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DEVELOPING THE SAFETY CULTURE THROUGH RISK ASSESSMENT BY IMPLEMENTING MS-5 IN TOOLBOX TALK

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Abstract:

In the current world, the importance given to Health, Safety and Environment is at peak. Incessant improvements and the constant monitoring of safety systems and the procedures will help to achieve zero accident. The objective of the project is to develop the safety culture in industry by implementing MS-5 a customized safety tool concept in Toolbox Talk and perform every minute risk assessment to identify the risks using Pareto Principle. Assessed risks are provided with ratings based on the priority of the risks sequenced, which will be solved by providing necessary corrective action.

1. Introduction:

My project is to develop safety culture in the industry by assessing all the potential hazards in the workplace. Company systems and their procedures depends upon the behavior of individuals and groups for successful implementation. For the successful execution of the procedures it requires actions of correctly trained individuals who understand the importance and responsibility to perform the task. I am implementing a MS5 a customized tool of Stepback 5 X 5 safety tool in Toolbox talk which is a risk awareness process and also perform every minute Risk Assessment.

About MS5:

Developing a new tool called MS5 by using the concept of an effective safety culture tool Stepback 5 X 5. This tool will help us in risk assessment or finding the hazards in the workplace by implementing it in the Toolbox Talk. The objectives of MS5 to the workers are:

"I take 5 Minutes for my Safety and the one of my colleagues."
"I take control of the situation."
"I apply the 5 steps of a proper risk assessment before starting my job."

As the objective signifies the workers will be aware of their job and its surroundings and takes control of the situation. The five steps of MS5 helps them to assess the risk in their job.

Stepback 5x5:

Step back 5×5 is a personal planning tool developed to help all of us to ensure that we perform even the most mundane of tasks without getting hurt. It is used to assist us in maintaining awareness of our environment at all times and aid in the identification and control of immediate hazards as we go about our day-to-day work. It is based on the principle of 'Engaging the Mind before the Hands' by:

- Stepping back 5 paces from the job
- Investing 5 minutes (nominal) to step through the job in your mind and identify plans to control hazards before starting the job
- Stepback 5 x 5 is an informal personal planning process. It is essentially a mental JHA applied before starting ALL jobs
- The process encourages sharing of information and experiences with others.

Stepback 5×5 Process:

Before The Job:

- Stop and think
- Observe the work area and surroundings
- Step through your mind what you are going to do
- Think about what else is happening in the area or nearby
- Identify what else could go wrong Satisfy yourself that the hazards are controlled before starting the work

During the Job:

- Be aware that when performing a routine task, it is possible to get into an automatic mode of operation.
- If it is a long routine task, take short regular breaks to re-focus on the job, work environment and related hazards.
- When a job is coming to a conclusion or a natural break e.g. (Meal Break) re-focus your effort on what is required to complete the task safely.

After The Job:

- Observe the work area
- Take action to control any hazards that may have been created by the work
- Reflect on how well the job went and the mental planning process you used
- Did you feel safe doing the job?
- Were others around you working safely?

- Can any improvements be made next time?

Work Review/Preview Checklist:

- Did everyone have a safe day yesterday?
- If Yes, what made it safe?
- If No, what made it unsafe?
- What can/could be done to improve on it?

So, let's have a Safe Day! Think Safe! Act Safe! Be Safe!

Keeping the Culture Alive:

Start of shift meeting

- Raise awareness of hazards that may be encountered during shift
- Encourage investment of time to think through the job
- Promote the identification and taking action to control hazards
- Share information with others in the workgroup.

