

## **Developing, Implementing and Measuring a Safety and Health Business Plan**

**Jerry L. Williams, CSP, CPEA  
Siegel-Robert Inc.  
Dyersburg, TN**

### **Why a Safety and Health Business Plan?**

Business plans are created for a number of reasons. New companies looking for financing prepare the plans so financial institutions can understand what they do, how they do it and what kind of returns they can expect in their market niche.

We have seen GM and Chrysler prepare business plans for the Senate and House so they would provide their companies billions in bailout moneys.

You see your plants preparing an annual business plan so the corporate officers so see the strengths and weakness of each plant and learn how they manage and solve problems. The results may be that your plant wins a major contract.

Business plans all take different formats, depending on the customer of the plan and the reason the plan is written.

#### **Corporations establish an annual Business Plan to:**

1. Identify the company's financial direction for the year. This includes their expected revenues, product values, operational and capital expenditures, loss potentials, capital plans related to the focus, action plans related to completing the financial direction, plans to eliminate or reduce liabilities and the measures to use each quarter to ensure plans are met and financial objectives are met.
2. Identifies where the company will focus their resources for the next year, to ensure their financial goals are met.
3. The plan details the objectives by quarter and provides measures and milestones to ensure the plans stays on course. This includes strategy and implementation, competitive edge, marketing strategy, sales strategy, sales forecast and industry analysis.
4. Identifies major customer projects or programs and defines the plans to make them a success.
5. The plan provides extensive financial information: Profit and loss, projected cash flow, cash flow, balance sheet, and business ratios.

Again the plans contain information for the customer they serve.

Let me ask you, does your companies' business plan mention safety and health or identify safety at all? In most cases we all can say no, that is unless the company has gone through a catastrophic event in the last year.

Corporations have often been confused with what to do with safety and health and how to make safety and health a real part of the business environment. Companies often confused OSHA with safety, and OSHA rates and worker's compensation cost with the real value of safety and health. After all, this may be all they see. Safety professionals on the other hand have for decades been trying to integrate safety and health into the day-to-day operations of their business. Safety professionals are learning to understand business and finance, and are working hard to be seen as a business value in the same vein as production, quality, R and D, and engineering. I will say now, if that lesson is not learned and used, you will be part of the unemployed. Sounds tough, but with the new economic times business leaders have narrowed their vision and scope to surviving.

## **So Why a Safety Business Plan Now?**

When the boat is sinking or the plant is on fire, it is hard to stop, take the time and see where the fire extinguishers are or understand if we have enough life boats. You will remember afterwards, but then that is like experience; you get it just after you needed it. A safety business plan brings critical issues up front, so we know our liabilities and the controls needed.

A safety business plan is different from a company business plan. Our customer is the plant manager and the management team, or the corporate management team. The information needed would be in line with what events, actions, situations, or conditions will prevent our plant or corporation from meeting our objectives?

### A Safety and Health Business plan should contain the following:

1. Objectives: This section is the outcome of an in depth evaluation of all liabilities to the company which stem from safety and health issues. The objectives identify which safety and health issues create the greatest liabilities and define the expected reduction in liabilities for each issue. Liabilities can be stated as issues then dollar cost or other cost of liabilities such as down time, loss of production, community issues and employee issues. Reduction can be stated in similar terms but the cost reduction would be stated as cost avoidance rather than a cost reduction. Cost avoidance is a loss of the need to pay for and or reserve for certain amounts while a cost reduction is the reduction in moneys expected and budgeted to be paid for. The objectives would also identify a tentative budget that is needed to ensure the success of each objective.
2. Action plans for addressing each objective: A different plan is required for each objective. The plan identifies how each safety and health issue will be addressed. The plans will identify what actions are needed to improve the safety and health issues in order to reduce the liabilities and identify the actions per quarter along with the expected returns.
3. Business plans will also identify the person(s) and groups that will be responsible for overseeing, leading, managing each objective.
4. The business plan will also set up specific measures that will be used for each objective to ensure the objectives are met. Measures will help ensure that the actions taken to reduce the liabilities are effective and moving in the correct direction.
5. The business plan will also identify the expected returns from the actions taken. Returns will be identified by quarters and for the year end. Returns will be stated in dollars of

6. The business plan will identify the benefits derived for the concepts of the plan as well as a revised benefit list when the project is completed.

