

ABERDEEN CHEMICAL PLANT SAFETY AND HEALTH MANUAL
ABERDEEN, MISSISSIPPI

VISTA

SUBJECT: Plugged Line Safety Procedure

EFFECTIVE DATE: June 1, 1991

PREPARED BY: *Don L. Tingo* **SAFETY DIRECTOR**

APPROVED BY: *W. J. Seymour* **PLANT MANAGER**

I. GENERAL PROCEDURE

- A. Operating Department personnel will prepare equipment by isolating, depressuring, decontaminating, lockout and any other steps necessary to reduce risk of un-necessary exposure to personnel performing the work to acceptable levels.
- B. After the necessary steps have been taken to isolate the plug, the contained pressure must be released in some controlled, safe fashion. In all cases, personal protective equipment must be used to protect personnel performing the work. The methods authorized to release confined pressure are:

Bleeders - This is the most preferred methods. They, too, can be plugged but may be cleared using pressure, vacuum, or bent metal rod (with caution).

Flanges - Flag off the work area. Break flanges on opposite side of the line.

Drill Hole in Pipe - If there are no bleeders or flanges to release the contained pressure, a small pilot hole must be drilled to the center of the pipe. (An air operated drill must be used for flammable materials.) Once the contained pressure has been released, the pipe may be cut using cold methods at the location of the drilled pilot hole. This method can be used only with permission from the Operations and Mechanical Superintendents.

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I. GENERAL PROCEDURE - Continued

This requirement also applies to long sections of plugged flanged piping that has been removed from its normal location. Multiple cuts require multiple pilot holes.

- C. Permits must specifically describe the work to be done, equipment to be used, necessary personal protective equipment, special exposure precautions, and any other items deemed necessary by the operating supervisor.
- D. The scope of work can be changed only after a thorough supervisory review and a new permit is issued.
- E. The work area must be flagged off and signs posted to keep unprotected personnel out of the area.
- F. Safety showers must be tested by personnel signing the permit and the work crew must witness the test. When safety showers are either not available or not functioning properly, a portable heated unit is available from the Safety Department.
- G. The Operations and Mechanical Department Supervisors will verbally review the safety considerations regarding that job as the last item prior to the start of the job.

II. PHTHALIC ANHYDRIDE (P.A.)

- A. Operations must close, bleed-down, and tag all steam tracing lines; lockout, tag and try transfer pumps; and close and tag product valves related to the plugged line, if possible. The locations of all tagged, isolated valves should be noted in the Operating Department's logbook. Valves which could not be isolated should also be noted and discussed with the personnel performing the work.

II. PHTHALIC ANHYDRIDE (P.A.) - Continued

- B. After the necessary steps have been taken to isolate the plug, the contained pressure must be released in some controlled, safe fashion. In all cases, personnel protective equipment must be used to protect personnel performing the work. The methods authorized to release confined pressure are:

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This requirement also applies to long sections of plugged flanged piping that has been removed from its normal location. Multiple cuts require multiple pilot holes.

- C. Permits must specifically describe the work to be done. Face shields, rain suits and gloves which cover all body parts are required for work which could expose personnel to molten P.A. (i.e., opening any closed system due to valving, plug-gages or other conditions which could release trapped material). Personnel performing the work should be told to treat all lines as if they contained pressure. A cooling device should be obtained from Safety when personnel must wear full body protection and personnel may be overheated due to high, ambient temperature conditions.

II. PHTHALIC ANHYDRIDE (P.A.) - Continued

- D. If the scope of work must be changed, Mechanical personnel (plant or contract) must discuss the proposed method with their plant supervisor and gain his approval. A new permit should then be requested from Operations.
- E. The area in which the work is to occur must be roped off by Operations with barrier tape available in the storeroom. This method of isolation shall be used to indicate that personnel who enter should do so with caution. In cases where entry is prohibited, this condition must be indicated by signs.
- F. The Safe Work Permit must be clearly posted at the job site.
- G. Prior to the issuance of a Safe Work Permit, the Operations Supervisor performing the work must survey the work area for safety equipment and test the closest/most accessible safety shower.
- H. Operations and Mechanical/Contract Supervisors must provide a safety reminder which related to the specific job, even though it might already be noted on the permit.
- I. For work being done in areas where safety showers are either unavailable or not functioning properly, the portable eyewash/shower available from safety must be used.
- J. Prior to using manual chipping methods to remove solidified P.A., the Mechanical/Contract Supervisor must review the work to insure that no spark hazards can occur. NOTE: Process Engineering must be contacted prior to performing this work. DO NOT wash this material to sewers without their approval.
- K. Where ladders are required to perform the work, they must be secured with the attached tie-off devices when so equipped or secured by a second employee.

