

BP OIL -- TOLEDO REFINERY

Document Type: Procedure	Refinery Wide	Procedure No.: SAF 116
Effective Date: March 31, 2017	Barricading of Hazardous Activities	Revision No.: 5
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SCOPE	This procedure describes the appropriate use of barricades to protect personnel from entering areas where hazardous activities or conditions exist. Such activities include high pressure water blasting, unprotected overhead work, asbestos abatement, and countless other activities or hazards. This procedure applies to all work at the BP Husky Toledo Refinery Site where barricades are needed to protect personnel and property. This procedure establishes guidelines for the use and installation of protective and warning barricades by BP employees and contractor organizations for communications of hazardous/potentially hazardous conditions or for communicating general hazards in areas of concern.
HEALTH Special PPE & Special Hazards	Any area where an occupational exposure limit will be exceeded while performing work needs to be identified and barricaded to prevent unprotected and unauthorized entry.
SAFETY	This procedure is to provide guidance to barricade potentially hazards areas from unsafe conditions.
REFERENCE DOCUMENTS	OSHA 1910.144 Safety color code for marking physical hazards. OSHA 1910.335(b) Safeguards for personnel protection. OSHA 1926.200 Accident prevention signs and tags. OSHA 1910.145 Specifications for Accident prevention signs and tags. SAF – 082 Vehicle and Traffic Policy SAF – 042 Working at Heights MAINT-E-033 Cranes and Lifting.
SPECIAL MATERIALS & EQUIPMENT	Proper barricade tape or barricade materials necessary to warn of hazards or protect area.
QUALITY	N/A
ENVIRONMENTAL	N/A

OVERVIEW

The purpose of this procedure is to prevent injury and equipment damage by means of restricting access to hazardous areas and providing visual warnings of such hazards.

1.0 Definitions

- 1.1 Attendant: For short duration tasks, an attendant is a person assigned the sole duty to communicate hazard(s) in a specific area by using voice, whistle, flags, flashlight, or other methods. Attendants may be used in lieu or in conjunction with barricade tape to protect areas excluding lifting and hoisting as outlined later in this procedure
- 1.2 Barricade: A physical device to prevent or limit access to an area where a hazard exists.
- Permanent Barricades include those of permanent design (gates, roadblocks, metal protective barriers around manholes).
 - Temporary Baricades (plastic or polypropylene tape, scaffold tubing, wooden structures (i.e. sawhorses), portable flashing lights, and traffic cones/barrels).
- 1.3 Barricade Tag: A visible tag is required on all temporary barricades designed to explain:
- the date(s) and time planned for barricade
 - the hazards within the barricade
 - the Company erecting the barricade and the contact person
 - contact person's radio/telephone information
- 1.4 Examples of barricade tags are illustrated in Appendix B. Barricade tags are a BP - Fisher Safety Store stock item.
- 1.5 Barricade Tape: Ribbon or Flagging made from polypropylene or plastic
- 1.6 Lifting Activity: Any activity that includes but not limited to the use of cranes, hoists, mechanical devices such as chain falls, come-alongs, well wheels and the manual use of rope, See MAINT-E-033
- 1.7 4:1 Ratio: For every four feet high of elevation the barricade should be placed 1 foot out from the outer edge of the elevated work platform.

2.0 Types of Tape

- ___2.1 The following barricade tape designs are approved for general use at the refinery:
- Danger Tape – Red and black or Red and White (polypropylene/polyethylene tape/fabric) or Red is used where a hazard is known to exist. It is used to communicate an imminent hazard or dangerous condition that can result in death or serious injury. Unauthorized entry is prohibited. Examples include and are

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not limited to IDLH atmospheres, overhead work, scaffold erection, and confined spaces Caution Tape - Yellow and Black barricade tape which identifies areas which a potential hazard exists. It is used to communicate a condition requiring individual CAUTION or awareness. Examples include and are not limited to protected overhead work, trenching, and tripping hazards

___2.2 Specific barricade tape designs are approved for use and may be utilized and observed on the site:

- “Danger Asbestos” tape identifies areas containing a potential asbestos hazard, such as exposed insulation or abatement activities. Only qualified workers, donned in appropriate PPE, will be allowed to enter this area
- Yellow and Magenta “Caution Radiation Area” tape: To be posted by qualified inspectors and accompanied by radiation warning signs at specific distances according to the type of radiation activity. Do not cross or alter this barricade tape.
- Blue with white letters “Energized Electrical Work”. Refer to SAF 095, Working on or near Energized Electrical Equipment
- White with Red Letter “DO NOT ENTER WITHOUT OPERATOR PERMISSION.” Refer to SAF 092, Removal of Non-essential Personnel during Periods of Increased Risk e.g. Planned Unit Startup and Shutdown Periods

3.0 Responsibilities

___3.1 Operations Personnel: Establishes initial barricade boundaries for confined spaces, hazardous leaks or spills, and other operating conditions that are consistent with the hazards presented.

