

Safety Survey

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BEAUMONT WORKS
POLYMER PRODUCTS DEPARTMENT
BEAUMONT, TX

REPORT NO. 3181
JANUARY 6, 1984



E. I. DU PONT DE NEMOURS & CO. (INC.)
EMPLOYEE RELATIONS DEPARTMENT
SAFETY & FIRE PROTECTION DIVISION
WILMINGTON, DELAWARE 19898

DUP 0503070

DU 002411

INTRODUCTION

A safety emphasis survey including aspects of safe distribution and occupational health was conducted at the Beaumont Works November 28-December 9, 1983. This report documents the summary of our findings which was presented to the plant staff at the conclusion of the survey. We would appreciate a response within the next three months to the recommendations contained in this report and to any field observations with which you do not concur.

If there are any questions or if additional information is needed, please contact us.

SAFETY & FIRE PROTECTION DIVISION

J. R. Aggus
J. R. Aggus, Staff Engineer

R. J. Geisen
R. J. Geisen, Staff Engineer

R. W. Roepke
R. W. Roepke, Staff Engineer

F. H. Ahrens
F. H. Ahrens, Survey Supervisor

Reviewed by:

R. E. Munson
R. E. Munson, Consultant

JRA:msh

DUP 0503071

DU 002412

SUMMARY

The overall safety performance at the Beaumont Works is considered good. Work practices during the survey were excellent, although it was noted the site 1983 total recordable injury frequency is higher than the company average and 1982 site performance.

Safety and Health Management is good with the principal deficiency involving the control of contractor activities. Inadequate barricading of work areas and failure to follow site protective equipment rules are two aspects which require additional supervisory attention. Site safety programs, activities and policies effectively address identified needs with the line organization responsible for the safety and health of employees and the safe distribution of materials. A qualified Safety Office supports these efforts.

Work environment safety is good. While housekeeping is good and site facilities and process equipment are well maintained, many easily-corrected deficiencies such as soiled respirators, oil spills and overdue equipment inspections were noted indicating higher supervisory standards and attention to detail are needed.

Emergency Control is considered good. Fire protection equipment is well maintained and inspected per recommended frequencies. Good progress is being made in alleviating the site fire water supply deficiencies and planned projects should completely resolve this situation. The initial TERP team drill and supervisory media training have improved site capability for responding to a potential transportation emergency and these drills should continue. Fire brigades are adequately staffed, but "hands-on" drills and training for these brigades need to be strengthened.

Process Hazards Management is also good. The process hazards reviews have good technical depth, but are not fully addressing whether area operating and maintenance procedures and operator/mechanic training are adequate to control and respond to identified hazards. Separate evaluative sections are recommended. Additional coordination between the Process Hazards and Operating Standards subcommittees should also strengthen site process hazards management efforts. Most other aspects of process hazards management are adequately addressed by in-place site programs.

SAFETY & HEALTH MANAGEMENT - Good

The Central Safety and Health Committee is properly organized and provides appropriate policy and direction for the overall safety and health program. Central Safety and Health Subcommittees are appropriately staffed and have well defined charters. For instance, the Off-The-Job Committee includes plant-wide participation by both supervision and wage roll. Its monthly programs highlight timely safety topics and the committee makes available for area safety meetings, useful sources such as slides and films which contribute to the good off-the-job injury experience.

The Safety and Occupational Health Organizations are appropriately staffed and responsibilities have been well defined. The safety office maintains good rapport with local agencies such as OSHA, Coast Guard and the local fire department.

Communications to employees on work-related hazards is done and appropriately documented. Material Safety Data sheets are complete, accurate and appropriately located in production areas. The site has established and maintains an effective audit program involving both supervision and wage roll. Both safety and occupational health items are included in audit programs.

The site has developed and generally updates all operating procedures and safety and occupational health policies on a routine basis. However, Business Services should promptly develop written procedures similar to those now in use by the other site areas.

The site has developed a commendable quantitative respirator fit test protocol based on the use of Freon® as a test agent. Generally, use and control of personal protective equipment is adequate, but storage practices should be improved.

The Handling of Hazardous Materials (RHYTHM®) Subcommittee is active and meets established annual objectives. This subcommittee properly functions as a consultant to the line organization and conducts audits in production areas. The line organization has assumed responsibility for the safe distribution of hazardous materials.