The safety business plan should also reflect the same long term goals as the company. The actions defined by the plan should also take on similar directions as taken by all other business units within the company. The actions in this plan are your performance measures and goals. Management should be able to relate to every objective brought up and see a business value in it.

## Defining the Problems

Traditional safety analysis will not provide you the information you need to identify the liabilities for developing the objectives. **Reason:** We have a tendency of looking at injuries by end result rather than causation or classification similar to this. As an example we record a laceration from cutting tape for a box. Results we see a cut but the causation is material handling.

Traditional analytical methods of loss analysis are focused on worker's compensation injuries. With this we identify the type of injury, date, and cost. This method is good for identifying trends by injury type and or body part (if provided), and provides you the cost per injury type. Safety professional then plan their activities around the highest dollar cost recorded by injury trends. The non-traditional analytical method uses a similar philosophy but adds the following: 1. Work-related injuries. 2. First aid cases. 3. Near misses. 4. Employee concerns. 5. Employee survey reports. 6. Observation reports. 7. OSHA citations past and those possible. 8. Third party litigation. For every entry we identify the name, date, day, area, department, job, part, tenure on this job, other variables (OSHA, employee concerns etc.) dollar cost and **safety process**.

To help you out, if you are insured by a carrier for worker's compensation and liability you can request a computer run by plant, policy year, accident month and detail such as name etc. This is usually part of the cost of insurance. If you are self insured with a TPA they can provide the same and sometime give you direct access to the process. They can usually send this information to you in a spreadsheet format where you can add variables.

There is one variable in this above list that you may not recognize, safety process. A safety process is a 24/7, 360-degree coverage of a specific safety and health area. Some people call them Programs. A process defines what actions, safe work practices, what safety designs are needed and others the company and employees must complete to ensure an injury free work environment for the safety topic area. Examples: Lockout, hazard communication, fall protection etc. A process contains defined responsibilities, defines training needs, information and skills required. A process defines the required equipment, required PPE, and defines the hazards and the controls that must be in place. The process identifies the records that are required to be developed and maintained. The process provides documentation, information or documentation required for the process. A process also defines the measures that will be used to determine if the process is effective.

Now we know what a safety process is, so how is the safety process used in an analytical process? Our philosophy is that for every work-related injury, near miss, first aid report, employee concerns, negative employee survey responses, non-conformance observations, OSHA citations now or future, and third party litigations is the direct result of a failure within a specific safety process.

So as an example: If we have an eye injury reported, at the time of the team investigation the team decides which safety process failed, and identifies why the failure took place. In this case the highest probability would be the PPE safety process. The failure would likely involve the incorrect selection of equipment, or the unavailability of the correct equipment, or the lack of enforcement of correct safe work practices by the other employees or supervision. This will all be determined during the injury investigation and the team completing the investigation. Using this method would require additional training for all those employees involved in injury investigations. The training time is well worth it. Focus is on the failure of the process not the person. Investigation cannot say “employee was careless, told to be more careful”.

The advantage of using safety processes as a focal point rather than using trends created from an injury type is that when you modify the safety process to eliminate failures you also eliminate the injuries, near misses, employee concerns, survey complaints, negative observations, OSHA citations and third party litigations related to the safety processes. If you identify the issue early before an injury is recorded you have a reduction rate of at least 1 to 20. This means every action taken to eliminate a near miss/employee concern/survey complaints you reduce twenty injuries. One of our plants recorded 120 associate report of injury (no medical) to 60 first reports (medical treatment given) to 40 recordable injuries. Of this 4 four were lost time, 4 restricted day cases and 32 other recordables of which 98% were from prescription meds only. By focusing on safety processes we were able to revise the affected safety process and set up additional safe work practices or modify the process to eliminate over 60 sixty injuries from occurring.

When you use the traditional method, you limit the evaluation to injuries that show up on worker’s compensation records. The traditional method that focuses on injury trends will require you to evaluate a large number of safety processes to change the process for one injury trend. Then you repeat this activity for all the other injury trends. Your time and resources will spread all over the plant and would be similar to juggling five balls at the same time. This non-traditional method uses all liabilities to the company that relate to a safety and health issues. This method focuses on a review of all safety processes and as a result will identify the injuries associated with each trend. Using this method in five corporations, we have found that the average plant or division recorded 95% of their liability cost and 85% of the frequency involved three or less safety process. So therefore, if your focus is on the three failed safety processes you can expect to reduce the liabilities to the company by 95%. (That is if you make the process perfect). We also found that if you focus on just the top three safety process you can expect a high degree of success. However when you try to handle more than three the results are directly affected by the amount of time afforded each.

