

HEALTH AND SAFETY PROCEDURE HSP 506 – FIRE PREVENTION PLAN

1.0 INTRODUCTION

This fire prevention plan has been prepared for the Westlake - Plaquemine Complex located in Plaquemine, Louisiana. The content of this plan is administered by the Westlake Health and Safety Department to comply with the requirements of OSHA, 29 CFR 1910.39.

Due to the nature of the business activity, there is an elevated risk for fire at the Westlake - Plaquemine Complex. Accordingly, all work activities at Westlake are controlled, closely monitored, and supervised to reduce and eliminate the potential for fire.

To meet established fire prevention objectives, Westlake pays careful attention to the three primary areas of fire prevention listed below:

Engineering - Engineering includes the planning of fire-safe design and construction processes. It also includes the review and interpretations of fire codes and the control of process hazards through the implementation of procedures, proper design principles, and the installation and placement of appropriate fire protection features and equipment.

Education - Education includes training and other activities to promote fire safety consciousness among employees and contractors. This is accomplished by informing employees and contractors how to recognize, control, and eliminate fire hazards in their work environment. It also includes training to ensure employees are prepared to safely and effectively respond to and manage a fire emergency.

Enforcement - Enforcement includes inspection and assessment practices to ensure fire prevention and protection measures are being followed. Enforcement deals with the activities of inspecting plant facilities to ensure compliance with Federal, State, and local codes; along with insurance and corporate requirements. Also, through inspection and observations, hazardous conditions and behaviors can be discovered and control measures can be employed before a fire occurs.

Fire prevention is the responsibility of all Westlake and Contract employees. Prior to receiving an initial job assignment, employees are provided with education and training on the risks and hazards they could encounter at Westlake (including the potential for fire, fire risk management, and actions for self-protection in the event of a fire).

The Westlake fire prevention plan is reviewed regularly and updated as needed to maintain compliance with regulations and standards; and to remain current with corporate fire prevention goals and objectives. Workplace inspection reports and any fire incident reports are maintained, reviewed and utilized as appropriate to provide information for the update and improvement of this plan. This plan is available for employee review at any time during their normal work hours.

HEALTH AND SAFETY PROCEDURE HSP 506 – FIRE PREVENTION PLAN

Fire Hazards

- Vinyl Chloride Monomer (VCM) - Located in VCM and PVC Plants
- Ethylene Dichloride (EDC) - Located in VCM Plant
- Ethylene – Located in VCM Unit and valve station yard
- Natural Gas – Located in Cogen Unit and valve station yard
- Hydrogen – Located in Cogen and C/C Units

2.0 FIRE CHEMISTRY

To understand how fire is prevented, it is important to understand the chemistry of fire. Fire is a chemical reaction involving the rapid oxidation or burning of a fuel. The fire tetrahedron provides a simple scientific explanation of the four components required for a fire to occur. By eliminating any one of the four components, fire cannot occur. These four components are explained below:

FUEL - The first component of the tetrahedron is fuel. Fuel can be any combustible material such as: solid (such as wood, paper, or cloth), liquid (such as gasoline) or gas (such as acetylene or propane). Solids and liquids generally convert to gases or vapors before they will burn.

OXYGEN - Another component of the tetrahedron is oxygen. Fire only needs an atmosphere with at least 16% oxygen.

HEAT - Heat is also a component of the tetrahedron. Heat is the energy necessary to increase the temperature of the fuel source to a point in which sufficient vapors are emitted for ignition to occur.

CHEMICAL REACTION - The final side of the tetrahedron represents a chemical reaction. When these components are brought together in the proper conditions and preparations, fire will develop. Take away any one of these elements, and the fire cannot exist or will be extinguished if it was already burning.

3.0 FIRE CLASSIFICATIONS

Fires are classified into four site specific groups according to sources of fuel that could be encountered at Westlake: Class A, B, C, and D are based on the type of fuel involved. Details of the four fire classification groups are explained below:

Class A - Ordinary combustible materials such as paper, wood, cloth and some rubber and plastic materials.

HEALTH AND SAFETY PROCEDURE HSP 506 – FIRE PREVENTION PLAN

Class B - Flammable or combustible liquids, flammable gases, greases and similar materials, and some rubber and plastic materials

Class C - Energized electrical equipment and power supply circuits and related materials.

