United States Environmental Protection Agency

Region 6 - Enforcement & Compliance Assurance Division

INSPECTION REPORT

Inspection Date(s):	May 5-9, 2025	
Media Program:	Air	
Regulatory Program(s)	Clean Air Act (CAA) § 112(r) and 40 Code of Federal Regulations (C.F.R.) Part 68 Chemical Accident Risk Management Plan (RMP)	
Company Name:	**Union Carbide Corporation/The DOW Chemical Company**	
Facility Name:	**St. Charles Operations**	
Facility Physical Location:	355 Hwy 3142	
(city, state, zip code)	Hahnville, Louisiana 70057	
Mailing address:	355 Hwy 3142	
(city, state, zip code)	Hahnville, Louisiana 70057	
County/Parish:	St. Charles	
Facility Phone Number	985-783-4387	
Facility Contact:	Charles Cuti	Air Specialist
	crcuti@dow.com	
FRS Number:	110018861793	
Identification/Permit Number:	1000 0009 4211/ Title V 2422-V11	
Media Identifier Number:	RMP 1000091506	
NAICS:	32511 Petrochemical Manufacturing	
SIC:		

Personnel participating in inspection:		
Kristen Latiolais	EPA Region 6 ECDAC	RMP Inspector
Howard Cole	EPA Region 6 ECDAC	RMP Inspector
Michael “Patrick” Spillman	EPA Region 6 ECDAC	RMP Inspector
Glen Jenkins	LA. Dept. of Environmental Quality	RMP Inspector
Jamie Vicknair	LA. Dept. of Environmental Quality	RMP Inspector
Christopher Smith	LA. Dept. of Environmental Quality	RMP Inspector
Charles Cuti	DOW	Air Specialist
Nattaya Boonsombat	DOW	RCL
Michelle White	DOW	Regulatory Affairs Lead
Rhonda Courville	DOW	Process Safety Manager
Michell LaFond	DOW	Process Safety Manager
Paula Gonzalez	DOW	ESS Manager
Brian Moore	DOW	Process Safety Manager
Monica Geoffrey	DOW	ODMS/Training Lead
Danielle Folse	DOW	Digital Implementation
Katelyn Kessinger	DOW	Fixed Asset Integrity Leader
Jason Knowles	DOW	ES&S Fire Protection Specialist
Jonathan Porche	DOW	ES&S Technologist
Kevin Gaubert	DOW	ES&S; FSO
Ryan Kinler	DOW	ES&S Leader
Deb Beck	DOW	HHS Delivery Leader
Jason Scioneaux	DOW	H&S Delivery Tech
Benjamin Oberski	DOW	Maintenance Leader

Ashley Bergeron	DOW	Engineering Ops Leader
David Laiche	DOW	Engineering Leader
Gus Becnel	DOW	Environmental Tech
Lolita Grant	DOW	Env. Compliance Ops Leader

EPA Lead Inspector Signature/Date	KRISTEN LATIOLAIS Digitally signed by KRISTEN LATIOLAIS Date: 2025.12.30 06:20:43 -06'00'	
	Kristen Latiolais	Date

Supervisor Signature/Date	KAYLA BUCHANAN Digitally signed by KAYLA BUCHANAN Date: 2026.01.07 11:03:23 -06'00'	
	Kayla Buchanan	Date

Section I – INTRODUCTION

PURPOSE OF THE INSPECTION

United States Environmental Protection Agency ("EPA") Region 6, inspector Kristen Latiolais ("I") arrived at the Union Carbide Corporation/ DOW Chemical Company- St. Charles Operations Facility ("SCO"), operated by Union Carbide Corporation in Hahnville, Louisiana at 8:00 AM on May 5, 2025, for an announced inspection. EPA and Louisiana Department of Environmental Quality ("LDEQ") inspectors met with Charles Cuti (Air Specialist) and his Environmental and Process Safety Team at the opening conference. I presented my credentials to Charles Cuti and his team and informed them that this was an EPA inspection to evaluate compliance with the requirements of the Chemical Accident Prevention Provisions of Title 40 of the Code of Federal Regulations ("C.F.R.") Part 68 under Clean Air Act ("CAA") § 112(r). An owner or operator of a stationary source that has more than a threshold quantity of a regulated substance in a process, as determined under 40 C.F.R. § 68.115, shall comply with the requirements of the CFR Part 68. Employee representatives were invited to participate in the inspection. The facility does not have union representation.

FACILITY DESCRIPTION

Union Carbide Corporation, a wholly owned subsidiary of the Dow Chemical Company, owns and operates the St. Charles Operations chemical manufacturing complex in Hahnville, Louisiana. It consists of over 15 different process units and operates 24 hours a day, 365 days a year and currently has 898 employees on site. The Facility produces a range of products including, but not limited to, acrylic acid, acrolein, various amines, butanol products, alkyloxylates, various glycols, low-pressure polyethylene, ethylene, propylene, and ethylene oxide.

PROCESS DESCRIPTION

SCO consists of an Oxide Plant, two Olefins Plants (Olefins 1 & 2), two low pressure polyethylene plants (LP-3 & LP-6), two acrylics plants (Acrylics 1 & 2), a Higher Glycols Plant, a methyl glycol ethers plant (MGE), an amines plant, two butanol plants (TB1 & TB2), an alkyloxylates production unit (EPARK), a specialty products unit (SPU) which produces methoxydihydropyran (MDP) and tetrahydrobenzaldehyde (THBA), and an energy systems plant, which supplies utilities in for form of steam, electricity, fuel gas and water to the facilities manufacturing plants. The facility also has environmental operations (EnvOps) for the handling and treatment of the facilities stormwater and produced wastewater streams, and site logistics for the bulk storage, loading and unloading of products and raw materials.

Site Logistics

Site Logistics is responsible for the bulk storage, loading and unloading of many of the products and raw materials associated with the SCO.

Oxides

Ethylene oxide (EO) is produced in the oxide plant by reacting ethylene and oxygen in the presence of a catalyst. Methane is used as a ballast gas. Since the reaction is exothermic, there is a tetralin heat transfer system that is used to recover the heat and generate steam.

Carbon dioxide, a byproduct of the reaction, is removed from the process by absorption in a potassium carbonate solution. The carbon dioxide is stripped from the solution and vented to the atmosphere through a catalytic oxidation unit, which burns the trace hydrocarbons. Impurities that enter the process with the ethylene, oxygen and methane are purged from the system to either a flare for destruction or the site fuel gas system. The EO is scrubbed from the system using water.