**Data Collection:** So still confused? Let’s work on how the data is collected. We use a spreadsheet and record every injury, every near miss, every citation, every employee concern, every survey issue, every possible OSHA citation, and every possible third party litigation issue. In the columns we identify the date, name, cause, injury type, dollar cost (or estimated), and failed safety process. Then we sort by safety process. We formulate the cost for each safety process. Simply use a spreadsheet and sort the data. We now know for the year what every safety process cost the company and we can set the priorities for the business plan by identifying the safety process with the greatest liability cost to the company as well as the safety process with the greatest frequency. With this you now know the issues for the safety and health business plan. From the spreadsheet, you can now pull out all the information for each safety process and break down the liabilities into individual trends such as cause, injury type, body parts, area, job, task etc.

**Third party** is usually a guess or projection using fault tree or other statistical tools. What is the probability of an event occurring? What are the maximum and minimum values? The more

history of failure you have the greater the accuracy of your data. Maintenance and engineering can be of a greater value for this information.

**OSHA citations and or possibilities:** You can usually identify immediately what you could be cited for by OSHA or state plans. You can do this by looking at past citation for your company, plant or similar industries. You can also look for national, state or area emphasis programs and focus. If your company has been cited anywhere and you have similar operations, you may expect a repeat citation at a value up to 35,000 dollars if that condition has not be corrected. You should also know the level of citation that would be issued in normal situations (willful, serious, non-serious). The level is based on the seriousness of the condition seen.). The more serious the injury potential involved the greater the level. The amount of the citation would be very subjective. The area office and the officer and the relationship you have with the office will determine the actual amount.

## Identify the Problems and State the Objective

Results from data collection will identify your problems. Which safety process recorded the greatest number of failures and which recorded the greatest dollar cost. As an example from one of our plants:

### Summary of Data Collected

#### Injury Main Areas

Safety Process	Number	Cost	% #Total	;%\$Total
Ergonomics	65	\$ 959,000	42	52
Material Handling	45	\$ 644,000	29	35
Lift Truck	19	\$ 145,000	12	08
All others	25	\$ 75,000	16	04
<b>Total</b>	<b>154</b>	<b>\$1,823,000</b>		

#### Associate Concerns

Safety Process	Number	Estimated Cost
Ergonomics (hands hurt)	35	\$ 42,000
Lift Trucks (too fast)	12	\$ 5,000

#### Near Misses

Safety Process	Number	Estimated Cost
Material Handling	15	\$ 48750
Lift Trucks	12	\$ 46080

#### OSHA

Safety Process	Number	Estimated Cost
Machine Guard Tool rest	2	\$ 1,800
Electrical Wire	1	\$ 1,800
Chemical MGT Target area	1	\$ 35,000 Repeat

In this example you can see that Ergonomics at 42% frequency and 52% cost. Material Handling 29% frequency and 35% cost. Lift Trucks at 12% frequency and 8 % cost. A total of the three equals 83% of the frequency and 95% of the cost. This is only for injuries. Add the rest of the

data and you will find the three top priorities remain the same. If we focus on Ergonomics, Material Handling and Lift Trucks we should be able to eliminate 83% of our injuries and 95% of our cost. Do you agree?

### **Using Cost**

Worker's compensation cost change almost daily. The best method is to use total incurred cost or paid and reserved amounts. Update the values monthly.

The values for employee concerns, near misses, employee survey issues and observations are developed in the following manner:

1. Define the safety process involved for each issue.
2. Define the type of injury, property damage, or environmental damage that can occur if no action is taken to address the issues.
3. Define the average cost for the injury type that would be involved, the average cost for the type of property damage that would be involved, or the average cost from the environmental damage that may occur for each issue. The average cost comes from the history of the Division or plant.
4. Multiply the average cost per issue times the number of issues.  
Input this information into the spreadsheet.