Class D - Combustible metals such as magnesium, titanium, zirconium, sodium, lithium and potassium.

Class K – combustible cooking media such as oils, etc.

4.0 GENERAL GUIDELINES

All employees and contractors at the Westlake Complex will maintain fire prevention as a high priority during all work activities. Due to the nature of the business activities within the complex, fire prevention is critical to the safety of personnel working in the complex. General fire prevention guidelines for the Westlake Complex include the following:

- 4.1 **Fire Safety** - All work activities at Westlake will be conducted with a focus on preventing fire. All employees, contractors and visitors are responsible for maintaining a fire safe workplace.
- 4.2 **Administration** - The Westlake Health and Safety Department will manage the fire prevention program and ensure adequate resources are available to maintain a fire-safe work environment.
- 4.3 **Management of Change** - The Westlake Engineering, Maintenance, and Operations Departments will include fire prevention planning in their management of change and future upgrade planning processes. Fire prevention planning will be included in all facility upgrades and new construction.
- 4.4 **Contractors and Visitors** - All contractors and visitors will adhere to the Westlake Fire Prevention Plan when working in and/or visiting the complex.
- 4.5 **Corporate Direction** - Westlake Corporate Fire Prevention Guidelines will be incorporated into the Westlake Fire Prevention plan, as appropriate.
- 4.6 **Insurance Requirements** - Insurance requirements will be taken into account on all fire prevention and protection issues.
- 4.7 **Fire Scene Management** - The pre-assigned and designated On-Scene Incident Commander on each of the rotating shifts will implement and use NIMS-ICS; and will be the authority having jurisdiction when there is a fire emergency. The authority having jurisdiction will be authorized to establish and/or approve orders pertaining to fire control and fire hazards.

HEALTH AND SAFETY PROCEDURE HSP 506 – FIRE PREVENTION PLAN

- 4.8 Fire Protection Systems - All facility upgrades and new construction will be reviewed for fire prevention and fire protection needs by the Project Engineers for the Westlake Plaquemine Complex. All fire prevention and protection systems and features will be placed in an operational state prior to commissioning any facility upgrades and/or new construction.
- 4.9 Employee Training – Fire prevention training for employees working at the Westlake complex will include as a minimum this information:
 - 4.9.1 Fire prevention responsibilities relative to the job assignment.
 - 4.9.2 The locations and use of fire extinguishers in their work areas.
 - 4.9.3 How to activate the fire alarm and emergency alert systems.
 - 4.9.4 Facility evacuation routes and the location of assembly/shelter areas.
 - 4.9.5 Locations and types of materials and/or processes which pose potential fire hazards.
 - 4.9.6 Use and disposal of smoking materials.
 - 4.9.7 The importance of electrical safety.
 - 4.9.8 Proper use of electrical appliances and equipment (including cell phones).
 - 4.9.9 Unplugging of heat-producing equipment and appliances at the end of each work day.
 - 4.9.10 Correct storage of combustible and flammable materials.
 - 4.9.11 Safe handling of compressed gases and flammable liquids (where appropriate)
 - 4.9.12 Emergency drills will be conducted annually. Documentation of fire prevention training, drills and exercises for the Westlake Plaquemine complex will be maintained by the Emergency Response Supervisor and will be available for inspection by the authority having jurisdiction.

5.0 MANAGING FIRE HAZARDS AND IGNITION SOURCE

Fire prevention includes effective management of fire hazards and ignition sources. The following is a list of the requirements for managing and controlling fire hazards and ignition sources to ensure fire prevention goals and objectives are met at Westlake.