The EO is then stripped from the water and sent on to a series of distillation columns where the EO is concentrated and purified. The purified EO is sent to storage tanks in Site Logistics to either be shipped offsite in railcars as a product or used by other plants within SCO.

Olefins

The Olefins 1 & 2 plants consist of cracking furnaces, fractionation sections, furnace gas compressor areas, separation section, and a propylene refining system. A bank of fuel fired cracking furnaces, located in Olefins 1, and a second set located in Olefins 2, crack the inlet raw material into olefin products. The feed stock is brought into the cracking furnace at slightly above ambient temperatures. The raw material then combines with process steam as diluents. The combined stream is passed through a preheater section in the flue of the furnace for more efficient use of heat. This stream enters the radiant side of the furnace firebox where cracking takes place at temperatures of 800°C. The effluent is exchanged with water to generate high pressure steam and to cool down the furnace gas to approximately 350°C. The furnace gas is sent to the fractionation and quench areas for further cooling and for the beginning of product separation.

In the fractionation section of both Olefins 1 & 2 plants, the hot furnace gas is cooled with a quench oil cycle. The heavy pyrolysis fuel oil is removed and further refined. The furnace has from which the C10+ has been removed enters the quench cycle. A quench water cycle further cools the gas, and the dripolene product (C5+ products) is removed in a decanting operation. The crude dripolene is pumped to field storage. The remaining furnace gas (C5 and lighter materials) is routed to the furnace gas compressor.

In the furnace gas compressor areas of both the Olefins 1 & 2 plants, the gas stream is pressurized to at least 500 psig to aid in light product separation. Acid gases from the raw materials and acid gases generated in the pyrolysis operation are removed prior to entering the separation train. Heavier components are removed from the furnace gas using cooling water, and these components are added to the crude dipolene product.

In the separation stream of both the Olefin 1 & 2 plants, the furnace gas is cooled to subzero temperatures in order to separate light products. Hydrogen is removed in the cooling train. The

methane column makes a methane/C2 split to produce the main fuel has product. The C2 column makes a C2/C3 split. The C2 stream is sent to the ethylene column where the uncracked ethane is returned to the cracking furnaces for further cracking. The remaining ethylene/acetylene is sent to an acetylene removal unit for removal of the acetylene product via acetone stripping. The refined ethylene and acetylene are sent to a pipeline distribution system.

The material from the bottom of the C2 columns of both the Olefins 1 & 2 plants is further refined in a C3 column where the lighter products are routed to the propylene refining system. The propylene product is sent to customers, and the heavier propane is returned for further pyrolysis cracking. The material from the bottom of the C3 column is then sent to the C4 column for separation of the crude butadiene product from the remaining C5+ crude dripolene product.

The furnaces in both the Olefins 1 & 2 plants are fired with gas, consisting mostly of hydrogen and methane, generated in the process and supplemented with natural gas as required. For both the Olefins 1 & 2 plants, the process refrigeration is supplied by two large refrigeration compressors (one ethylene and one propylene cycle machine). Electricity is used to drive a majority of the pumps and refrigeration motors. Process heat is supplied by site and unit produced steam, and the process quench water cycle. Several steam driven turbines supply power driven equipment, including the furnace gas compressor.

LP3 & LP6 Polyethylene

In the Union Carbide low pressure polyethylene (UNIPOL) process, ethylene and an alpha-olefin comonomer are copolymerized in the presence of a proprietary catalyst to produce polymers having the desired melt indices, densities, and molecular weight distributions. UNIPOL is a registered trademark of Union Carbide Chemicals and Plastics Technology Corporation.

Monomers are fed continuously into a fluidized-bed reactor. Before entering the reactor, the monomers are subjected to impurity removal to prevent catalyst poisoning. The catalyst, which is prepared on site or purchased from a specific formulation of materials, is added separately.

The fluidized bed in the reactor is made up of granular polyethylene polymer product of the polymerization reactions. Circulated up through the bed, the gas stream passes out of the reactor through an enlarged top section designed to discharge most of the fine particles due to a decrease in velocity well below the particle terminal velocity. It then goes to a cycle compressor and through an external cooler before returning to the reactor.

Dry, free-flowing solid product is removed intermittently from the continuously growing fluid-bed through a discharge system in such a way as to keep the volume of the bed approximately constant. The reactor pressure is controlled at low pressures.

Although most of the unreacted monomer is recovered and recycled, some residual hydrocarbons are purged from the granular product so that it can be safely air conveyed. As a final process step, the material form is changed from granular to cylindrical pellet by forming a polymer melt and forcing the

melt through an underwater cutter while adding one or more proprietary additives to the product before it is stored or shipped. Pelletized materials are transferred to the loading area for shipment offsite as a commercial product.

Acrylics

The Acrylic 1 Unit consists of the "subunits" acrylic acid and acrolein. The production unit produces acrylic acid and acrolein by catalytic oxidation of propylene. Propylene, air and steam are mixed in prescribed rations and fed to the reaction section. The outlet gas from the reaction system is a mixture of acrylic acid, by-products, and unreacted propylene and propane.

The Acrylics 2 Plant consists of a heavy ester (HE) and methyl acrylate (MA) process. Currently, the principal products permitted are ethyl acrylate, and 2-ethylhexyl acrylate (refined heavy ester). Vents from the distillation columns, tanks and hot wells are collected in a closed vent system routed through two knockout pots to the thermal oxidizer, located in Acrylics 1 Plant.

Both hazardous and non-hazardous residues generated in Acrylics 1 & 2 are stored in six above ground, fixed roof storage tanks.

Higher Glycols

Diethylene glycol feed is further refined in the Higher Glycols Plant. Ethylene oxide and diethylene glycol are reacted together to produce triethylene glycol (TEG) and tetraethylene glycol (TTEG). The TEG and TTEG are refined into saleable products for shipment offsite to customers. Crude glycol streams are also sold and shipped offsite to customers.

MGE

Ethylene oxide, methanol and glycol ethers are reacted together at the Methyl Glycol Ethers (MGE) plant to produce glycol ether products of varying molecular weights. Production rates of the products are dependent upon the amount of each product that is returned to the reactor and the ethylene oxide feed.

The unused methanol in the reaction is recovered in a distillation column and reused in the process. There are three other distillation columns used to separate the glycol ether products. The three distillation columns utilize a vacuum jet system to operate below atmospheric pressure.