The values for OSHA citation are as follows:

1. Define the type of citation that can be given and identify the safety process that would be involved.
2. For each citation, define the level of citation that would be applied. Example: serious would be a maximum of \$ 7,000 and non-serious at \$1,000. Willful citations would not be considered, because a company that would consider developing a safety business plan would not likely be in a position for a willful citation.
3. Use these values and input into the spreadsheet. The company should also consider the probability of an inspection. National emphasis programs, poor employee relations, target inspection areas are all issues for a higher probability of a visit. When planning the cost for an OSHA inspection, count your time plus all those involved times the hourly and benefit cost times the number of days. Then also include the hourly cost for response, Informal Conference or Notice of Contest.
4. Third party litigation would be based on case history and the attorneys.

### **Defining the Issues**

Now we need to really define the problems involved with each safety process. Basically this means explaining why the issues exist. Example: Using the spreadsheet we sort by department and save the data. We then sort by injury type and save and then we sort by safety process and save. We now have data that shows the safety process with the greatest number of injuries, the type of injuries and the department involved in. We also know the cost for each. What more data do you need? It also only takes minutes to gather if you are entering the data as you go. Let's look at the data. In one plant we have two major safety process failures. Ergonomics accounts for 42% of the frequency and 53% of the cost. Material handling accounts for 29% of the frequency and 32% of the cost. Do we really have to look more? I will provide one simple definition: Ergonomics relates to any action taken to improve or add value to a product. Material handling involves any action that does not add value to the product but is required for the production process to move the material, WIP (work in progress to a RTS (ready to ship) status.

For **Ergonomics** we use the spreadsheet and sorting ergonomics by injury type, we can find the greatest cost and frequency for each injury type under ergonomics. We review the Job Safety Analysis for each job identified in the spreadsheet and collect the following:

1. Reasons for injuries under the ergonomics safety process:
  - a. Continual gripping of parts in the total production process. There is little mechanical assist (robots) and all task are manual. 35,000 motions of gripping per shift, based on the JSA. (dies not sealed)
  - b. Two areas involved Mold: due to trimming and degating parts. Degating averages four gates per part at 21 pounds of force 345 parts per shift. (automatic degaters not uniformly provided to all molds)
  - c. Plate inspect due to manual degating. Average four per part 345 parts per shift, average force 18 pounds. (autodegaters not provided)
2. The type of injuries: The majority for Ergonomics involves CTS, Ulna release and trigger finger with an average cost \$12296. per injury.

All of the above were taken from the JSA developed for the job. You would then repeat this activity for each injury trend identified under ergonomics. These reviews not only identify the real cause of the failure of the safety process, but also help identify the issues under each safety process.

For **Material Handling**: We used the same methods as for Ergonomics and found the following:

1. Reasons for injuries under material handling safety process:
  - a. Total manual system where all parts and materials are handled manually without any mechanical assist. Bending to floor level to over shoulder, 375 times per shift. Continual gripping of parts or material.
  - b. Squeezing contacts to rack parts, 18 to 34 pounds of pressure average of four contacts per part 375 parts per shift.
  - c. Pulling parts off of rack, force 21 pounds, 375 per shift.
  - d. Handling raw boxes and or manual lifting of racks (100 to 130 pounds)
2. Type of injuries: CTS, trigger finger, rotator cuff shoulder, lower back, neck and upper arm strains.

Now we have the problems, the cost, and the magnitude of the problems. All we need now is an objective. Our objective must be reasonable and will be able to be accomplished within the year. We would usually state the objective as a specific percentage of reduction of the cost stated for each problem within the first year. As an idea, our objective would be to reduce the liabilities created from ergonomics and material handling by 65 % the end of the first year. Make sure this value is doable and committed on by the plant, division or corporate management team.

Suggestion: Develop the target safety processes, develop the cost and define the objectives. Set up a preliminary plan idea with an interim budget. Then present this to senior management. Before you move on to the next stage, make sure senior management is committed to this direction and is willing to provide the needed resources.

## **Define the Methods To Be Used**

When a safety process fails, it may be due to a number of problems such as (1) Lack of a process at all. (2) Lack of quality training at all levels. (3) Lack of commitment from the employees and

supervisor that are involved with the process. This is usually due to lack of involvement. (4) Lack of enforcement or direct consequences for not meeting conformance with the safe work practices of the safety process. (5) Lack of safety controls (hardware or software) (6) Lack of viable measures and follow up. (7) Lack of process review and evaluation. (8) Lack of commitment from senior management.