The most significant weakness in safety and health management continues to be the proper control of contractor employees. A number of contractor generated unsafe conditions and unsafe acts were identified during the survey. In some instances,

these hazards also posed a potential threat to Du Pont employees. Examples include inadequate barricading of contractor work areas and failure to follow established site personal protective equipment rules. A contractor work permit procedure was recently developed to ensure contractor employees work without injury and minimize exposure to themselves or Du Pont employees. Its prompt implementation is recommended.

EMPLOYEE WORK PRACTICES - Excellent

During the survey we observed 120 employees working. One unsafe act was observed in progress and an additional four unsafe conditions were noted that could be attributed to specific individuals. Seven employee-created unsafe conditions were observed, all of which had low injury potential.

The most serious situation observed was a crane driver who allowed his load to swing out beyond the barricade limits. As was mentioned in the previous category, barricading practices by both Du Pont and contract employees are considered a problem requiring more supervisory attention.

No deficiencies in the use of personal protective equipment by Du Pont employees were observed during the survey. However, some improper protective equipment storage practices were noted during field observations.

Contributing factors to the low incidence of unsafe acts are the use of job cycle checks, the comprehensive and up-to-date procedures available in most areas, and the excellent, well documented employee training programs. While employee work practices were excellent during this survey, the plant's total recordable injury rate for 1983 is higher than the Company average and the number of medical treatment cases has increased from nine in 1982 to fifteen so far in 1983. Analysis of the medical treatment cases shows employee poor judgment is a contributing factor in several incidents, which indicates a need for persistence in demanding and maintaining safety awareness from all employees.

WORK ENVIRONMENT - Good

A large number of field observations were noted that applied to this category of safety. Typical deficiencies included laboratory hoods requiring stops, an unstable load on a pallet, soiled respirator storage and oil on stair treads. Most of these deficiencies were readily correctable indicating that higher safety standards are needed.

Serious safety concerns were observed related to the exposure of Du Pont employees to overhead hazards due to inadequate barricading by Du Pont and contractor employees. There was also potential injury exposure from falling scaffold boards due to improper loading of trailers by contractors. In one instance, three boards actually fell off the trailer when it negotiated a curve.

Stairways, floors and exits are maintained in a safe condition. Machine guarding is excellent with no deficiencies noted. Housekeeping standards site-wide are good. Ladders, hoists, electrical cords, life lines and other portable equipment are properly inspected, with some minor exceptions noted in field observations.

This category has deteriorated somewhat since the last survey largely due to poor contractor control and inadequate barricading practices. Individual members of the line organization should raise their safety expectations and correct deficiencies when detected.

EMERGENCY CONTROL - Good

Fire protection equipment is well maintained and is inspected and tested per recommended frequencies. Specific test procedures for this equipment are well documented and examination of fire protection equipment and test records indicate no significant deficiencies. While the existing fire pumps are in excellent condition and perform at or slightly better than design specifications, water supply capabilities at Beaumont remain deficient in supplying the maximum anticipated demand of the Nordel® deluge systems. Good progress has been made in balancing these deluge systems and enlarging the underground fire mains northeast of the Nordel® area. Future projects to provide additional fire pump capacity and to enlarge some underground fire mains should resolve the site fire water supply deficiency. These efforts should continue to be expedited.

Combustible and flammable liquids and gases are well controlled with the exception of compressed gas cylinders. Deficiencies detailed in field observations include oxydizing gas and flammable gas cylinders stored together and improperly secured compressed gas cylinders. Ignition sources and smoking are well controlled and the site is properly classified and designed in regard to electrical equipment and grounding.

The Emergency Preparedness Subcommittee has gathered data establishing there are currently no safe havens at the Beaumont

Works. Infiltration data indicates that process control rooms were particularly poor. Site efforts to modify existing facilities to provide safe havens are endorsed.

Emergency drills, begun about two years ago, are an excellent means of testing the site's emergency preparedness. The written drill critiques are thorough and have generated numerous recommendations resulting in improved site emergency preparedness. Examination of recent critiques, however, indicate additional improvement is still possible, especially in disaster communications, rescue techniques, ambulance response and fire brigade response and actions.