Amines

SCO produces, among many other products, ethyleneamines and ethanolamines, in three existing units, 6, 7 & 10.

Unit 6 produces ethyleneamines from organic materials and ammonia. The ethyleneamines are separated and purified through distillation to produce higher value products which are sent to storage tanks or downstream for further refining. Ammonia is recovered and recycled back to the process. Unit

6 emission sources include storage tanks, process vessels, scrubbers, column vents and fugitive emissions.

Unit 7 produces ethanolamines from ammonia and ethylene oxide, which are fed in prescribed ratios to the reaction section. The outlet stream from the reaction section is composed of ethanolamine's and unreacted ammonia and is sent to the ammonia recovery section where distillation is used to separate unreacted ammonia and water from the process stream. The unreacted ammonia is recycled to the beginning of the process, and the water is routed to the SCO WWTP. The liquid stream from the water column is sent to the refining section. Monoethanolamine, diethanolamines, and triethanolamines are distilled and sent to storage for distribution. Monoethanolamine are routed to unit 6 as feedstock. Unit 7 emission sources include columns, tanks, loading operations and fugitive emissions.

Unit 10 produces ethyleneamines from organic materials. The ethyleneamines are separated and purified through distillation. Ammonia, a by-product, is recycled back to and consumed in Unit 6. Unit 10 emission sources include storage tanks, loading operations, and fugitive emissions.

Butanol (TB1 & TB2)

Fresh natural gas and propylene feeds entering the units are purified. The purification includes natural gas desulfurization and propylene purification. Recycle streams also enter the clean-up system. Clean natural gas and recycles are fed to the synthesis gas generator. Clean propylene is fed to the hydro formylation reaction system. Synthesis gas is generated by a partial oxidation of natural gas and small liquid feed streams. Synthesis gas is fed to the hydroformylation system, while a purge gas is sent to the fuel gas header.

In the hydroformylation system, the synthesis has consisting of hydrogen and carbon monoxide, is reacted with clean propylene feed to form butyraldehyde. Aldehyde is separated from a catalyst solution and sent to the hydrogeneration reaction system. A vapor purge stream is fed to the fuel gas header to remove inerts from the system by introduction into the fuel gas system. Intermediate storage of the crude butyraldehyde is provided in the unit storage area.

In the hydrogenation system, the aldehyde is reacted with hydrogen over supported catalysts to form butanol. A hydrogen cycle purge is taken to the fuel gas header to remove inerts from the system. A series of distillation steps are used to refine the crude butanol into the n-butano and isobutanol products. Certain streams are recycled to the hydrogenation reaction system and purges are fed back to the synthesis gas generation unit. Intermediate storage of the butyraldehyde and crude butanol for steady operation is provided. Day tankage of the n-butanol and iso-butanol products is also provided. Pg 134 of permit.

Energy Systems
The energy systems plant supplies utilities in the form of steam, electricity, fuel gas and water to the plant's manufacturing units. The fuel utilized at the complex is fuel gas, a combination of natural gas and off-gas from some UCC processes.

Alkyloxylates Production Unit (EPARK)
The EPARK surfactant reactors are utilized for the production of nonylphenol ethoxylates, octylphenol ethoxylates, hydroxyl ethyl piperazine (HEP), secondary alcohol ethoxylates (15-S), methoxy polyethylene glycol (MPEGs) and castor oil ethoxylates. The resultant products are packaged or shipped offsite by railcar, tank truck, box truck or drums.

The reaction process begins by loading the desired amount of starter into the reactor. A base material is then added to the reactor as a catalyst for the reaction. Ethylene oxide (EO) is fed to the reactor and the reaction begins. Once the reaction has been completed, it is neutralized with acid. The end product is then transferred to rail cars. Several of the higher molecular weight surfactants are sold as aqueous blends due to the freezing potential of the neat surfactant.

The polyethylene glycol (PEG) reaction system is utilized for the production of high and low molecular weight PEGs. The reaction process begins by feeding diethylene glycol (DEG) to the reactor. Caustic is added to provide a catalyst for the reaction. EO is then fed to the reactor. This reaction will yield either a PEG starter material or a low molecular weight product. The low molecular weight product is neutralized in the reactor. PEG starter is used to produce the higher molecular weight PEG products. These products are sold as aqueous blends, molten materials or solid materials.

Specialty Products Unit (SPU)
Specialty Products Unit is composed of two production lines (Lines 1 & Line 4) that produce methoxydihydropyran (MDP). MDP is the product of the reaction between acrolein and vinyl methyl ether (VME). After passing the solution through reactors, the unreacted raw materials and diluents are stripped from the solution and recycled as feed to the system. The product-containing stream passes through a refining system where the product is refined and byproducts are removed. The refined MDP is then pumped to unit storage tanks. The normal vents and safety relief device discharges are routed to the unit flare.

Environmental Ops Unit
EnvOps unit includes facilities for the handling and treatment of the SCO's storm water and individual plant produced wastewater streams.

Section II - OBSERVATIONS

The documentation review began onsite with the SCO personnel as listed on the sign in sheets, **see Appendix 1.**

This inspection was a routine partial compliance evaluation conducted to determine compliance with the Clean Air Act (CAA) Risk Management Plan (RMP) regulations. A file review in LADEQ's EDMS was conducted before the on-site compliance inspection to determine compliance history. A review of the air permit conditions was conducted prior to the facility inspection.

Federal and State inspectors, conducted a walk-through of the facility, accompanied by facility representatives, to observe the facility process equipment, overall operations and major emission sources at the facility. Operators from the Emergency Response, Olefins 1, Olefins 2 and Oxides units assisted during the facility tour. The facility was in operation at the time of inspection.

40 C.F.R. Part 68 – CHEMICAL ACCIDENT PREVENTION PROVISION

Subpart A – General

40 C.F.R. § 68.10 Applicability- SCO is a stationary source that has more than a threshold quantity of regulated substances in their process. The facility is subject to the Occupational Safety and Health Administration's (OSHA) Process Safety Management (PSM) Standard (29 C.F.R. § 1910.119) and is therefore a RMP Program 3 facility.