Completion of Meeting

- Share information on hazards and other problems encountered during the shift
- Discuss any unexpected events that occurred during the shift
- Discuss solutions to problems encountered
- Discuss incomplete activities so they can be noted in hand-over's

Customized To MS5:

In MS5, M stands for Minutes of 5 taken for the safety awareness process in the Toolbox Talking and S stands for the Steps of 5 taken for the assessment of risk while working. In this MS5, safety culture and hazards involved on the job is discussed on the Toolbox Talking which takes approximate timing of 5 minutes. An awareness of the hazard involved in their job and the safety precautions to be taken is also discussed in the toolbox talking. The whole meeting will be an interaction session and all the employees are set free to discuss about their problems they face during their job and suggestions from their side. The workers are trained to work safely and assess the risk involved on their work while performing by following 5 simple steps. Those 5 steps are:

- Stop! Consider the task.
- Identify! Detect potential hazard.
- Think! Assess the risk.
- Plan! Decide on precautions.
- Proceed! Perform the task safely.

Toolbox Talk:

Safety Toolbox Talks was started in 2007 as a portal for safety professionals to share and exchange free safety topic resources, specifically Toolbox Topics, Toolbox Talks and other free safety resources. The daily safety meeting has proven very effective in reminding employees about the importance of safety in their daily tasks. "Toolbox Talks", "Toolbox Topics", "Safety Chats", "Tailgate Meetings" or whatever your organization calls them is a brief safety talk or meeting about a specific subject at the beginning of the shift. These talks can be done in a variety of ways but is typically a brief (2-5 minute) interactive discussion meeting on something safety related. Toolbox Topics are used to cover a variety of short safety training subjects and to remind employees each day before they go to work, the importance of being safe. Toolbox Talks are quick and easy trainings to enhance OSHA's safety requirements. Toolbox Talks cover a wide range of topics ranging from workplace electrical safety to lifting basics. Toolbox Talks also help create and an environment to discuss task specific or timely safety communications, identify problems or highlight specific safety concerns/risks. Environmental Health and Safety has developed a series of training sessions known as Toolbox Talks to encourage safety throughout the University.

What is a "Toolbox Talk"?

A Toolbox Talk is an informal group discussion among employees of an individual department that focuses on a particular safety issue.

Who can conduct a "Toolbox Talk"?

Anyone can conduct a Toolbox Talk. However, it is a good idea to select individuals who have expertise on the given topic.

How long and often should these be conducted?

EH&S recommends a 15 minute talk conducted on a monthly basis.

Where and when should these discussions take place?

The meeting should be held in a comfortable location at the beginning of a shift, after lunch/break, or incorporated into another operational meeting.

Do you have to use EH&S created "Talks"?

No. The EH&S topics are there for assistance but each group is free to conduct a talk on any safety issue that may be present in the work environment.

Do "Toolbox Talks" satisfy required safety training?

No. Toolbox Talks are a brief discussion each month of relevant safety issues but they do not replace formal safety training.

Other applications for Toolbox Talks:

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Toolbox Talks can be used for post accident communications, re-enforcement of safe work practice, pre-task planning and talking points for hands on training or table top exercises.

Toolbox talks are sometimes referred to as toolbox meetings, tailgate meetings, or safety briefings.

2. Literature Review:

Tiziana C. Callari., et al., (2019), published a paper titled "What is it like for a middle manager to take safety into account? Practices and challenges".This paper briefs about the roles played by the middle managers to ensure the safety of workers in the organization. Middle managers consider safety related practices and challenges faced by them. Semi-structured interviews and the qualitative content analysis (QCA) were conducted among the middle managers. The results were used for the further practices and improvements of safety in the avitation industry. Making decisions, Influencing key stakeholders to get the job done and Managing information's are the key role to be performed by the middle managers.

Serdar Korkmaz., (2018), published a paper "Comparison of Safety Perception between Foreign and Local Workers in the Construction Industry". The author delivers the difference in the safety perception between the local and the foreign workers. The survey is taken among the people working in the industry to evaluate the safety knowledge among the local and foreign workers. In the end it is confirmed with the tests carried out that, foreign workers accident/incident rate is more than the local workers as the language stand as a barrier for foreign workers.

