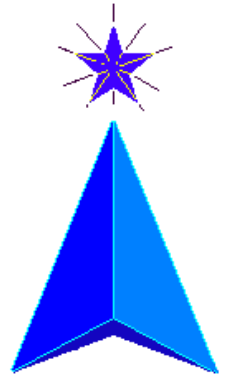


# **PROCESS SAFETY MANAGEMENT**

**CREATING MULTIPLE  
BARRIERS TO PREVENT THE  
CATASTROPHIC RELEASE OF  
HIGHLY HAZARDOUS  
CHEMICALS**



# PSM is not

- Another technique to improve the methods and actions involved with individuals working more safely i.e. behavioral based safety
- Primary Concept ----Not Just the the drivers behavior
- The Design of Cars and Roads
- Policing all three
- Protecting the individuals who work in or close to a facility making H.H.C's

# **THIRTEEN ELEMENTS IN THREE GROUPS**

- **CONCEPTUALLY THERE ARE THREE MULTIPLE PART MAJOR CONTAINMENT BARRIERS MADE UP OF.....**
- **AN ENHANCED KNOWLEDGE OF THE PROCESS**
- **WRITTEN SAFE PRACTICES AND TRAINING IN THEM**
- **AN ADMINISTRATION TO ENSURE THE WHOLE SYSTEM WORKS**

# **DOING EVERY ASPECT OF THE JOB THE RIGHT WAY**

- DOCUMENTING THE SUCCESSES, THE FAILURES AND THE ROUTINE
- TRACKING TO -----AN ITEM,  
A DATE, AND A PERSON

# KNOWLEDGE OF THE PROCESS

- Must have before starting .....
- Process safety Information and history of the manufacturing process
- Training
- Incident Investigation
- Employee Participation
- All used to perform a
- **PROCESS HAZARDS ANALYSIS**

# **THE WORK PRACTICES**

- **MECHANICAL INTEGRITY**
- **MANAGEMENT OF CHANGE**
- **EMERGENCY PREPAREDNESS & PLANNING**
- **HOT WORK PERMITS**
- **OPERATING PROCEDURES**

# **ADMISTRATIVE - ENFORCING THE RULES**

- **PRE-START UP SAFETY REVIEW**
- **Q.C. IN MECHANICAL INTEGRITY**
- **CONTRACTORS SAFETY RULES**
- **TRADE SECRETS**
- **ROUTINE SCHEDULED AUDITS**

# **USING OUR COLLECTIVE KNOWLEDGE OF THE PROCESS AS A BARRIER**

- Made up of the following elements

# PROCESS SAFETY INFORMATION

- Drawings, specifications, chemistry, hazards - toxicity, design premises, safety systems
- Complete information on how the plant was built and how it should be operated.

# INCIDENT INVESTIGATION

- A qualified team to investigate all incidents which might of resulted in a significant release within 48 hours
- Assignment of responsibility, tracking and closure of any recommendations made

# EMPLOYEE PARTICIPATION

- Employees at all levels need to be involved with, and have an understanding of the management of process hazards

# PROCESS HAZARDS ANALYSIS

- A written record of the technology, engineering, and analysis of them concerning the concepts and design philosophy that went into building the plant.
- A complete understanding of “Risk & Consequences”
- Follow up on any deficiencies found in the review process

# TRAINING

- Individuals must be trained in the process to safely carry out their duties
- Refresher training and verification of understanding must be done at least every three years

# **THE GOOD PRACTICES BARRIERS**

- The agreed day to day good work practices must be safe and adhered to by everyone

# OPERATING PROCEDURES

- Written procedures describing not only normal operating conditions but every reasonably conceivable conditions due to upset or emergencies
- In addition all standard work practices such as “line breaking” “vessel entry” etc

# MECHANICAL INTEGRITY

- A program to ensure that the plant was specified to approved - recognized standards
- Built to those standards and Maintained to those standards
- A quality control step must always be present to guarantee things are as specified
- It covers all equipment whose failure could lead to a loss of containment
- Any deficiencies found must be tracked to completion

# HOT WORK

- A procedure must exist to control hot work to prevent accidental ignition

# MANAGEMENT OF CHANGE

- Any change to the process safety information that is anything other than a change in kind requires a Management of Change review and sign off.
- The check list should be appropriate for the complexity of the change
- As examples----It is OK to replace a given manufacturers valve with another's provided they are made to the same specification.
- It is not OK to replace a gate valve with a globe valve or to replace a steel valve with a bronze valve of identical design
- The process must be operated inside the specified envelope

# EMERGENCY PREPAREDNESS PLANNING

- Should a range of incidents involving the release of highly hazardous chemicals occur then.....
- A plan to address the organization and the roles and anticipated actions of individuals inside and external responders must be made

# **THE ADMINISTRATIVE CONTROLS BARRIERS**

- ....

# PRE START -UP SAFETY REVIEW

- After making an approved change to the process and before the equipment installed can be put into use.....
- A review of the safety implications is necessary.
- The review includes ensuring that the equipment is installed as specified, that it conforms to recognized and accepted codes, that procedures have been modified and operators have been trained in them.

# QUALITY CONTROL

## Manufacture and Installation

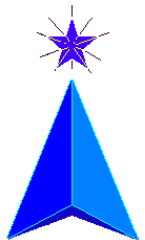
- Linking PSSR and MI there is a requirement that a documented Q.C.verification be provided.
- Similar to an audit or test of understanding in training

# **RULES FOR CONTRACTORS**

- A jointly held responsibility to ensure that contract employees are treated in a similar manner to the owner companies employees regarding the whole PSM program
- The owner must satisfy himself that the contractor and his employees are adequately trained both in their profession and in the hazards of the specific site
- That periodic audits are made by the owner of the contractor to maintain conformance

# TRADE SECRETS

- Essentially this commits all parties sharing information about a facility. They must not pass information to a third party



# COMPLIANCE AUDITS

- The owner of the facility is required to conduct an audit of all facets of the program every three years and document the results.
- Should the owner chose to do this himself the individuals selected need to be adequately trained.
- Shorter term audits are recommended