40 C.F.R. § 68.12 General requirements – SCO submitted their most recent 5-year Risk Management Plan submission on February 2, 2021, with a voluntary update on February 19, 2024. The Risk Management Plan listed the following chemicals as present in processes in amounts greater than the threshold quantity, prescribed in the standard, and therefore classified as RMP Program 3 regulated substances by rule: 1,3-Butadiene, 1-Butene, 1-Pentene, 2-Butene, 2-Methylpropene, Acetaldehyde, Acrolein, Ammonia (Anhydrous), Butene, Ethane, Ethylene, Ethylene oxide, Ethylenediamine, Isopentane, Methane, Methyl mercaptan, Propane, Propylene and Vinyl methyl ether.

40 C.F.R. § 68.15 Management – SCO has developed a management system to oversee the implementation of the RMP Program elements. SCO provided an organizational chart that outlined the positions for the implementation of the individual elements of the RMP.

Subpart B – Hazard Assessment

40 C.F.R. § 68.20 Applicability – The owner or operator of a stationary source subject to this part shall prepare a worst-case release scenario analysis as provided in § 68.25 of this part and complete the five-year accident history as provided in § 68.42. SCO provided the worst-case scenario analysis and a five-year accident history in the RMP.

40 C.F.R. § 68.25 Worse-case release scenario analysis – EPA reviewed the Offsite Consequence Analysis- Worst Case scenarios for Acrolein and 1-Butene held in a covered process. SCO analyzed and reported a worse-case scenario for both chemicals in the RMP.

40 C.F.R. § 68.28(a) Alternative Worse-case Release Scenario Analysis – EPA reviewed the Offsite Consequence Analysis- Alternative release scenario for Methyl mercaptan, Acrolein, Ammonia, Ethylene oxide, Ethylenediamine and Isopentane held in a covered process. SCO analyzed and reported an alternative release scenario for all the chemicals listed in the RMP.

40 C.F.R. § 68.30 Defining offsite impacts-population – SCO used the most current census bureau population data available in February 2021 at the time of the RMP update.

40 C.F.R. § 68.33 Defining offsite impacts-environment –EPA reviewed the Offsite Consequence Analysis document with associated Marplot maps. SCO identified environmental receptors within a distance to endpoint, as required by § 68.22.

40 C.F.R. § 68.36 Review and update – SCO submitted their offsite consequence analysis with its RMP submission on February 2, 2021 and voluntary update on February 19, 2024. The next 5-year offsite consequence analysis submission is due on February 2, 2026.

40 C.F.R. § 68.39 Documentation – SCO operates eleven (11) RMP Program level 3 processes subject to this subpart and are required to prepare a worst-case release scenario analysis and complete the five-year accident history. SCO provided the hazard assessment information for the worst case and alternative case scenarios. This information includes the worst-case scenario for Polyethylene 1-Butene and alternative release scenarios for Polyethylene isopentane, Methyl Mercaptan, Ammonia, both Ethylene Oxide's and Ethyleneamine/Ethylenediamine. None of the hazard assessments for worst case or alternative case scenarios contained the rationale for selection of the vessel or pipeline and substance used in the scenario **[AOC 1- 68.39(a) & (b)].**

40 C.F.R. § 68.42 Five-year accident history – SCO reported one accidental release in their RMP submission on February 3, 2023.

Subpart D – Program 3 Prevention Program

40 C.F.R. § 68.65 Process safety information (PSI) – SCO maintains a variety of technical documents used to maintain safe operation of the processes. These documents address chemical properties and associated hazards, limits for key process parameters and specific chemical inventories, and equipment design basis/configuration information. Departments within the facility are assigned responsibility for maintaining and updating process safety information. Chemical-specific information, including exposure hazards and emergency response/exposure treatment considerations, is provided in safety data sheets (SDSs). In addition, the facility has documented safety-related limits for specific process parameters (e.g., temperature, level, composition) in the operation manuals. SCO ensures that the process is maintained within these limits by using process controls and monitoring instruments, operating procedures, and protective instrument systems (e.g., automated shutdown systems). SCO also maintains numerous technical documents that provide information about the design and construction of process equipment.

While reviewing the 2015 and 2019 facility siting (Occupied Building Impact Study), SCO failed to document the process safety information for the design of ventilation systems located in electrically classified (Class 1 Division 2) areas such as but not limited to buildings 334, 340, 353, 430, 451 635, and 636 in accordance with RAGAGEP NFPA 496 and good engineering practice. **[AOC 2- 68.65(d)(1)(v)]**

SCO also failed to document the effectiveness of ventilation systems present in buildings designated as shelter-in place locations by performing suitable inspections and tests (e.g., pressure tests) to ensure that toxic and flammable gases and vapors will not enter buildings. SCO's shelter-in-place maintenance program requires field walks of the shelter-in-place buildings at five-year intervals. Five-year maintenance inspection intervals, which do not include pressure or alarm testing, are inadequate and insufficient to ensure proper sealing of doors and windows or gaps in walls to confirm there is no infiltration of toxic and flammable gases and vapors. during a release event. **[AOC 2- 68.65(d)(1)(v)]**

During the facility walkthrough, the inspection team identified refinery process equipment and piping associated with the Olefins 1 & 2 and Oxides covered process areas that were not labeled, or color coded to indicate contents, direction of flow and potential hazards, per ASME standard A13.1(2023). As a result, this equipment does not conform with RAGAGEP pursuant to 40 CFR §68.65(d)(2) **[AOC 3- 68.65(d)(2)].**

40 C.F.R. § 68.67 Process hazard analysis (PHA) – SCO has a program to ensure that hazards associated with the various processes are identified and controlled. Within this program, the covered process is systematically examined to identify hazards and ensure that adequate controls are in place to manage those hazards. SCO primarily uses the RCPHA Checklist, HAZOP, Layer of Protection Analysis (LOPA), the Dow Fire and Explosion Index, the Dow Chemical Exposure Index, and Reactive Chemicals techniques to perform these evaluations. These analyses are conducted using a team who has operating, maintenance, experience, and engineering expertise. This team identifies and evaluates hazards of the process as well as recommends accident prevention and/or mitigation measures when the team believes such measures are necessary.

The process hazard analysis was not appropriate to the complexity of the process as it did not correctly identify, evaluate, and control the hazards involved in the process. In these occupancy criteria evaluations, the site identifies vulnerable employee occupied structures and the hazards they may be subjected to, but rather than providing protection to either the structures or employees through measures like employee relocation, spacing, or protective construction, the site simply accepts the employee exposures as adequate based on their own acceptable occupancy criteria. Occupancy criteria evaluations as the basis for a site's determination that adequate protection has been provided for employees in occupied structures which have been identified as being potentially subject to explosions, fires, ingress of toxic materials or high energy releases is not acceptable. Building occupancy should not be applied as a metric to justify decisions to not modify buildings to make them safer.