The method used must identify all possible failures in the existing process and remodel the process to effectively address these issues. If the company uses the data collection model stated above, all the reasons for failure of the process will be identified in the injury investigation reports. Actually, once a failure is identified, the leader of that safety process should get the information on the failure and take action to ensure the failure does not repeat. However, unless oversight of a safety process is a responsibility driven by the plant or company senior management, failures will continue unchecked.

Methods should define how these failures would be identified, revised, distributed, trained, measured and reevaluated. The best method we can recommend is using a focused team dedicated just to one topic. Each team would be given specific responsibilities, due dates, budgets, and expectations to be completed by defined dates. Each team would have a designated leader. The team would be expected to provide regular status reports in which they will define the actions they have taken to date. **Problem:** While this is a good practice during good times, but when economic times are very strained, lack of people, resources and moneys makes any control a strain. In these times the responsibility needs to be on the line and accountability set hard.

The method you use is totally up to you and your company. However, the company must have faith that you will obtain results through this method. One warning, safety professional have a tendency for instant correction. If it hurts do not do it any more. Done. OK. move on. However, until we know and understand why a process failed, we can not correct it. The people that do the process daily know what works and does not work. A team environment makes them responsible for their actions and sets accountability. Gee what a concept. The faster safety learns they may own the standards (WHAT) but operations owns the process (HOW) the faster the process can be changed effectively.

## **The Responsibility for Oversight for a Safety Process**

In good economic times the highest level of management at a plant would have the main oversight of all safety processes, using the safety professional as an internal consultant and advisor. But then again I said good times. Today we do so much with so little so we must adapt. Actually the quote is more like “ For a long time we have done so much for so little lead by people who know little, that we are now at a point that we can make something out of nothing lead by no-one.

Every safety process should be created by the people that do the job daily. Example Maintenance people and lockout should be the team. I would suggest that the team members be trained on problem solving before they start. This can eliminate the gripe sessions that may take place The person who leads a safety process team should be the management person who knows the process the best. In our example the leader should be the maintenance manager. The leader should also be someone who the company values and is seen as a person who gets results. Safety processes like material handling will require a wider variety of people and departments. Example, follow the flow of production. In out plants we would involve molding, plating, painting, assembly and shipping. Move one of the groups out and you create a void. The team may want to develop their own data and even separate into different groups such as a system



group and a process group. This will allow the team to look at the problem from two different directions. Examples of questions:

1. What material handling actions can we totally eliminated?
2. With the remaining material handling actions what mechanical assist can we add to reduce the pressure, weight, or stress of those actions (Invite manufacturer representatives to discuss mechanical assist systems)?
3. Would mechanical assist systems work in the existing line and would they eliminate the recorded injuries? What is the best type of mechanical assist to use?
4. Are there other methods to reduce the number of motions and weight, pressure or reach involved?

These questions will help the team focus on the real failure issues.

Action plans by the team may involve a test study. The team would select a target production line to evaluate the possible new changes. Using the example above, the team would have a mechanical assist provided to the target line. They would train the employees involved and set up a measurement process that will allow each employee on this line and other lines to work through this station and evaluate the assist. Each employee would complete a written evaluation for the team. The team could have the manufacturer provide the assist at no charge and help in the evaluation. This is only one idea that a team could use.

The team must also work with safety to identify the budget that has been made available to the team and identify any additional needs for funds to complete this project.

The teams will have total responsibility for the revision of the safety process, the measures and the budgets. They will also be responsible to ensure the changes they developed are effectively implemented through the plant, division or company. This may include new equipment, new designs, line changes, production revisions, employee training and new audit processes.

In these economic times you may have to set up meeting times during lunch and bring lunch. Taking people off a line can become the kiss of death in these times. We have to learn how to work these teams without overtime, off the line. Ideas would be to use inventory days, when a line breaks down, or during prearranged periods.