___3.2 Craft Foreman or Designee: Establishes safe boundaries for various maintenance or construction tasks in a unit or area including crane lifting and hoisting, welding, chemical handling, etc. Foremen are required to notify Operations, or establish joint approval, when boundaries are established.

___3.3 Contractors: Be knowledgeable of the BP Barricade procedure; recognize the hazards represented by the various barricade types, and erecting the proper barricades for the work and hazards they are creating. Contractors are required to notify Operations, or establish joint approval, when boundaries are established.

___3.4 All Employees: Be knowledgeable of the BP Barricade procedure, have thorough understanding of the various barricades types/colors/signage, recognize the hazards represented by each and ensure compliance with the procedure.

___3.5 Security and Emergency Response Personnel: Control pedestrian and vehicular traffic on roadways during emergency situations that allow safe/efficient egress for non-essential personnel and access for emergency vehicles.

___3.6 Attendent: Communicate to others in the work area and stop others from entering a hazardous area.

4.0 Barricade Placement

- ___4.1 Permanent barricades will be constructed of materials suitable to the task such as roadway guardrails, pre-cast concrete, structural steel, or other similar devices.
- ___4.2 For routine maintenance or construction tasks, barricades shall be erected and tagged prior to the actual beginning of work to avoid leaving an unprotected hazard.
- ___4.3 For construction or maintenance activities that will block traffic or close a road, see SAF-082 Vehicle and Traffic Safety Policy for specific requirements on road closures.
- ___4.4 For lifting activities and when required by the risk assessment, barricades will be placed to control the line of fire hazard area using a 4:1 ratio.
- ___4.5 All groups working inside a barricade are responsible for maintaining the barricaded area's orderliness/housekeeping.
- ___4.6 Scaffold tubing, structural steel, steel plate and/or lumber utilized as a barricade, and functions as a guardrail or hole cover shall meet the minimum requirements described in HSSE Procedure **SAF 042 Working at Heights**, or OSHA Subpart D Walking/Working Surfaces. All temporary/hard barricades must have an access point for entering and exiting the barricaded area.
- ___4.7 Barricade tape used as a temporary barrier shall be red, yellow or a specialty color according to the nature of the hazard and be maintained between 32 inches and 48 inches high.
- ___4.8 Barricade tape shall be attached to substantial structures that will adequately maintain the tape in position and not be adversely affected during the work period. Stanchions, large diameter piping and substantial building parts can be utilized for securing barricade tape. Do not tie barricade tape to hot pipes, small diameter conduit, instrument tubing, controlling valves, fire extinguishers, safety showers, fire monitors, etc.
- ___4.9 Portable/temporary barricade supports should be used in lieu of unit structures to reduce the barricaded area in order to maintain pedestrian passages when ever deemed necessary to protect a hazard. Portable/temporary supports shall be self supporting and designed to minimize tripping hazards.
- ___4.10 Barricades must have the hazard area surrounded on all sides. Permanent structures that prevent entry may be used as part of the barricade.
- ___4.11 Completed barricade tags are required on all sides of the barricaded area. The tags must contain information on the date(s) and time planned for barricade, the hazards within the barricade, the Company erecting the barricade, and the contact person with their radio telephone information. The tags should be legible, clearly visible from all approaches of the barricade when possible. Use of permanent/weatherproof markers to complete the barricade tag is required.
- ___4.12 For lifting activities, all persons working within the barricaded area must

be aware of line fire hazards created by the overhead hoisting/lifting operation.

5.0 Entering a Barricaded Area

- ___5.1 Entering a barricaded area shall be avoided unless there is a clear business purpose to do so and the area is verified safe to enter.
- ___5.2 Caution/yellow tape barricades may only be entered when the hazards of the area are known and understood, or has been discussed with barricade attendant, or owner of barricade; and it has been determined that the hazard will not impact the safety of the individual entering the area.
- ___5.3 Areas barricaded for radiation, high voltage, asbestos, lead, benzene or inert atmosphere work shall not be entered by anyone other than the authorized persons associated with the barricade.