For the 2015 and 2019 facility siting (Occupied Building Impact Study), SCO's Response to PHA Recommendations: 3.4.2 regarding St. Charles Operations' Wood Frame or Modular buildings 1, 2, 5, 6, 7, 2111, 2117, 2252, 3234,3460, 232, 4642, 5114, 541, and 5331 (interim' guidance for low occupancy

buildings) occupancy criteria evaluations as the basis for a site's determination that adequate protection has been provided is not appropriate for the complexity of the process. **[AOC 4- 68.67(a)].**

For the 2015 and 2019 facility siting (Occupied Building Impact Study), SCO failed to address the installation of engineering controls applicable to the hazard resulting from the release of extremely toxic and flammable chemicals. Such hazard controls for buildings, including shelter-in-place locations, would incorporate positive pressure ventilation systems and detection methodologies such as alarms and sensors **[AOC 5- 68.67(c)(3)].**

SCO also failed to address, resolve or mitigate the hazards posed by toxic chemicals and explosions resulting from the uncontrolled release of flammable chemicals. There has been no corrective actions, mitigations, or resolution to address the major findings of the Occupied Building Impact Study for St Charles Operations 2015 and 2019; identified in the study as follows **[AOC 6- 68.67(c)(5) & (e)]:**

i. Table 5- Sources of Significant Overpressure Impact to Occupied Buildings
Table 5 presents 50+ buildings that have been identified with the potential for significant damage (building damage level of 3 or greater) due to overpressure along with the source of the Process Block that has the potential to cause such damage levels. It represents buildings impacted by blast scenarios from flammable gases and vapors.

ii. Table 2- Summary of St. Charles Occupied Buildings Subject to Toxic Impact
Table 2 presents 50+ occupied buildings subject to toxic impact, a toxic concentration equal to or greater than AEGL-3 or ERPG-3 / EEPG-3.

iii. Table 3- Summary of St. Charles Occupied Buildings Subject to Flammable Impact.
Table 3 presents 50+ occupied building subject to a flammable impact; materials with potential to reach the Lower Flammable Limit (LFL). A building was considered subject to flammable impact if the scenarios modeled by this study indicated that a concentration equal to a lower flammable limit could be achieved.

iv. Toxic and flammable impacts are present in the evacuation assembly areas.

v. 33 of 37 shelter in place buildings are in a toxic impact area
23 of 37 shelter in place buildings are in an overpressure impact area
29 of 37 shelter in place buildings are in a flammable LFL impact area

vi. Union Carbide failed to promptly address a finding from the “Union Carbide Response to PHA Recommendations, 3.4.2 regarding “interim” guidance for low occupancy buildings which has not been updated since 2015.

When reviewing documentation corresponding to the 2019 RCPHA for the EXP unit, SCO failed to retain documentation for the process hazard analysis and updates or revalidations for action item 114197 of

the 2019 EXP RCPHA EAT report. The facility retained the actual documentation of the PHA but the action items and gap closure documents had been deleted by the system and were not recoverable. Thence, not available for review **[AOC 7- 68.67(g)].**

40 C.F.R. § 68.69 Operating procedures – SCO maintains written procedures that address various modes of process operations, such as unit startup, normal operations, temporary operations, emergency shutdown, normal shutdown, and initial startup of a new process. A section of the operating manual contains safe operating conditions and limits for each production area as required which is consistent to process safety information. These procedures can be used as a reference by experienced operators and provide a basis for consistent training of new operators. Procedures are maintained current by revising them as necessary and certified on an annual basis to reflect changes made to the process. In addition, the facility's operating procedures provide guidance on responding to events in which safe operating limits have been exceeded. The written operating procedures are readily available to operators to use as necessary to safely perform their job tasks.

EPA reviewed several operating procedures which included: initial startup, normal operations, temporary, emergency shutdown, emergency operations, normal shutdown, and startup following a turnaround. The following was identified:

SCO failed to develop and implement written operating procedures that provide conditions under which emergency shutdown is required for the following procedures, including but not limited to **[AOC 8- 68.69(a)]**:
- Emergency- Common-Shutdown for Evacuation (4 hour)
- Emergency- Planned- Common- Shutdown for Evacuation (Rapid).
- Emergency- Planned- LEO- OX1- Plant Power Failure

SCO failed to develop and implement written operating procedures that provide consequences of deviation and steps required to correct or avoid deviation for the following procedures, including but not limited to **[AOC 8- 68.69(a)]**:

- Critical- Clearing the EO Derivatives header to Oxide Shutdown Tank
- Critical- HG- Higher Glycol Reactor and DRC Startup
- Critical- LEO- HG- Flash Column Startup
- Critical- LEO- OX1- EO Refining Shutdown
- Critical- LEO- OX1- Reaction System Shutdown
- Critical- MGE- Reaction System Start Up
- Routine- HG- Derivative Unit Oxide Feed Header Operation
- Emergency- Common-Shutdown for Evacuation (4 hour)
- Emergency- Planned- Common- Shutdown for Evacuation (Rapid).

SCO failed to develop and implement written operating procedures that provide the proper safety and health considerations or precautions necessary to prevent exposure for the following procedures, including but not limited to **[AOC 8- 68.69(a)]**:

- Critical- Clearing the EO Derivatives header to Oxide Shutdown Tank
- Critical- HG- Higher Glycol Reactor and DRC Startup
- Critical- LEO- OX1- Reaction System Shutdown
- Emergency- Common-Shutdown for Evacuation (4 hour)
- Emergency- Planned- Common- Shutdown for Evacuation (Rapid)
- Routine- HG- Derivative Unit Oxide Feed Header Operation

In the Ethoxylates Unit, SCO failed to ensure that an operating procedure, “Manually Relieving Ethylene Oxide Header Pressure", provided clear instructions for safely opening the manual vent line to the flare on high-high pressure on the ethylene oxide (EO) line, if the oxide block limit automatic block valve is closed; as identified in the EXP 2022 compliance audit **[AOC 8- 68.69(a)]**.