Shezeen Oah., et al, (2018), published a paper on title "The Influence of Safety Climate, Safety Leadership, Workload, and Accident Experiences on Risk Perception: A Study of Korean Manufacturing Workers". In this paper few workers from various manufacturing industries were asked to reply the questionnaire survey prepared in order to find out the multilevel factors such as individual,group and organization which play the critical role in predicting individual risk perception.

G. Reniers., (2017), published a paper titled "On the future of safety in manufacturing industry". In this paper they revealed the importance of SAFETY and how to improve the safety in manufacturing industry. CHESS method is followed to form a safety culture in the manufacturing industry. Cluster-thinking and cooperation, High transparency and efficient inspections, Education and training, Security integration and Safety innovation.

3. Pareto Principle:

Definition:

"The Pareto principle (also known as the 80/20 rule, the law of the vital few, or the principle of factor sparsity) states that, for many events, roughly 80% of the effects come from 20% of the causes".

Pareto Analysis:

It is a statistical technique in decision-making used for the selection of a limited number of tasks that produce significant overall effect.

It's based on the Pareto Principle (also known as the 80/20 Rule) – the idea that 80 percent of problems may be caused by as few as 20 percent of causes. To use Pareto Analysis, identify and list problems and their causes. Then score each problem and group them together by their cause.

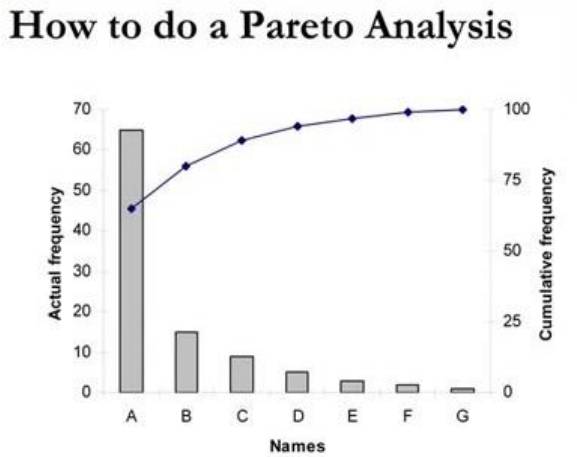

Figure 1: How to do Pareto analysis

It is a technique used for business decision making based on the 80/20 rule. It is a decision-making technique that statistically separates a limited number of input factors as having the greatest impact on an outcome, either desirable or undesirable

Major Risks:

According to the Pareto Principle following are the 24 risks identified and which is common for any kind of industries.

- Slips, trips, fall at same level
- Fall from height (platform, stairs, ladders)
- Burying (under sand, rocks, gravels)
- Fall of tools/ other items
- External body in eye
- To be run over/ squeezed by a vehicle
- Sting/ bite (insects, animals)
- Vehicles hitting/ overturn
- Asphyxiation
- Lumbago/ Bruise (manual handling)
- Load fall/ Hitting (mechanical handling)
- Musculo Skeletal Disorder
- Caught/ Squeezed
- Electrocution

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- Cuts/ bruise (hand tools)
- Burn (hot, cold)
- Bursting / discharging (hose, compressed air)
- Deafness (noise)
- Radiation exposure (ionizing/ non-ionizing)
- Burn /irritation (chemical)
- Dust inhalation
- Fire and explosion
- Conflicting tasks (coactivity, contractors)

4. Methodology:

The process of the project is to employ MS5 in to Toolbox talking which make a great combo of bringing safety culture, awareness and assessment of risk in one. In this project there are two segments.