5.1 Construction and Location of Buildings

HEALTH AND SAFETY PROCEDURE HSP 506 – FIRE PREVENTION PLAN

- 5.1.1 Any new construction or major building renovations will follow the current codes adopted by the State of Louisiana including the NFPA Life Safety Code and the National Electrical Code.
- 5.1.2 All new buildings (portable/fixed and temporary/permanent) will receive a State Fire Marshal permit coordinated by the Emergency Response Supervisor or designee prior to occupancy.
- 5.1.3 The use and location of any portable trailers or buildings brought into the Westlake Plaquemine Complex for any reason must be reviewed and approved initially by the Westlake Emergency Response Supervisor.
- 5.2 Process Area Design, Construction And Operation
 - 5.2.1 All process area equipment, piping, and containment equipment will be designed and constructed with normal operating and emergency operating conditions in mind.
 - 5.2.2 Design standards will include appropriate safeguards to meet OSHA PSM requirements and ensure the safe release and disposal of materials to avoid overpressure via pressure relief valves, rupture disks, pressure and vacuum vents, blow-downs, and flare systems.
 - 5.2.3 Appropriate risk management and process hazard analysis engineering studies and inspections will be implemented on all required process equipment systems.
 - 5.2.4 Identified deficiencies will be repaired or the equipment will be replaced with the highest maintenance priority to prevent failure and the potential for fire or other safety concerns.
 - 5.2.5 Appropriate operating controls will be incorporated into process control systems to avoid over-fills, over-pressuring, and over-heating. This includes the use of automatic shutdowns, alarms, and interlocks.
 - 5.2.6 Operating procedures/guidelines will be developed and training will be provided to give Process Control Operators the necessary knowledge and skills to start up, shut down, monitor, control and intervene as necessary to prevent critical upset conditions and loss of containment.
 - 5.2.7 Routine inspection and surveillance of process equipment will be maintained by Process Control Operators as a means of

HEALTH AND SAFETY PROCEDURE HSP 506 – FIRE PREVENTION PLAN

detection and initiation of preemptive action to avoid fire or hazardous exposure.

5.3 Electrical Fire Safety

5.3.1 Any new electrical appliances, fixture, or wiring will conform to the current edition of NFPA 70, National Electrical Code, where applicable.

5.3.2 Existing installations not conforming to the current edition of NFPA 70 may continue to be used provided the lack of conformity does not present an unacceptable hazard as verified by an electrician.

5.3.3 Sufficient electrical wall outlets will be provided in office areas and all extension cords in use will be properly sized.

5.3.4 Any temporary electrical wiring must be inspected and approved by an electrician and must be replaced with permanent wiring installations conforming to the current edition of NFPA 70.

5.4 Inspection And Maintenance

5.4.1 Appropriate maintenance procedures/guidelines and training will be provided to maintenance personnel to ensure repairs consistent with original design and leak-tight re-assembly of equipment.

5.4.2 Process equipment will be routinely inspected to detect and preempt loss of containment due to corrosion, erosion or other causes.

5.4.3 Preventive maintenance of rotating machinery will be provided to preempt loss of containment due to seal leak or equipment failure.

5.4.4 Testing and preventive maintenance programs will be implemented to ensure the operations of critical controls and safety systems when needed.

5.5 Fire Protection Systems And Equipment

5.5.1 Fire protection equipment, such as fire extinguishers, fixed suppression systems, hose reels, fire detection systems, hydrants, monitors, etc., will be installed, tested, and

HEALTH AND SAFETY PROCEDURE HSP 506 – FIRE PREVENTION PLAN

maintained to meet requirements established by OSHA regulations, NFPA standards and Westlake HSP-503, *Fire Equipment Inspection and Maintenance*.

- 5.5.2 Records of the type, location, inspection and maintenance of fire protection systems and equipment will be retained and made available for review by the Westlake Emergency Response Supervisor.
- 5.5.3 Impairments to fire protection systems and equipment installed for the protection of the Westlake Complex will be managed according to the requirements established by Westlake HSP 504, *Fire Equipment Impairments*. Protection systems and equipment will be repaired, replaced, and returned to service as soon as possible to ensure the safety of personnel and property.
- 5.6 Combustible and Flammable Liquids
 - 5.6.1 Storage of combustible and flammable liquids will follow the general guidelines outlined in NFPA 30 and appropriate Westlake Engineering Guidelines.
 - 5.6.2 Approved safety cans must be used for the portable storage of flammable and combustible liquids within the complex.
 - 5.6.3 Appropriate metal safety cabinets will be used for the storage of multiple containers of flammable and combustible liquids.
 - 5.6.4 Portable fuel tanks will either be double wall constructed or have a secondary means of containment. Fuel tanks/drums used for fuel transfers will be properly bonded and grounded and will be placed in safe location with barrier posts to protect them from traffic.
 - 5.6.5 All portable fuel storage locations will be identified with appropriate signage.
- 5.7 Liquefied Petroleum Gases
 - 5.7.1 Storage and handling of liquefied petroleum gases will follow the general guidelines outlined in NFPA 58, *Liquefied Petroleum Gas Code* and appropriate Westlake Engineering Guidelines.
- 5.8 Welding, Cutting, Spark-Producing Tasks