SCO failed to ensure that four (set-up), startup (Return to Operations) operating procedures for returning the following equipment to service were not missing procedure elements such as the medium used to leak test, the minimum testing time and the hazards and precautions if the test fails; as identified in the 2022 Ethoxylates compliance audit. Each procedure was missing different elements. C-570 Acetic Acid Scrubber Set-up, C-561 Sodium Hydroxide Tank Set-up, C-507 Phosphoric Acid Tank Set-up and C-1101 Surfactant Reactor Set-up **[AOC 8- 68.69(a)].**

40 C.F.R. § 68.71 Training – SCO has implemented a training program for all employees involved in operating a process. All operations employees receive basic training in the facility operations. After operators demonstrate (e.g., through tests, skills demonstration) having adequate knowledge to perform the duties and tasks in a safe manner on their own, they can work independently. In addition, all operators periodically receive refresher training on the operating procedures to ensure that their skills and knowledge are maintained at an acceptable level. As required per 40 C.F.R. 68.71, refresher training is conducted every three years or more often if determined to be necessary.

40 C.F.R. § 68.73 Mechanical integrity (MI) – SCO uses established practices and procedures to maintain pressure vessels, piping systems, relief and vent systems, controls, pumps and compressors, and emergency shutdown systems in a safe operating condition. The basic aspects of this program include developing written procedures, performing and documenting inspections and tests, correcting identified deficiencies, and applying quality assurance measures. Inspections and tests are completed to evaluate equipment functioning as compared to that intended, and to verify that equipment is within acceptable limits (e.g., adequate wall thickness for pressure vessels). If a deficiency is identified, the deficiency is corrected before placing the equipment back into service (if possible), or a plant assessment team will review the use of the equipment and determine what actions are necessary to ensure the safe operation of the equipment.

SCO failed to implement its mechanical integrity program by not ensuring that the following pressure safety valves were inspected and tested at the required a 24-month frequency interval **[AOC 9-68.73(b)]:**

1. EO108 PG-423R2 Exhausting Column
-PSV 423R2-102 tested 9/30/2020 and then again on 9/19/2024
-PSV 423R2-202 tested 10/21/2020 no additional test has been performed
-PSV 423R2-302 tested 9/25/2020 and then again on 9/14/2023

2. EO108 PG-463 Ethylene Oxide Purification Column
-PSV 463-01 tested on 8/15/2017 no additional test has been performed

3. EO108 PG-D-469 EOPC Reflux Accumulator
-PSV-463-101 tested 8/12/2020 and then again on 8/24/2023
-PSV-463-201 tested 9/9/2020 and then again on 9/13/2023
-PSV-463-301 tested 10/23/2020 and then again on 10/11/2023
-PSV-463-401 tested 10/15/2020 and then again on 10/26/2023

4. E108-PG-E-424R2 Exhausting Column
-PSV 423-R2-102 tested 9/30/2020 and then again on 9/19/2024
-PSV 423-R2-202 tested 10/20/2020 no additional test has been performed
-PSV 423-R2-302 tested 9/25/2020 and then again on 9/14/2023

5. PG-E-464 EOPC Reflux Drum and Condenser
-PSV-463-101 tested 8/13/2020 and then again on 8/24/2023
-PSV-463-201 tested 9/9/2020 and then again on 9/13/2023
-PSV-463-301 tested 10/23/2020 and then again on 10/11/2023
-PSV-463-401 tested 10/14/2020 and then again on 10/26/2023

6. PG-E-108-465 EOPC Reboiler
-PSV-463-101 tested on 8/13/2020 and then again on 8/21/2023
-PSV-463-201 tested 9/9/2020 and then again on 9/13/2023
-PSV-463-301 tested 10/23/2020 and then again on 10/11/2023

7. MS-103 ASS Decanter
-RV1-108R2 – tested 5/8/2022 no additional test has been performed

8. TT-209R no inspection and testing results provided on pressure safety valve-PSV 2206 which is identified in the P&ID

SCO failed to develop periodic maintenance schedules for two Safety Instrumented Systems as required by LPP 15.2. All components of Safety Instrumented Systems shall be included in a preventive maintenance program. This was identified i**n** the 2022 Oxide 1 MGE HG compliance audit **[AOC 9-68.73(b)]**.

SCO failed to ensure that inspection and tests were performed in November 2021 on pressure vessels C-1301 Rx3 and C-561 NaOH tank and equipment identified as Group 9; as identified in the 2022 Ethoxylates compliance audit **[AOC 10- 68.73(d)(1)].**

In April 2023 an ultrasonic thickness assessment was done and projection plate points 12 and 27 on Acrylic Acid Storage Tank TK-2514 were determined to have thicknesses results below the action level, as identified in the 2022 Ethoxylates compliance audit **[AOC 10- 68.73(d)(1)].**

SCO also failed to calculate the minimum thicknesses for Acrylic Acid Storage Tank TK-2514 per API 653 and document the results and resolution as recommended; as identified in the 2024 Site Logistics compliance audit **[AOC 10- 68.73(d)(1)].**

SCO failed to ensure that the following pressure safety valves were inspected and tested every 5 years in accordance with API 510-2018 Section 6.6.3 Testing and Inspection Intervals **[AOC 11- 68.73(d)(2)]**:

i. Poly C-1007 Butane Storage Bullet; PSV-1007-60 was last inspected April 15, 2020, and was due for inspection on April 15, 2025.
ii. Poly High Pressure Condenser Exchanger E-5610; PSV 5608-60, 5610-60 no inspection and testing data was provided for these pressure safety valves.

SCO failed to ensure that the following pressure vessels received an internal inspection every 10 years in accordance with API 510 2018 Section 6.5 Internal, On-stream, and Thickness Measurement Inspections **[AOC 11- 68.73(d)(2)]**:

i. Poly C-2113 Ethylene Dryer last internal inspection was August 20, 2013 and was due for its next internal inspection on August 20, 2023.
ii. Poly C-4101R Product Chamber #1 last internal inspection was March 2, 2013 and was due for its next internal inspection on March 2, 2023.
iii. Poly C-4408R Product Blow Tank #2 last internal inspection was March 26, 2013 and was due for its next internal inspection on March 26, 2023.
iv. Ethylene Oxide EO108 PG-D-469 EOPC Reflux Accumulator
No internal inspection has been performed.
v. Acrolein AS-251R Refined Acrolein Column
No internal inspection has been performed since March 2006
vi. AS-302R MAIN ACETYALDEHYDE COLUMN

Failure to conduct a complete and comprehensive internal inspection; only a limited internal inspection was conducted on May 5, 2017: "Limited inspection was done to vessel not being cleaned. Approximately 80% of this vessel was covered with product adhered to the surface. Nozzles were packed with product and surface was not visual.