They are

- Risk Awareness
- Risk Assessment

Risk Awareness:

Risk awareness is the acknowledgement of risks and the active process of reducing or eliminating those risks. Risk permeates every component of the industry and it is everyone's duty to follow applicable laws, policies, and procedures in order to minimize the industry's risk profile. Risk-awareness is a cultural approach to safety but it is also a form of risk assessment and has been variously referred to as 'informal risk assessments on day-to-day tasks. This segment is totally to provide awareness to the workers about his job, the risk in his job and in the surroundings. Also to provide essential safety precautions and measures for the risk involved in his job. This risk awareness segment has four divisions to provide awareness and bring a good safety culture to the workers. They are

- Posters
- Toolbox Talking (TBT)
- Minutes of Meetings (MOM)
- Attendance List

Posters:

A poster displaying hazards or risks at work site and the damage that may be caused by it is a basic awareness method. The concept of this poster awareness depends on three factors.

A Name – A Logo – A Slogan

According to the program a display board will be walled on every department. A particular risk will be taken for a week and a graphical image of the risk and a safety slogan for the accident will be displayed. Every week a new risk will be taken, and then a graphical image and a slogan according to the risk will be displayed up to next week.

Example:

Slip, Trip, Fall

Fall from Height

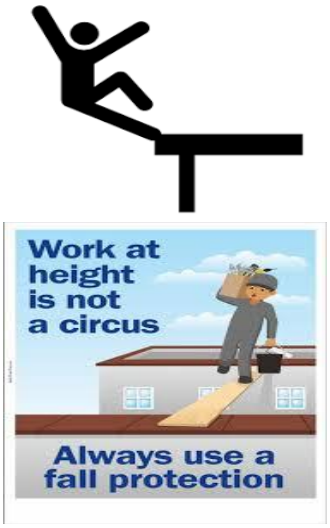

Figure 2: Posters

Toolbox Talking:

Toolbox Talking is a quick way awareness meeting which is conducted to the workers every day before starting the task. The team leader or the supervisor will conduct the Toolbox Talking every day to the workers. A specific risk or the risks involved on the task they going to perform on that day will be discussed and awareness about the risk and the precautions or safety measures to be taken will be taught. The supervisor must perform 5 steps during TBT to make it effective and they are

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- Why is it important to speak about this hazard?
- Questions to ask to launch the talk.
- Answers to give / comment.
- The key points to remember.
- Example of typical accident.

This will make an interactive session where the workers can inform the risks they face during the work. They are trained to follow the 5 steps of MS5 for 5 minutes during or before their work session so they can understand the surrounding and situation and act according to it. They can avoid many accidents that may possibly happen by following the 5 steps survey.

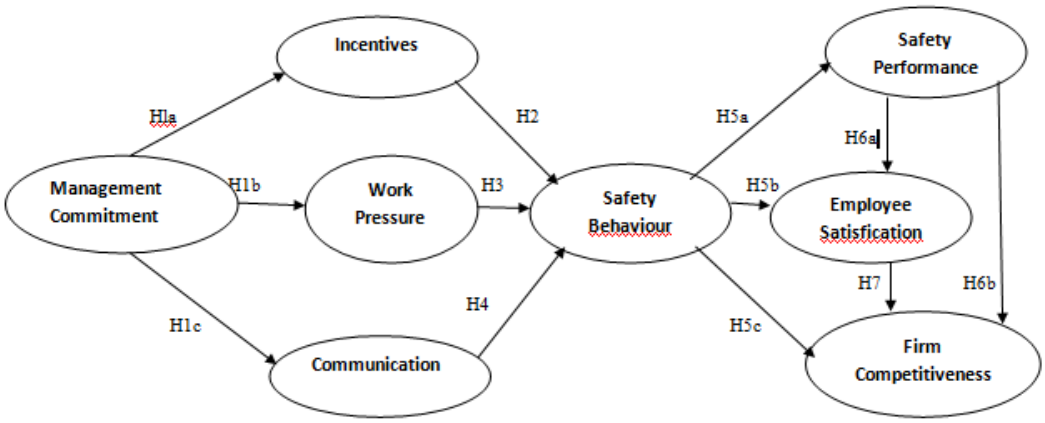

Figure 3: Step Survey

Example:

Confined Space Entry Procedures (Permit Required):

For every 10 accidents that occur during a confined space entry, one of those accidents results in someone dying. Confined spaces present a variety of hazards and that is why specific procedures must be developed and followed for every entry. This Tool Box Talk is de-signed to review these procedures for employees who have already been trained in confined space entry.

