Leadership for the prevention and control of accidents in the MAH Industries

[1] A. Varahalu

[1] Faculty (Industrial safety), Govt. Institute of Chemical Engineering, Visakhapatnam

Abstract: - **Safety management has been a prime content in the industries involving hazardous process due to many accidents occurring in the major hazardous industries in the recent days. This may be due to system failure or human failure withmultiple causes and finally, its root cause will be inadequate procedures, failing in implementation and monitoring of safety measures. In this scenario, question arises that how to maintain industrial operations and processes without having any such mishaps anytime and anywhere in the industries. This must be our safety motto to safeguard the people, property and environment. For such accidents who can take the responsibility to manage the industry as accident free workplace and by what means? Obviously, the answer will be "all employees at each and every level". It may be true and prominent because they are at primary level on which safety depends at grass root level mainly for implementation of industrial safety. But the interest and dedication flows from top. Here, it is most important to understand that the vital responsibility lies with top or senior level management like a proverb" Yadha raja, thathapraja". Hence, leadership comes into limelight on the top of all these reasons. Let us know what leadership is and how it is related to safety management that leads to prevention of major accidents. Answer is "Yes" and because of their continuous efforts.**

Keywords: safety management, leadership, safety commitment, MAH industries, MSIHC Rules 1989

INTRODUCTION

Safety management includes safety activities based on the safety strategies of an organization and coordinating the efforts of its employees to accomplish its objectives through the application of available resources such as financial, technological, natural and human resources. Management may also refer to those people who manage in organization individually such as safety managers, operational managers and production managers etc., who execute their roles, responsibilities having authority and power in executing safe work by planning, organizing, directing, controlling, motivating and monitoring for safety, health and environment in terms of National/ International standards and occupational safety, health and environment management systems.

Leadership is the art of motivating a group of people to act towards achieving a common goal. In a industrial establishment, this can mean directing workers and colleagues with a strategy to meet the company's needs.

Company's needs should include not only production and profit but also people's safety on-site and off-site. In the concept of leadership, safety never be an additional attachment and to be involved in the main stream of the routine activities and with a special attention on safety and MAH control.

Fig-1 : Importance of leadership in HSE (Health, Safety and Environment) Management

Controlling accidents in MAH (Major Accident Hazard) Industries starts with identification of hazards and then risk management and providing safety systems, infrastructure and methods for safe operations and processes in the plant and finally with emergency preparedness.

2.MAH Control

With the growth of chemical industry and use of hazardous chemicals, the world had seen many major accidents during last 50 years but the concept of major accident hazard control

came in our country after Bhopal accident in 1984 only. Thereafter, many new legislations were published on HSE-MAH for strict safety compliance. Safety regulations were for framed for bulk storage, hazardous processes and heavy transportation of dangerous chemicals such as

1. Major amendment of the Factories act, 1947 in 1987 and state rules accordingly.
2. The Manufacture, Storage, and Import of. Hazardous Chemicals (MSIHC) Rules, 1989
3. The Chemical Accidents (Emergency Planning, Preparedness and Response) Rules, 1996.
4. The Environment (Protection) Act, 1986 and Rules 1986.

These enactments need to be realized and appropriate safety measures to be taken to identify and prevent the major accident causes and to mitigate their consequences. Major hazard means that the hazard which arises because of the hazardous nature of the substance and its storage quantity equal or exceeds the threshold quantities prescribed in MSIHC Rules.

Major accident is an incident scenario such as major discharge/ emission or a fire /explosion, which immediately or subsequently cause several serious harm to the people and environment and /or loss of substantial material assets.

Firstly, leadership in the MAH Industries should have thorough understanding of the importance of the statutes and safety guidelines with respect to all hazardous chemicals/materials and operations in more detailed manner about the senior management's commitment and involvement to help them achieving the continuous improvement in health and Safety performance of the company.

3. Safety culture

- Achieving a positive health and safety culture in the organization is the fundamental motto in the minds of all employees through HSE policy.
- To make sure that all managers are committed to promoting health and safety.
- Improving "workers health and safety motivation' is fundamental to improve safety. Ensure to take action by convincing key groups such as supervisors of their importance to safety culture.
- To recognize that the attitudes and decisions of senior managers are critical in setting the priorities of the safety organization. Their attitudes will impact on styles of behavior and priorities of those below them in the organizational hierarchy. Training for top to middle level management is requires understanding this.
- Leaders should know where there are problems and where things could go wrong.

- All staff to work safely and comply with the rules, but also want them to show initiative and be proactive in improving safety.
- Make sure that health and safety is not viewed as a separate function, but an integral part of production, competitiveness and profitability that the health and safety risks are recognized as a part of business risks.

4. Leading by example

- Make it clear that an exemplary health and safety performance is our aim and we value the health and well-being of our workers, contractors, visitors and members of the public.
- Health and Safety is on the agenda of any board or management meetings and the company routinely reports the safety performance as a part of commitment to corporate social responsibility which is a measurement and indicating safety.
- Long – term goals for the control of major hazards and have a plan to meet these by prioritizing the risk.
- Immediate action to control the high risk hazards to create safe environment.
- Include the safety performance element as one of the individual performance indicators in assessment sheet.
- Meet the workforce regularly and discuss safety and health aspects at work with them
- Contracts are awarded to companies who can demonstrate a good safety performance and who have a good understanding of the hazards.
- All incidents and near misses are investigated fully to identify the underlying causes and follow up on the agreed action and do not accept that identify "human floor" as the sole cause of an accident.