The fire brigades themselves are adequately staffed to meet anticipated site needs, but discussions with supervision revealed that only two or three fire drills are held annually. Consequently, all five fire brigades may not have the chance to participate in a drill. Each fire brigade should participate in "hands on" fire drills at least two or three times per year to maximize their effectiveness. Again, critiques of each fire drill should further improve their effectiveness. Each critique should generate a "pre-action plan" which describes the optimal use of brigade resources for a particular fire or emergency situation. Pre-action plans also can be generated without holding a fire drill using analysis of fire hazards by experienced personnel. These pre-action plans should be filed for easy brigade officer access and be periodically reviewed with all brigade personnel.

Emergency facilities and equipment such as safety showers, eyewashes and emergency lighting are adequate for site needs with the exception of the automotive shop where battery acid is handled without a nearby safety shower. Self-contained breathing apparatus cylinders generally appear to be underpressurized throughout the site and modification of site cylinder filling facilities is recommended.

The initial TERP team drill and recently implemented supervisory media training have improved the site capability for responding to potential transportation emergencies. The use of videotape practice sessions and written drill critiques have been particularly effective and should continue. The site is encouraged to schedule at least three or four drills annually. The recently authorized purchase of a well equipped van to respond to both on- and off-site transportation emergencies will further improve TERP team effectiveness.

PROCESS HAZARDS MANAGEMENT - Good

Examination of recent process hazards reviews from the three operating departments revealed good technical content and hazard analysis. However, some hazards reviews failed to address whether area operating and maintenance procedures were adequate to fully control identified hazards. None of the examined reviews studied the adequacy of operator and mechanic training and retraining. Operator and mechanic training should be assessed by hazards review teams through employee interviews. Future write-ups of process hazards reviews should include separate evaluative sections on operator/mechanic training and operating/maintenance procedures as well as sections on critical equipment inspections and tests, changes in design or operation, serious incidents and audits of process areas.

The Operating Standards Subcommittee is principally responsible for auditing the production areas for operating procedures and operator training. These audits are thorough and have assisted in raising site standards. These audits should continue, but should be expanded to include applicable mechanic training and maintenance procedures (as they apply to process hazards tasks). This subcommittee's plans to increase the number of employee interviews to better evaluate operator and mechanic process knowledge and understanding are endorsed. Joint discussions with the Process Hazards and Operating Standards Subcommittees concluded that additional coordination between these two subcommittees should strengthen site management of process hazards.

Currently, the Process Hazards Subcommittee examines and evaluates process hazards studies after they have been reviewed by area PMT management and issued. Audits of these studies with verbal and/or written critiques prior to review by area PMT management should accomplish the following objectives:

- more uniform content of hazard studies on a site-wide basis,
- assurance that reviews have adequately addressed all pertinent aspects of process management, and
- improved feedback to process hazards study team members.

The Process Hazards Subcommittee has identified site-wide process hazards management training needs aimed at site management personnel, technical supervision, study team chairmen and

team participants. These proposed training programs are endorsed as a means of continuing to strengthen overall site process hazards management.

Examination of monthly area reports concerning the status of process hazards review recommendations show very few delinquent or overdue items. Discussion with area personnel, however, indicated that recommendation goal dates could be changed from their original dates. A system reporting the number of recommendations completed, the number outstanding (on backlog), and the number of new recommendations generated is suggested. Quarterly status reports to the Central Safety Committee concerning these recommendations should continue.

Examination of inspections and tests of critical process equipment such as pressure vessels, relief valves, rupture disks, crucial piping systems, interlocks and alarms indicate all tests are being performed as scheduled and test results are documented with very few exceptions. To further improve the inspection and test program, the site should:

- continue to establish detailed test procedures for critical process equipment;
- record all "as-left" equipment setpoints;
- strengthen area proprietorship understanding of test results, trend analysis and possible corrective action; and
- establish acceptable performance ranges for "as-found" results (when operating supervision should be notified).

Process hazards management aspects of serious incident investigations, changes in design or operation, pre-startup safety reviews and process safety information such as P&I's, chemical information and operating limits are in excellent condition.

PREVIOUS REPORT

All recommendations from the previous survey reports (No. 1173 dated December 7, 1981 and No. 8026 dated June 26, 1980) have been satisfactorily resolved except contractor control, fire water supply and as noted in this report.

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