HEALTH AND SAFETY PROCEDURE HSP 506 – FIRE PREVENTION PLAN

5.8.1 Any welding, cutting, use of torches, grinding or other spark-producing tasks will be managed and controlled by the safe work permit system in place and outlined in Westlake HSP 200, *Safe Work Permits*.

5.9 Compressed Gases

5.9.1 The in-plant handling, storage, utilization, maintenance and inspection of all compressed gases in cylinders, portable tanks, rail car tanks, or motor vehicle cargo tanks at the Westlake Complex will be in accordance with Compressed Gas Association guidelines and Pamphlet P-1-1965.

5.10 Heating Appliances

5.10.1 Only heating devices designed and approved for a specific purpose will be used for heat treating of vessels and piping at the Westlake Complex.

5.10.2 The use of open flame heaters and open element heaters will be controlled through the safe work permitting system.

5.11 Heat Producing Equipment

5.11.1 The Westlake Maintenance Manager is responsible for establishing and maintaining a regular scheduled inspection, maintenance and lubrication program for all heat-producing equipment to prevent and eliminate conditions that could result in or contribute to a fire.

5.11.2 Operators will routinely inspect heat producing equipment in their assigned work areas and any equipment discovered with extremely hot bearings, hot machine parts, or other operational equipment concerns will be promptly removed from service and repaired as necessary to minimize and eliminate the potential for a fire.

5.12 Static Electricity

5.12.1 Appropriate measures, including bonding and grounding will be taken according the guidelines established by NFPA 77, *Recommended Practice on Static Electricity* to eliminate the potential for static electricity sources contributing to a fire or explosion.

5.13 Housekeeping and Waste Management

HEALTH AND SAFETY PROCEDURE HSP 506 – FIRE PREVENTION PLAN

5.13.1 Good housekeeping is essential to controlling the accumulations of flammable and combustible waste materials at the Westlake Complex. As verified by Area Supervisors, all work areas will be maintained clean and free of the accumulation of waste and residual materials that can serve as the fuel for a fire. Each employee, contractor and visitor is responsible and accountable for the housekeeping in his/her work area as established in Westlake HSP-107, *Housekeeping and Hygiene Policy*.

5.13.2 Flammable and combustible waste will only be stored in designated areas/containers and will be disposed of in a timely manner to prevent accumulation and unsafe fire conditions.

5.13.3 Switch gear rooms, mechanical rooms, electrical cubicles, etc. where high voltage electrical switch gear is housed and maintained will not be used for the storage of any materials.

5.14 Lightning Protection

5.14.1 With the increased use of sensitive electronic equipment and greater awareness of structural protection, the need for certified lightning protection is increasing. Lightning protection systems at the Westlake Complex will be installed according to the requirements of NFPA 780, *Standard for the Installation of Lightning Protection* and listed by UL using the UL96A Standard.

5.15 Open Fires

5.15.1 Open fires within the Westlake Complex are strictly prohibited except open fires in a designated emergency response fire training area approved by the Facility Manager.

5.16 Warehouse Materials Storage And Handling

5.16.1 The Warehouse Supervisor is responsible for ensuring the storage and handling of materials in the warehouse are managed in a fire safe manner.

5.16.2 The storage of material in warehouses will be arranged such that adequate clearance is maintained away from heating surfaces, air ducts, heaters, flue pipes, and lighting fixtures.

5.16.3 Stored materials will not be piled within three (3) feet of beams or girders and shall be at least three (3) feet below sprinkler

HEALTH AND SAFETY PROCEDURE HSP 506 – FIRE PREVENTION PLAN

deflectors or discharge orifices of water spray, or other fire protection systems.