## **Identify the Measures and Methods Used**

The safety business plans must identify how each modified safety process will be measured, who will complete the measures, define how the measures will be collected and distributed and what actions will be required from the results. This should not be difficult. Companies are constantly measuring everything. Think what is already being measured and by whom. Will the existing measures provide you the results you want? If not, how can the measures be modified to provide you the data? Plants conduct audits for many different needs. ISO, TS Internal and external audits. Can the information you need be provided from an existing audits? If not how can we add it? The measurements we take must help us

to determine if the actions reduced or increased productions, reviews of compensation cost to see if the actions or changes in the process have yielded a reduction in cost and number. As an example we can use interviews and observation. Associate surveys and safety audits are examples of measurement systems that should already been in place.

You can see that the measures must continue beyond the term of the teams' project, so we can be assured that the changes remain in place and continue to control the hazards.

## Pre-Process Improvement Measures

Measures help the teams define the basis of each problem; provide continual measures of the effectiveness of each action taken, and measures the end results. Measures must be valid, analytical and consistent. Measures can not be subjective.

Our first measures must be to create a baseline. Example: 1. we complete observations of employees in a target area and identify if the employees are following the procedures set up for the existing safety process being reviewed. 2. We then complete employee interviews of the same employee observed, and ask questions: “What are the safe work practices for the safety process in this area?” If the employee identify the correct safe work practices but were observed not following them, we then need to find out why. In addition to the questions we need to identify the current line rate, production rate, quality rates, and supervisors’ knowledge of the safety process safe work practices. This information becomes the baseline for all future measures. If we have negative values here what makes us think we will have positive numbers with an improved safety process?

Measures need to be valid and measured against the base. This means the measures developed need to be taken before any changes are made. This will also give the team an understanding of what practices or procedures that was in existence before the team started was being followed. If they were not being followed, the team has a basis to identify the reasons. The reasons alone will provide the team an understanding of what changes are needed.

Measures need to be developed in a usual format. The measures need to be distributed to specific individuals who will read the information and use that information to improve the process. Anytime we set up a prototype line or add a new mechanical device and want to test the device, all affected employees would complete a written evaluation. The team must read each evaluation and determine the percentage of favorable responses. In addition supervisors need to provide their input or evaluations. From the reviews the team must decide if they gave adequate time for the employees to use the equipment, if the employees need more training, if the team brought in the right equipment for the task, or did the evaluation confirm the correct choice.

## **Expected Returns**

The objective will identify what the company expects for a return on the work of the team. The expectations need to be identified by quarters. The company should not expect a significant return in the first quarter, but needs to expect the greatest return in the fourth quarter or later. Some safety personnel feel that it takes years to get results from any initiative, from 32 years in industry I disagree. The team needs to report on the cost used (from the budget) and the returns gained for each quarter. The teams also need to identify if the expected returns are unreasonable, and then provide a more reasonable return to senior management. The expectations given in the business plan are only estimates and based on probabilities that may not have a sound database. Once the teams begin their work, they will have a greater understanding of what can be gained. In additions, the returns are based on the financial support of the company and the agreement for change from the management. If no actions are allowed to occur, the returns will be greatly diminished.

If management loses interest in the project or their priorities change, the teams will become frustrated and lose respect for management and feel the project is lost. The safety professional must stay current with the corporation and recognize any changes in corporate priorities. This

may not be easy since many issues are kept silent from anyone other than corporate executives. We must be as persuasive as possible to show to senior management the value of the returns that can be gained. There are difficulties here as well. Some times decisions made by the corporation do not involve returns. When companies are about to reach an agreement of sale or merger with another company, all activities may be shut down until the sale or merger is completed. The hardest thing for the safety professional to do at this time is to keep the interest of the teams moving forward without losing their interest or support. The best idea is to find the leaders of the new company and work directly with them. The outgoing management usually has little say or interest. The safety professional and the team leaders need to handle the issues of management support, capital budgets, priorities etc. The team needs to be focused only on their task.

### Benefits

As we change the processes we need to expect improvements in operations, production processes, reduction in injuries and their related cost as well as a reduction in employee concerns, OSHA possible citations and even third part liability claims. At first the benefits will be stated in general terms, but as the projects are closer to completion we can define the benefits in financial detail.

Please note that some safety process may take years to complete, depending on the complexities of the process. As an example, just to find all material handling task that can be eliminated may take a year. Even if you eliminate three tasks out of five, how do we move the product from station 1 to 5? Sometimes it is easy to eliminate, but much harder to unite.