III. CAUSTIC SODA

- A. Operations personnel must close and tag all appropriate valving, lockout, tag and try transfer pumps; and issue a blind list to insure continued safe operations. The blind list will be maintained in the Shift Supervisor's office. Steam tracing lines must be isolated, bled down, and tagged by Operations personnel. The locations of isolation valves shall be noted in the Operations log book to ensure that all systems are properly restored to service.
- B. After the necessary steps have been taken to isolate the plug, the contained pressure must be released in some controlled, safe fashion. In all cases, personal protective equipment must be used to protect personnel performing the work. The methods authorized to release confined pressure are:

Bleeders - This is the most preferred method. They, too, can be plugged but may be cleared using pressure, vacuum, or bent metal rod (with caution).

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This requirement also applies to long sections of plugged flanged piping that has been removed from its normal location. Multiple cuts require multiple pilot holes.

III. CAUSTIC SODA - Continued

- C. Permits must specifically describe the work to be done. Face shields, goggles, rain suits, rubber gloves and rubber boots which cover all body parts are required for work which could expose personnel to liquid or solid caustic containing materials. Personnel responsible for the performance of work must be reminded to treat all lines as if they contained pressure. A cooling device should be obtained from safety when personnel must wear full body protection and personnel may be overheated.
- D.
 - 1. Clearing of caustic containing materials from equipment and piping should be done with hot water and the above noted protective equipment as opposed to manual chipping methods. This should be done in an area that drains to a process sewer.
 - 2. If lines cannot be cleared by the above method, they should be taken to the pipe cleaning area and steam cleaned.
- E. The area in which the work is to occur must be roped off by operations with flags available in the storeroom. This method of isolation shall be used to indicate that personnel who enter should do so with caution. In cases where entry is prohibited, this condition must be indicated by "DO NOT ENTER" signs that can be obtained from the tool room.
- F. The Safe Work Permit must be clearly posted at the job site.
- G. Prior to issuance of the Safe Work Permit, the Operations Supervisor and personnel performing the work must survey the work area for safety equipment and test the closest/most accessible safety shower.
- H. Operations and Mechanical/Contract Supervisors must provide a safety reminder which relates to the specific job even though it might already be noted on the permit.

III. CAUSTIC SODA - Continued

- I. If the scope of work must be changed, Mechanical personnel (plant or contract) must discuss the proposed method with their plant supervisor and gain his approval. A new permit should then be requested from operations.
- J. For work being done in areas where safety showers are either unavailable or not functioning properly, the portable eyewash/shower available from Safety must be used.
- K. Where ladders are required to perform the work, they must be secured with the attached tie-off devices when so equipped or secured by a second employee.

IV. ACIDS (Typically Sulfuric and Dilute Hydrochloric)

- A. Although the plant has experienced very few problems with the sulfuric acid used at the wastewater lagoons or the dilute hydrochloric acid stream from the incinerator, there is potential for a serious injury to occur. The plant is currently using an outside contractor to acid treat the reactor condensers to improve heat transfer. This procedure shall also define requirements for safety in acid treating operations.
- B. After the necessary steps have been taken to isolate the plug, the contained pressure must be released in some controlled, safe fashion. In all cases, personnel protective equipment must be used to protect personnel performing the work. The methods authorized to release confined pressure are:

Bleeders - This is the most preferred method. They, too, can be plugged but may be cleared using pressure, vacuum, or bent metal rod (with caution).

Flanges - Flag off the work area. Break flanges on opposite side of the line.

IV. ACIDS (Typically Sulfuric and Dilute Hydrochloric)

Drill Hole in Pipe - If there are no bleeders or flanges to release the contained pressure, a small pilot hole must be drilled to the center of the pipe. (An air operated drill must be used for flammable materials). Once the contained pressure has been released, the pipe may be cut using cold methods at the location of the drilled pilot hole. This method can be used only with permission from the operations and mechanical superintendents.

This requirement also applies to long sections of plugged flanged piping that has been removed from its normal location. Multiple cuts require pilot holes.

- C. Operations personnel must isolate and tag all valves; lockout, tag, and try transfer pumps; and prepare the blind list necessary to make the equipment safe to work on. Operations will maintain the blind list in the Shift Supervisor's office.
- D. Permits must specifically describe the work to be done. Face shields, goggles, rain suits, rubber gloves and rubber boots which cover all body parts are required for work which could expose personnel to acids. Personnel responsible for the performance of the work must be reminded to treat all lines as if they contained pressure.
- E. The area in which the work is to occur must be roped off by operations with barrier tape available in the storeroom. In the case of acid treatment of reactor condensers or other types of heat exchange equipment cleaning, personnel shall not enter the flagged off area unless they are equipped as noted in "C" above. Roped off areas shall include all levels of the reactor(s) being treated and the acid handling equipment. For normal mechanical work on other acid handling equipment, entry into flagged off areas must be done with caution. If the area should not be entered, "DO NOT ENTER" signs shall be posted with flags. These signs are available from the tool room.