5.16.4 Surplus wooden pallets will not be stacked over six (6) feet tall. If feasible, surplus pallets will be stored outside and away from the main warehouse; or in separate buildings/shelter to reduce the risk of fire hazards.

5.16.5 Storage of chemicals and flammable/combustible liquids will be in a separate building designed for that purpose or will be separated in the warehouse from other materials and from incompatible materials.

5.17 Storage and Handling of Hazardous Materials

5.17.1 Safe storage and handling of hazardous materials at the Westlake facility will include the process of identification, temperature control, ignition control, ventilation, and segregation. Proper segregation is essential to prevent incompatible materials from inadvertently coming into contact. If incompatible materials were to come into contact, fire, explosion, violent reactions or toxic gases could result. General chemical storage and handling practices for Westlake will include the following:

5.17.1.1 Do not overfill containers;

5.17.1.2 Inspect and inventory all chemicals stored in each work area at least annually;

5.17.1.3 Check for damaged labels, outdated chemicals, damaged containers and peroxide forming compounds;

5.17.1.4 Store liquid hazardous chemicals below six feet;

5.17.1.5 Do not store incompatible chemicals in a common safety cabinet (e.g., acids with cyanides; acids with bases; oxidizing agents with organic compounds or solvents); and

5.17.1.6 For volumes of solvents larger than one pint, use safety cans instead of glass if the purity required does not mandate glass storage.

6.0 FIRE PREVENTION INSPECTIONS

HEALTH AND SAFETY PROCEDURE HSP 506 – FIRE PREVENTION PLAN

Fire prevention inspections are integrated into the routine work activities within the Westlake complex. The inspection process is incorporated into the following tasks:

- 6.1 Work Permitting System – The Westlake Safe Work Permitting system requires fire prevention inspections be performed prior to and at the completion of all permitted work tasks.
- 6.2 Work Area Inspections - Fire prevention inspections are incorporated into the routine safety inspections of work areas conducted by individual departments throughout the Westlake complex.
- 6.3 Review Process - Fire protection planning is a routine requirement of the Safety, Operating and Engineering Review process.
- 6.4 Process Startup and Building Occupation - A fire prevention inspection will be conducted prior to the start up of any new process unit and/or the occupation of any new structure. Additionally, a fire prevention inspection will be conducted prior to restarting a unit after major turnaround or building/structure modifications. The inspection will be conducted by an appropriate representative(s) from the involved process unit or building.

7.0 REFERENCES

Westlake–Plaquemine Complex–Health and Safety Procedure (HSP) Documents

- HSP 107, *Housekeeping & Hygiene Policy*;
- HSP 200, *Safe Work Permits*;
- HSP 500, *Emergency Response Plan*;
- HSP 500-A, *Shelter In Place , Head Count & Evacuation*;
- HSP 503, *Fire Equipment Inspection and Maintenance*; and
- HSP 504, *Fire Equipment Impairments*;

OSHA - 29 CFR 1910 Occupational Safety and Health Standards

- 29 CFR 1910.39 - *Fire Prevention Plans*

National Fire Protection Association (NFPA) Codes and Standards

- NFPA 10, *Standard for Portable Fire Extinguishers*
- NFPA 20, *Standard for the Installation of Stationary Pumps*
- NFPA 25, *Standard For The Inspection, Testing, And Maintenance Of Water-Based Fire Protection Systems*

HEALTH AND SAFETY PROCEDURE HSP 506 – FIRE PREVENTION PLAN

- NFPA 30, *Flammable and Combustible Liquids Code*
- NFPA 58, *Liquefied Petroleum Gas Code*
- NFPA 70, *National Electric Code*:
- NFPA 101, *Life Safety Code*;

Compressed Gas Association Guidelines and Pamphlet P-1-1965

Revision History

Rev	Changes	Approved	Date
1	Westlake Branding and Formatting	H. Garner	10/1/2018
2	Westlake Branding – inserted new logo. Removed cumene, phenol, acetone and alpha methyl styrene from section 1 as Fire Hazards. These chemicals are no longer in “Phenol Unit” as this unit was de-commissioned. Updated to include Class K fires. General review, no other edits.	H. Garner	2/8/2024