WARNING
No person shall enter a radiation hazard barricade (yellow and magenta tape/rope) unless expressed permission is granted by the person(s) performing the radiography or a BP-Husky Radiation Safety Officer.

- ___5.4 Danger Tape/red tape barricades shall not be entered unless the person is assigned to the task within the barricade. Other individuals, not assigned to the task must:
 - a) Ensure they have thorough understanding of the hazards within the barricaded area AND,
 - b) Obtain verbal permission from the barricade owner/delegate AND,
 - c) Have the required PPE AND,
 - d) Assured the hazard will not impact the safety of the individual before entering.

WARNING
It is critical that no one crosses RED barricades without express approval by the barricade owner/delegate and proper PPE.

6.0 Barricade Removal / Overnight Approvals

- ___5.5 Entry into a permanent or temporary/hard barricade shall be made through the access gates provided or designated entry points. Never climb over barricades structures.
- ___6.1 Barricades and temporary supports will be removed at the end of the work assignment or work shift by the barricade erecting work group unless the hazards associated with the barricade still exist.
- ___6.2 If the barricade needs to remain in place, the work group shall communicate the need to the assigned Operations team. Operations shall review the barricaded area on a daily basis to ensure that it is

needed and still in use.

__6.3 If other work groups assume responsibility of the work area and barricade, they shall update the barricade tags and assume overall barricade responsibility.

__6.4 Removal of the tape and area needs to be seen and reviewed daily by operations.

Revision History

Revision history

The following information documents at least the last 3 changes to this document, with all the changes listed for the last 6 months.

Date	Revised By	Changes
9-30-14 and 1-15-15	Parker	Clarification on overhead hazards and dropped or falling object protection from incident investigation action items and manual lifts using rope – An MOC is needed so clarification can be communicated refinery wide.
1-15-15	Parker	Revision 4 was a clarification only of attendant description in 1.1.
3-8-17	Dan Hurst	Changed reference of SAF 036 to SAF 042 MOC# M2017300-001. Changed owner name of procedure.

Appendix A

These are examples of conditions that may require barricades:

Condition	Reference Procedure	Minimum Requirement	Description
Fresh Air Work Potential Exposures to H2S, Nitrogen, or NH3	Process Safety Standard No. 18 "Use of Nitrogen"	Danger Tape/ Red Tape	Safe boundaries shall be established, consistent with the exposure, shall surround areas requiring the use of fresh air or SCBA. Signs examples: Danger – Nitrogen in Use, Life Threatening Hazard Present, Oxygen Deficient Atmosphere – BA Required, Authorized and Trained Personnel Only
Nitrogen	Process Safety Standard No. 18 "Use of Nitrogen" SAF 086 Use of Nitrogen (N ₂)	Danger Tape/ Red Tape	Safe boundaries shall be established around work areas where streams containing nitrogen are being vented or drained. Supplemental Nitrogen signage must be utilized to warn of possible inert atmosphere area. Sign to display: Danger – Nitrogen in Use, Life Threatening Hazard Present, Oxygen Deficient Atmosphere – BA Required, Authorized and Trained Personnel Only
IDLH Atmospheres	SAF-109 Respiratory Protection Program	Danger Tape/ Red Tape	Safe boundaries shall be established, consistent with the exposure, shall surround areas requiring the use of fresh air or SCBA. Signs examples: DANGER IDLH HAZARD SUPPLIED AIR RESPIRATOR REQUIRED
Confined Space	SAF 032 Confined Space Entry	Confined Space Sign ant entry points	It is the Issuing Authorities responsibility to insure all openings into a vessel allowing entry have appropriate signage per SAF-032
Lead Abatement	Lead Management Program	Barricade Tape (color dependent on relevant hazards) and Signs	Barricade tape is posted around areas involving lead-based paint removal. Signage to display: WARNING LEAD WORK AREA POISON NO SMOKING OR EATING