Sample plan next page

**Siegel-Robert  
Automotive Division  
Safety and Health**

**Safety Business Plans 2009  
Topic: Material Handling**

**Division:** Automotive **Plant:** **Date:** 1/8/09

1. **Definition:** Material Handling is any movement of material or product from one station to another element in which all actions do **not** add value to the end product.
  
2. **Issues:**
  - Methods and equipment used to bring material or stock to the production process line or cell.
  - Methods and equipment used to move product or material onto the next production process.
  - Methods and equipment used to move equipment or parts for maintenance.  
The number of work related injuries/illnesses for the last three years that were assigned to Material Handling: 180 or 45% of the number of injuries. The related total cost: \$ 1,731,875 or 65% of the total **three year cost.**
  
3. **Objective:**
  - Reduce the number of times material is handled. This will reduce our exposure to injuries, reduce handling time, reduce creating scrap, and reduce the related cost and therefore, increase profit margin. Every time we handle parts we add 1% scrap. Reducing the number of times of handling will also reduce our scarp exposure.
  - Increase employee's knowledge of body mechanics needed to handle material without injury, positive motions
  - Increase employee's actual practice and use of effective body mechanics.
  - As a by-product, reduce the number of work-related injuries/illnesses and their related cost.
  - As a by-product, increase production efficiency.
  - As a by-product, reduce the possibility of an OSHA citation relating to material handling through the ergonomic direction. OSHA would likely cite under ergonomics and use Section 5A1 of the Act. This is a target safety practice and would likely be cited as serious with a minimum fine of \$ 7,000 and could move to willful at \$ 70,000. Note: OSHA usually uses the OSHA log as a basis and if at least 10% of the cases involve material handling, the plant is open to a citation. Our % is 60%. 5 A 1 would be used as the standard.
  
4. **Methods:**
  - Establish a safety development team made up of hourly and salary employees involved with the process. This should include representatives from assembly, plating, mold, paint and shipping/receiving.
  - The team will be responsible for the following:
    - A. Set weight limits for material handling. Presently 35 pounds

- B. Set standards of practice for moving material height, weight, distance and packing materials.
- C. Set standards of practice for moving product off the line for quality checks or other reasons.
- D. Set standards for maximum reach, relating to material handling.
- E. Define the standards for training employees and supervision on the safe work practices for material handling. This would involve what information is provided by group, who would provide the training, what type of training will be provided, how to document the training and how to measure the effectiveness of the training?
- F. Identify the equipment needed to implement a successful safety process. Identify by year, the type of equipment, location for each, cost per year for all equipment and a cost justification for each. This may include:
  - 1. Fixed stations for dunnage
  - 2. Air or electrical hand held contact squeezers
  - 3. Mechanical assists for racks.
- G. Define the safe work practices by area or production process needed for success.
- H. Establish a plan to implement this process and include a timetable, assignments and due dates.
- I. Establish a method to measure the effectiveness of the action taken. This should include setting a baseline, using tools such as interviews, observations, line rates, time studies, injury numbers and cost.
- J. Establish a budget for the initial year and all years there after to maintain this process. Budgets need to reflect what can successfully be completed during the first year and thereafter.
- K. Prepare a presentation for the Plant leadership, which will detail all the safe work practices, equipment, cost, justifications, and measures. The Leaders of the Plant will need to review the proposed process, make changes or approve “as is” and provide the needed resources for the success of the process. This includes people and moneys.

**5. Measures and Benefits: (These are ideas only)**

- % Increase of employee’s involvement in this safety process. Goal is 45% by year-end. Measured by employee interviews.
- % of employees that have a working knowledge of the safe working practices for material handling. Goal is 96% and measured through employee interviews.
- % of employees observed actually practicing the safe work practices for material handling. The goal is 95% and is measured by employee observations.
- % reduction in the number of times an employee needs to handle a product or material. Goal is 45% and measured by a count before and after changes.
- % increase in line efficiency due to changes made. The goal is 25% and is measured by rate prior to changes and rates after changes. Note to be accurate only material handling changes can be made to the line.
- % reduction in work-related injuries and illnesses related to material handling. The goal is 65% and measured by injury data.
- % reduction in related injury cost. The goal is 65% and measured by insurance and site cost for work-related injuries and illnesses.
- As a by product reduce the possible citations with OSHA by 100%.