IV. ACIDS (Typically Sulfuric and Dilute Hydrochloric) - Continued

- F. The Safe Work Permit must be clearly posted at the job site.
- G. Prior to the issuance of the Safe Work Permit, the Operations Supervisor and personnel performing the work must survey the work area for safety equipment and test the closest/most accessible safety shower.
- H. Operations and Mechanical/Contract Supervisors must provide a safety reminder which relates to the specific job even though it might already be noted on the permit.
- I. For work being done in areas where safety showers are either unavailable or not functioning properly, the portable eyewash/shower available from Safety must be used.

V. VINYL CHLORIDE MONOMER (VCM)

- A. Operations must steam strip or water flush and recover the equipment to be opened to a vacuum if possible; isolate and tag valves; lockout, tag, and transfer pumps in preparation for blind installation as deemed necessary by the Operations Supervisor.
- B. After the necessary steps have been taken to isolate the plug, the contained pressure must be released in some controlled, safe fashion. In all cases, personal protective equipment must be used to protect personnel performing the work. The methods authorized to release confined pressure are:

Bleeders - This is the most preferred method. They, too, can be plugged but may be cleared using pressure, vacuum, or bent metal rod (with caution).

Flanges - Flag off the work area. Break flanges on opposite of the line.

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V. VINYL CHLORIDE MONOMER (VCM) - Continued

Drill Hole in Pipe - If there are no bleeders or flanges to release the contained pressure, a small pilot hole must be drilled to the center of the pipe. (An air operated drill must be used for flammable materials.) Once the contained pressure has been released, the pipe may be cut using cold methods at the location of the drilled pilot hole. This method can be used only with permission from the operations and mechanical superintendents.

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- C. Permits must clearly specify the work to be done. Fresh air masks and rubber gloves are required for all personnel who could be exposed to liquid/vapor VCM or residue from the reaction process.
- D. Operations is responsible to clear personnel from the areas around the section of piping to be opened and downwind. The area must also be roped off and "Potential VCM Exposure Area" signs posted.
- E. If the scope of work must be changed, Mechanical personnel (plant or contract) must discuss the proposed method with their plant supervisor and gain his approval. A new permit should then be requested from operations.
- F. Operations and Mechanical/Contract Supervisors must provide a safety reminder which relates to the specific job even though it might already be noted on the permit.
- G. Where ladders are required to perform the work, they must be secured with the attached tie-off devices when so equipped or secured by a second employee.

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V. VINYL CHLORIDE MONOMER (VCM) - Continued

- H. Pluggages which occur during winter operations in lines which contain water and VCM can create special problems. Operations personnel must be reminded that direct steam injection as well as external application of steam via hoses and hand-held lines can expose personnel to the sudden release of pressure and the expulsion of hot liquids. These winter alert type of conditions require operating personnel to carefully control personnel movement in areas where sudden release of hot liquids or VCM can occur. These methods will be reviewed by operating supervisors prior to the start of a shift.

VI. REACTOR DUMP, BLOWDOWN TANK DRAIN, AND SLURRY TRANSFER LINES

- A. Operations should attempt to clear the plug by backflushing or flushing with cold water.
- B. After the necessary steps have been taken to isolate the plug, the contained pressure must be released in some controlled, safe fashion. In all cases, personal protective equipment must be used to protect personnel performing the work. The methods authorized to release confined pressure are:

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VI. REACTOR DUMP, BLOWDOWN TANK DRAIN, AND SLURRY TRANSFER LINES -
Continued

This requirement also applies to long sections of plugged flanged piping that has been removed from its normal location. Multiple cuts require multiple pilot holes.

- C. If the plug cannot be cleared by the above method, field personnel must communicate this to the Shift Supervisor. The Supervisor shall then survey the problem in the field and specify the safety equipment and work method necessary to safely clear the line via a Safe Work Permit. Safety equipment requirements will vary depending upon the nature of the plug, VCM content and the temperature of the stream. Personnel should assume that VCM vapor is present and use fresh air equipment. If the stream is hot, face shields, goggles, rain suits, rubber boots and rubber gloves must be worn.
- D. The area in which the work is to occur must be roped off by operations with barrier tape available in the storeroom. This method of isolation shall be used to indicate that personnel who enter should do so with caution. In cases where entry is prohibited, this condition must be indicated by signs.
- E. The Safe Work Permit must be clearly posted at the job site.
- F. Operations is responsible to clear personnel from the areas around the section of piping to be opened and downwind. The area must also be roped off and "potential VCM exposure area signs posted.
- G. In the case of a plugged suction strainer in the blowdown tank drain, operator must wear the equipment specified in "B" above and loosen the filter bolts on the side opposite his position.