Only Employees that have Completed Confined Space Training May Participate in a Confined Space Entry:

- Obtain a copy of the entry permit and hazard assessment and review the hazards associated with the space
- Ensure that the appropriate PPE, Rescue Retrieval Equipment and Communications Equipment are available and in good working condition
- Lockout/Tagout any hazardous energy that the entrant could be exposed to Conduct continuous air monitoring utilizing a multi-gas air monitor
- The space must be labeled with a confined space "DANGER" sign
- Review the confined space "DANGER" sign and make sure the information corresponds with the information on the hazard assessment
- Notify the Operations Center (include names and the confined space ID number) and wait for authorization to begin the entry
- When the entry is finished notify the Operations Center
- Return the permit to your Supervisor (retain for 3 years)

The entrant and attendant both have specific responsibilities during a confined space entry. These include:

Attendant:

- Understand signs and symptoms of exposure that the entrant may exhibit
- Remain outside the space during entry operations – Do not leave the space unattended
- Monitor atmospheric conditions
- Maintain communications with entrant
- Do not perform any work activities while attending an entry
- Perform non-entry rescue and initiate emergency rescue by notifying Operations Center

Entrant:

Understand potential entry hazards and be aware of signs and symptoms of exposure.

- Wear PPE as specified on the permit or on the confined space hazard assessment.
- Maintain communications with attendant.
- Evacuate space immediately upon notification by Entry Attendant.
- Alert the attendant and exit the space immediately whenever there is a warning sign or symptom of exposure.

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Minutes of Meeting:

Minutes, also known as protocols or, informally, notes, are the instant written record of a meeting or hearing. They typically describe the events of the meeting, starting with a list of attendees, a statement of the issues considered by the participants, and related responses or decisions for the issues. MOM is so essential and it will be taken by the team leader or the supervisor during the Toolbox Talking. It is the record of the meeting describing about the risk findings and the suggestion given by the workers. This MOM helps in the assessment of risks by the workers. After taking the MOM it will be forwarded to the up line managers.

Example:

Minutes of Meeting
Date:…….
Time:……
Place:…….
Meeting Name :……..
Minutes prepared by :……..

Table 1: Minutes of Meeting

1. Meeting Objective			
2. Attendees Present			
Name	Department	E-Mail	Phone Number
3. Notes, Decisions, Issues			
Topic		Owner	Time

Attendance List:

Attendance list is a formal procedure to record the conductor of the TBT and the employees attend the TBT. It is the Procedure of the Team leader to forward the MOM and attendance list to the up line managers.

Risk Assessment:

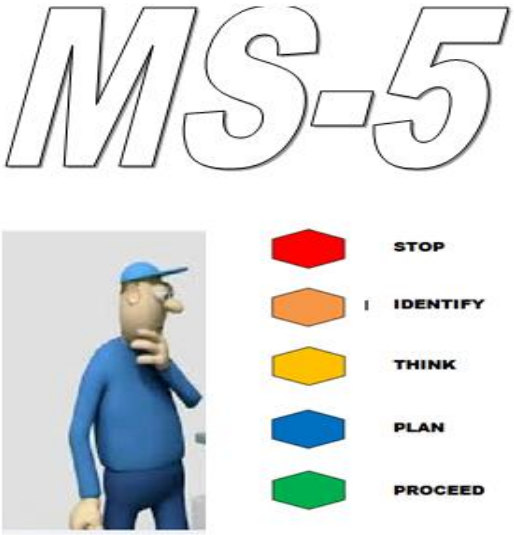
A risk assessment is an important step in protecting workers and industry, as well as complying with the law. It helps you focus on the risks that really matter in your workplace – the ones with the potential to cause harm. In this program the risk assessment is done by implementing MS5 in the TBT. By this the workers are trained to assess the risks or hazards in their job by following the 5 steps of MS5. The risk assessment is done by two segments. They are

- Risk Assessment Booklet
- Risk Assessment Record

Booklet:

A booklet will be provided to each worker in which the 5 steps of MS5 are followed. In that there will be columns for each step and the workers can fill up them and double check it with their supervisor. The 5 steps are

- Stop! Consider the task.
- Identify! Detect potential hazard.
- Think! Assess the risk.
- Plan! Decide on precautions.
- Proceed! Perform the task safely.