Condition	Reference Procedure	Minimum Requirement	Description
Benzene		Danger Tape/ Red Tape	<p>Safe boundaries shall be established around areas where streams containing benzene are being vented or drained. Respiratory protection is required inside these areas. Contact a site Industrial Hygienist with questions regarding PPE and benzene exposure. Benzene Sign to display;</p> <p style="text-align: center;">DANGER BENZENE CANCER HAZARD FLAMMABLE - NO SMOKING AUTHORIZED PERSONNEL ONLY RESPIRATOR REQUIRED</p>
Asbestos Abatement	Asbestos O&M Program	Specialty Hazard - Asbestos Barricade Tape & Sign	<p>Approved asbestos barricade tape is posted around asbestos work areas. Contact the site Asbestos Coordinator with questions regarding asbestos. Signage to display:</p> <p style="text-align: center;">DANGER ASBESTOS CANCER AND LUNG DISEASE HAZARD AVOID CREATING DUST AUTHORIZED PERSONNEL ONLY RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED IN THIS AREA</p>
Radiation Sources	SAF 067 Radiation Safety Program and Procedure	Special magenta & yellow barricade tape with signs on each side <u>OR</u> magenta & yellow rope with signs every 10 feet	<p>Sources may be brought on site by outside contractors for inspection purposes. Use barricade tape and suitable signage hung on the tape.</p> <p>Damaged radioactive sources have special isolation/barricade requirements</p> <p style="text-align: center;">Refer to procedures for detailed information</p>
High Voltage	SAF 095 Working on or near Energized Electrical Equipment	Blue Barricade Tape with White Lettering	<p>Barricade tape posted around work on energized electrical equipment (50 volts or greater, nominal) should display</p> <p style="text-align: center;">Energized Electrical Work</p>
Excavations	SAF 054 Procedure for Ground Disturbance	Barricade Tape (color dependent on relevant hazards)	<p>Outside boundaries must be established with hard barricades or barricade tape around all excavations when leaving for any length of time. The type of barricade is dependent on the severity of fall exposure and the barricade-excavation distance.</p>

Condition	Reference Procedure	Minimum Requirement	Description
Roof Work, Walkways, Leading Edges and Open Sided Work Areas	SAF 042 Fall Protection	Danger Tape/ Red Tape	Floor holes, open sided floors, and platforms. Place Red barricade tape no closer than six feet (6') from the edge. Place hard guardrails where persons must work or pass closer than six feet (6') to the edge of openings
Overhead Work	SAF 042 Fall Protection SAF 076 Scaffolding Procedure	Danger Tape/ Red Tape or caution/Yellow Tape and/or Sign (color dependent on relevant hazards)	Where there is worker exposure below an elevated work area, safeguards must be in place. Permanent or temporary barricades are one option. Other methods include screens and canopy barriers. Overhead work includes platforms with grated floors, open sided floors and platforms, ladders, pipe racks, roofs, scaffold erection, steel erection, and suspended personnel platforms
Crane Lifts and Hoisting Areas	MAINT-E-033	Danger Tape/ Red Tape	Safe boundaries shall be posted, using red danger tape around the area under the load zone and the swing area of the crane. Attendants may protect the area for short duration, low risk jobs (such as forklift or carry deck lifts) The attendant must remain out of the line of fire and ensure all others working in the area are also out of the line of fire from falling objects. Barricade tape is required between the outriggers to protect people from the turntable area of the crane and the swing area of the crane when a load is going overhead..
Manual Lifting and Hoisting	SAF 116	Caution/Yellow Tape	Manual lifting/hoisting of small loads such as scaffold components, tool bags, tools, etc. using rope or chain falls. Caution/Yellow tape must be placed around the line of fire hazard area.
Roadblocks	SAF 082 Vehicle Safety Policy Emergency response Plan.	Assigned personnel and/or various road barriers	Roadblocks are erected and Gate closures are completed for plant emergencies or hazardous conditions. Specific requirements defined in each procedure. Barricades & Signs are available from Security
Arial Platform lifts being stored or staged in the road way	SAF 117 Safe use of Aerial Platform Lifts	Danger tape or barricades with danger tape.	Danger tape and/or barricades shall be placed around the aerial lift platform
Unit Startup and Shutdown	SAF 092 Removal of Non-essential Personnel during Periods of Increased Risk e.g. Planned Unit Startup and Shutdown Periods	White / Red Barricade tape as described in SAF 092	Roadways and occupied areas adjacent to process units are evacuated and closed during unit startup and shut down, Specific requirements defined in this procedure. Barricade tape to display: Do Not Enter Without operators Permission

Miscellaneous Leaks or spills	none	RED or YELLOW Barricade tape and/or signs	Areas where algae is present, refinery streams have spilled or hazardous materials have leaked/spilled should be marked with barricade tape. The barricade tape color and the size of the area depend on the hazard potential and quantity of the chemical
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Appendix B

Examples of barricade tags:



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