5. Systems

- One should understand the hazard profile of the organization and there are systems in place that take account of human factors as well as technical issues to ensure the risks are adequately controlled.
- Establish safety manuals, standard operating procedures, safety regulations and identify and understand primarily wherever the major accidents and incidents can occur and that suitable engineering / technical and human controls are in place. Take up the control of major hazards on priority through hazard hazard analysis and risk assessment study.
- Identify safety critical roles and tasks to the

individuals and are routinely reviewed.

- Develop the key performance indicators for major major hazards and monitor the process safety management (PSM) and report against these parameters.
- Accident/investigation investigation procedure should ensure all issues, including human factors. Also ensure immediate as well as underlying management related causes are identified, without attributing blame, and corrective action is taken to prevent the incident happening again.
- Facilitate communication and enable people to discuss health and safety in the work process to prevent hazardous working and suggest safer methods to be supported by the supervisors and line managers.
- Technical integrity of the plant and equipment rests on good initial design, feedback from operations through hazard studies, competent risk assessment and high standards of construction.
- Technical integrity of existing plant and equipment are under good maintenance plans and in carrying out maintenance including preventive maintenance.
- Monitoring, reviewing and ensuring all safety issues are under control through conducting independent HSE Audit by the competent external auditors.
- Periodic review of company's safety performance at every stage and take necessary corrective measures to improve upon.

6. Work force

- Recognize that the employees are main resources for the company and ensure their health and safety.
- Ensure their involvement, consultation and participation in safety.
- Ensure all employees are trained and aware of process safety information such as hazards, risks involving safety measures to be adopted to prevent accidents through safety committees and work councils.
- Set safety objectives at regular intervals and performance measures to the individual departments in various fields.

Whether all these safety salient points are recognized by the senior level managers? If recognized, how can it be checked? May be one of the tools is external safety audit in which management representative will be asked about his commitment and involvement in implementing safety and health. It will be recorded in the checklist. Upto next audit, he will be free from such quarries or questions there by chances are there to ignore during his routine production and financial works. Safety again strikes to his mind suddenly when any severe accident takes place in his plant. By that time, all effects of the accidents like fire, explosion or toxic gas release etc, will damage within the plant or beyond the plant to the maximum extent. Even though the management has integrated safety policy, SOPs, safety documents and safety records, safety performance, safety organizing capabilities, it has not reached to the ground level for its implementation or execution in time. This may be due to break of link in the chain of process safety management in the site. By the time they understand the lacuna and root cause for the incident, damage to the company in terms of loss of money, man power, machinery, materials and management has to face the consequential effects.

To overcome this, continuous self assessment on safety by the leaders of the company is a must. Periodic review on safety assessment will definitely make a safe way to reach prevention of major accident in MAH Industries. A checklist is prepared as a sample for self assessment of safety leadership by the senior/top management for having continuous improvement in prevention of accidents.

7. Checklist for safety management in MAH Industries (under PDCA Rule) - Self assessment by the executives

- Safety policy
- Safety and Health organization, roles and responsibilities
- Accident prevention techniques in the plant- search for improvements
- Management information systems for HSE and its effectiveness
- Process safety management (as per OSHA's requirements) – 14 elements

Fig – 2: PSM 14 Elements as per OSHA's Requirements

1. Process Safety Information
2. Process Hazard Analysis
3. Operating Procedures
4. Training
5. Contractors
6. Mechanical Integrity
7. Hot Work
8. Management of Change
9. Incident Investigation
10. Compliance Audits
11. Pre startup safety review
12. Emergency planning & Response
13. Trade secrets
14. Employee Participation

- Hazard analysis and risk assessment and control – plans, procedures, preparedness
- Plant and equipment safety
- Chemical safety including MIS in Material safety data sheets/MSDS
- Electrical safety
- Construction safety
- Statutory and legal compliance and enforcement in the plant
- Layout of the plant/company
- Security
- Fire prevention measures and fire protection
- High pressure and temperature systems
- Storage, handling, processing and transportation of hazardous chemicals
- Storage, handling and transportation of highly inflammables
- Hazardous materials waste neutralization and disposals
- Occupational health monitoring and medical checkup
- Industrial hygiene aspects to the employees
- Occupational health services and emergency services
- Effective communication systems
- Best safety practices in the company and motivational aspects to the employees participation
- Workers participation in the safety committees

The above salient points are very vital and guide the management for continuous improvement of safety in the plant as well as to prevent untoward incidents.

8. Conclusion

It is well understood that at any stage or level, any mistake or lapse in the interest or compliance in safety may affect the people working in the industry as well as to the outside public domain. It may further result into threat to the organization directly or indirectly on the individuals as per the legislations and regulations on industrial safety.

Hence, it is our prime responsibility to march forward with safety as a first step and keep the production along with safety.But the present development of industrialization having various hazards and risks which can be addressed and solved by continuous monitoring and sustainable improvements in safety and taking advantage and benefit of the same modern technologies for safety of the people and economical growth of the nation as a whole.

Let us rededicate ourselves to improve Safety, Health and Environment in major hazard industries and inculcate "safety responsibility" down the line by way of implementing accident prevention programme in all the fields which makes a path safe and successful leadership with " No incident- No injury Concept"

9. References

1. Petersen, D. `Safety Policy, Leadership and Culture´. In: Saari, J. (ed), Safety Policy and Leadership, ILO Encyclopedia of Occupational Health and Safety (4th edition, volume 2), ILO, Geneva, 1998, pp 59.2-59.7.
2. Jump up↑ Simard, M., `Safety Culture and Mangement´. In: Saari, J. (ed), Safety Policy and Leadership, ILO Encyclopedia of Occupational Health and Safety (4th edition, volume 2), ILO, Geneva, 1998, pp. 59.7-59.11. https://www.hse.gov.uk/pubns/indg275.PDF