it has in their business. All S&H professionals can apply the lessons learned by Gold'n Plump to reduce their ergonomic risk factors, reduce their insurance-related expenditures, and sustain on-going improvement.

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Wrenden, Nick, *Executive Champions: Vital Links Between Strategy and Implementation*. Harvard Management Update, September 2002. Figure 1. Total Cost of Risk Example Using the Elements of Retained Losses and Risk Transfer Costs



Figure 2. Strategic Plan Example Used at the Time of Launch



## Figure 3. Gold'n Plump's Ergonomic Policy & Practice Guidelines

The list below contains the elements of Gold'n Plumps ergonomic policy. The document itself follows the company's policy format which is another way to garner support and promote safety integration into business activities:

- Company mission statement
- Document purpose
- Document scope
- Responsibilities
- References
- Definitions
- General requirements
  - Hazard identification
  - Implementing solutions
- Training
- New hire
  - Job specific
  - Ergonomic task force members
  - Manager and supervisor
  - Engineering and maintenance
- Recordkeeping
- Contractors
- Risk factor assessment tool
- Ergonomic improvement and success documentation form