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Stop the work and perform the following steps.
Steps must be carefully performed to execute the work safe.

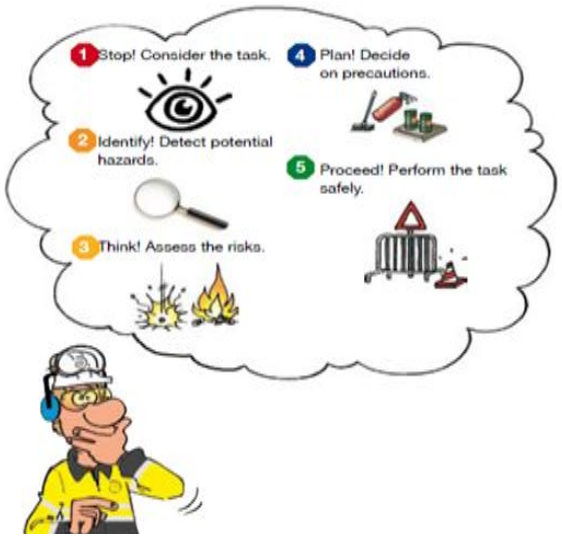

Figure 4: 5 Steps

Risk Assessment Record:

Once the booklet is ready then all the assessed risks will be consolidated by up line managers. From consolidated risks based on the high severity they are chosen and the risks are controlled one by one. Severity of risk is calculated by the risk assessment chart

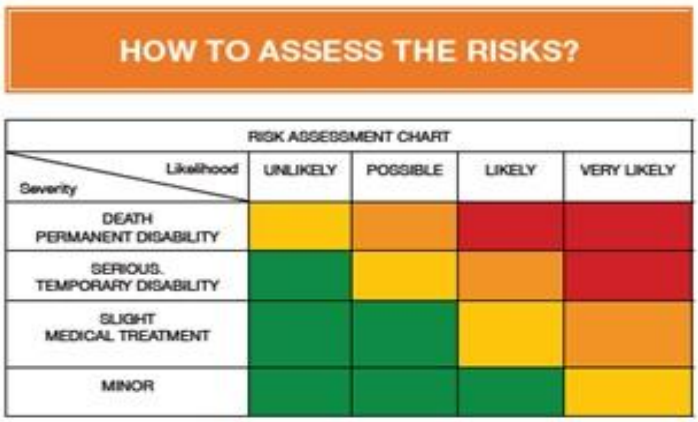

Figure 5: Risk Assessment Record

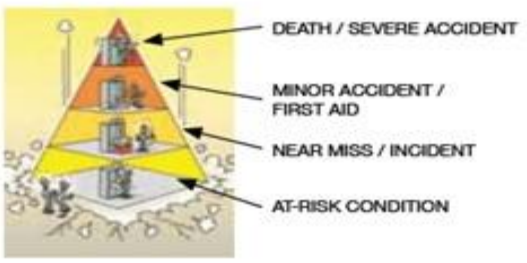

Figure 6: Color coded categorization Pyramid

After selecting the risks by assessing them, they are controlled by engineering control or with the help of hierarchy of control.

5. Conclusion:

By implementing MS-5 tool in the Toolbox Talking, I assess the risks present in the workplace and provide necessary corrective actions. By performing every minute risk assessment and thinking about own safety and safety of the neighbor which increases the performance of safety and develops the safety culture in the workplace gradually.

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