SCO failed to ensure that ultrasonic testing/non-destructive examinations were performed by the next calculated due date and that the following pressure vessels were not operated beyond their calculated

thickness minimum date in accordance with SCO's mechanical integrity program and and/or API 510 Section 6.7 **[AOC 12- 68.73(d)(3)]:**

6.7 Deferral of Inspections, Tests, and Examinations
Inspections, tests, or examinations for pressure vessels and associated pressure-relieving devices that cannot be completed by their due date may be deferred for a specified period, subject to the requirements in the following sub-sections. Pressure vessels or pressure-relieving devices that are operated beyond the due date without a valid deferral in accordance with these requirements are not permitted by this code.

1. Ethylene Oxide E108 Exhausting Column PG-423R2

CML	Corr. Rate	Retire Thick.	Thick. Reading	Date	Next Inp. Due Date
10.06 Shell@NOZ-E N	6.9	0.438	0.462	8/19/2020	12/19/2023
10.07 SHELL@NOZ-B N	6.8	0.438	0.467	8/19/2020	4/23/2025
12.08 SHELL@NOZ-S N	7.3	0.438	0.464	8/19/2020	3/15/2024
19.08 SHELL@NOZ-S N	5.23	0.438	0.464	8/19/2020	6/15/2024

2. EO108 PG463 Ethylene Oxide Purification Column

CML	Corr. Rate	Retire Thick.	Thick. Reading	Date	Projected t-min	Next Inp. Due Date
Shell E	6.3	0.803	0.804	3/19/2021	5/26/2021	4/27/2021

3. Poly C-2113 Ethylene Dryer

CML	Corr. Rate	Retire Thick.	Thick. Reading	Date	Projected t-min	Next Inp. Due Date
3.02 Head-E	2.7	1.134	1.113	8/30/2022	11/19/2014	11/19/2014
3.03 Head-C	6.1	1.134	1.082	8/30/2022	2/19/2014	2/19/2014
3.04 Head-S	0.3	1.134	1.132	8/30/2022	12/30/2015	12/30/2015
3.05 Head-W	0.1	1.134	1.120	8/23/2012	8/24/1987	8/24/1987

4. Poly C-4101R Product Chamber #1

CML	Corr. Rate	Retire Thick.	Thick. Reading	Date	Projected t-min	Next Inp. Due Date
003.01 Shell-N	5.2	1.053	1.067	2/23/2023	11/28/2025	6/28/2024
003.02 Shell-E	15.1	1.053	1.066	2/23/2023	1/3/2024	7/30/2023
003.04 Shell-W	4.2	1.053	1.064	2/23/2023	1/15/2026	8/4/2024

5. Ethoxylates Park C-1101 Reactor #1

CML	Corr. Rate	Retire Thick.	Thick. Reading	Date	Projected t-min	Next Insp. Due Date
1.01 12” Nozzle U-T	63.8	0.230	0.151	12/9/2015	12/9/2015	12/9/2015
1.02 12” Nozzle U-E	63.6	0.230	0.144	12/9/2015	12/9/2015	12/9/2015
1.03 12” Nozzle U-B	53.7	0.230	0.147	12/9/2015	12/9/2015	12/9/2015
1.03 12” Nozzle U-P	63.2	0.230	0.155	12/9/2015	12/9/2015	12/9/2015
2.01 1.5” Nozzle L-T	4.9	0.120	0.108	12/9/2015	12/9/2015	12/9/2015
2.02 1.5” Nozzle L-E	5.1	0.120	0.103	12/9/2015	12/9/2015	12/9/2015
2.03 1.5” Nozzle L-B	5.1	0.120	0.103	12/9/2015	12/9/2015	12/9/2015
3.01 12” Nozzle L-T	5.0	0.230	0.106	12/9/2015	12/9/2015	12/9/2015
3.02 1.5” Nozzle L-E	5.0	0.120	0.105	12/9/2015	12/9/2015	12/9/2015
3.03 1.5” Nozzle L-B	4.7	0.120	0.111	12/9/2015	12/9/2015	12/9/2015
3.04 1.5” Nozzle L-W	4.8	0.120	0.109	12/9/2015	12/9/2015	12/9/2015
4.01 1.5” Nozzle P-T	3.1	0.120	0.142	12/9/2015	2/13/2023	7/12/2019
4.02 1.5” Nozzle P-NE	3.0	0.120	0.143	12/9/2015	8/8/2019	10/13/2017
4.03 1.5” Nozzle P-B	3.2	0.110	0.139	12/9/2015	11/1/2021	11/20/2018

6. Ethoxylates Park C-1201 Reactor #2

CML	Corr. Rate	Retire Thick.	Thick. Reading	Date	Projected t-min	Next Insp. Due Date
024.03 8" NOZ W-S	9.1	0.180	0.326	3/14/2016	No date	4/2/2024
030.01 4" NOZ BB-N	26	0.875	0.928	3/14/2016	3/29/2018	3/21/2017
030.02 4" NOZ BB-E	25.6	0.875	0.929	3/14/2016	4/23/2018	4/3/2017
030.03 4" NOZ BB-S	27.8	0.875	0.923	3/14/2016	12/5/2017	1/23/2017
030.04 4" NOZ BB-W	28.8	0.875	0.920	3/14/2016	10/4/2017	12/23/2016

7. Ethoxylates Park C-1301 Reactor #3

CML	Corr. Rate	Retire Thick.	Thick. Reading	Date	Projected t-min	Next Insp. Due Date
004.01 TOP HEAD-N	12.9	0.940	0.992	6/25/2021	No date	6/30/2023
004.02 TOP HEAD-E	13.1	0.940	0.994	6/25/2021	No date	7/17/2023
004.03 TOP HEAD-S	12.5	0.940	0.987	6/25/2021	3/28/2025	5/12/2023

8. Acrolein AS-202R

The following ultrasonic testing results for nozzles located on AS-202R have exceeded their calculated next inspection due date (4/28/2016) and thickness minimum date (4/28/2016) at the following condition monitoring locations:

27.01-27.04 28.03-28.04 29.01-29.04 31.01-31.02 31.04 34.01-34.04
35.01-35.04 37.01-37.03 39.02-39.04 43.01-43.03 44.01-44.04
46.03-46.04 48.01-48.04 50.01-50.04 54.01-54-04 55.01

The following ultrasonic testing results for nozzles located on AS-202R have exceeded their calculated thickness minimum date and next inspection due date at the following condition monitoring locations:

CML	Projected t-min	Next Insp. Due Date
30.01	5/16/2017	11/5/2016
30.04	12/12/2017	2/18/2017
40.02	2/6/2021	9/17/2018
55.04	9/7/2018	7/3/2017

SCO failed to ensure that the following pressure vessels were not operated beyond their thickness minimum date and/or not inspected by the next calculated due date in accordance with API 510 **[AOC 12- 68.73(d)(3)]**:

1. Ethoxylates Park C-1101 Reactor #1

CML	Corr. Rate	Retire Thick.	Thick. Reading	Date	Projected t-min	Next Insp. Due Date
6.01 3” Nozzle Q-T	8.3	0.110	0.143	12/9/2015	12/1/2019	12/4/2017
6.03 3” Nozzle Q-B	8.4	0.110	0.141	12/9/2015	8/8/2019	10/13/2017
6.04 3” Nozzle Q-SW	8.4	0.110	0.141	12/9/2015	8/8/2019	10/13/2017
14.05 HEAD-NOZ-N	6.4	0.972	1.022	3/16/2016	12/28/2023	2/5/2020
14.06 HEAD-NOZ-E	6.6	0.972	1.025	3/16/2016	3/17/2024	3/16/2020
14.07 HEAD-NOZ-S	6.2	0.972	1.004	3/16/2016	5/7/2021	10/11/2018
14.08 HEAD-NOZ-W	6.2	0.972	1.004	3/16/2016		4/16/2021
15.05 HEAD- NOZ-N	4.6	0.972	1.027	3/16/2016		3/1/2022
15.06 HEAD-NOZ-E	3.46	0.972	1.031	3/16/2016		11/7/2024
15.07 HEAD-NOZ-S	8.2	0.972	0.998	3/16/2016	5/14/2019	10/14/2017
15.08 HEAD-NOZ-W	8.4	0.972	1.007	3/16/2016	5/10/2020	4/13/2018
17.01 1.5" NOZ J-N	305.7	0.120	0.188	3/16/2016	6/5/2016	4/25/2016
17.02 1.5" NOZ J-E	410.1	0.120	0.185	3/16/2016	5/12/2016	4/13/2016
17.03 1.5" NOZ J-S	249.8	0.120	0.185	3/16/2016	6/19/2016	5/2/2016
17.05 HEAD-NOZ-N	3.8	0.972	1.019	3/16/2016		5/15/2022
17.06 HEAD-NOZ-E	4.0	0.972	1.020	3/16/2016		3/8/2022
17.07 HEAD-NOZ-S	10.2	0.972	1.000	3/16/2016	12/10/2018	7/28/2017
17.08 HEAD-NOZ-W	8.6	0.972	1.005	3/16/2016	1/11/2020	2/12/2018
23.01 1.5" NOZ A-N	4.8	0.120	0.186	3/16/2016		1/21/2023
23.05 HEAD-NOZ-N	4.8	0.972	1.002	3/16/2016	9/14/2022	6/15/2019

23.06 HEAD-NOZ-E	2.4	0.972	1.001	3/16/2016		3/24/2022
23.07 HEAD-NOZ-S	3.2	0.972	1.018	3/16/2016		5/15/2023
23.08 HEAD-NOZ-W	8.6	0.972	1.008	3/16/2016	5/17/2020	4/16/2018

2. EO108 PG463 Ethylene Oxide Purification Column

CML	Corr. Rate	Retire Thick.	Thick. Reading	Date	Projected t-min	Next Insp. Due Date
47.01 2" NOZ C1-T	7.1	0.239	0.264	3/29/2021	10/5/2024	1/1/2023
47.02 2" NOZ C1-NW	5.9	0.239	0.278	3/19/2021		7/18/2024
47.03 2" NOZ C1-B	7.2	0.239	0.263	3/29/2021	7/29/2024	11/28/2022
48.01 2" NOZ C2-T	6.1	0.239	0.279	3/29/2021		9/8/2024
48.02 2" NOZ C1-E	6.2	0.239	0.274	3/29/2021		1/24/2024
48.03 2" NOZ C1-B	6.1	0.239	0.275	3/29/2021		3/11/2024
48.04 2" NOZ C1-W	6.7	0.239	0.269	3/29/2021		6/24/2023

3. Poly C-4101R Product Chamber #1

CML	Corr. Rate	Retire Thick.	Thick. Reading	Date	Projected t-min	Next Insp. Due Date
004.02 SHELL-W	7.6	1.053	1.066	2/23/2023	11/5/2024	12/30/2023
12.05 Cone Nozzle-T	19.5	1.053	1.058	2/23/2023	5/28/2023	4/11/2023
12.06 Cone Nozzle-N	10.0	1.053	1.057	2/23/2023	7/19/2023	5/7/2023
12.07 Cone Nozzle-B	11.6	1.053	1.056	2/23/2023	5/8/2023	4/11/2023
12.08 Cone Nozzle-S	10.8	1.053	1.057	2/23/2023	7/8/2023	5/1/2023

SCO had equipment deficiencies that were not adequately addressed before further use or in a safe and timely manner when necessary means were taken to assure safe operation (i.e., no work order or action was initiated)**[AOC 13- 68.73(e)]** such examples are as follows:

i. SCO failed to address recommendations from the January 2023 inspection of the FB-103 (OLE-1 sodium hydroxide (NaOH) tank) to address weld build up on the pitted area around a nozzle; as identified in the 2024 Hydrocarbon compliance audit.

ii. SCO failed to correct the piping for PSV-3279 which was determined not to be adequately supported, as identified in the 2024 Hydrocarbon compliance audit. There has been no documented follow-up.

40 C.F.R. § 68.75 Management of change (MOC) – SCO has a comprehensive system to manage changes to processes. This system requires that changes to items such as process equipment, chemicals, technology (including process operating conditions), procedures, and other facility changes be properly reviewed and authorized before being implemented. Changes are reviewed to ensure that adequate controls are in place to manage any new hazards and verify that existing controls have not been

compromised by the change. Affected chemical hazard information, process technology information, and equipment information, as well as procedures are updated to incorporate these changes.

SCO had sixteen in-service MOCs which had 45 open action items that were over one year old as identified in the Poly 2022 compliance audit **[AOC 14- 68.75(a)].**

SCO had approximately 136 acknowledgements of management of change modifications that were at least 30 days overdue from 38 separate MOCs dating back to June 25, 2021; as identified in their 2022 Hydrocarbon compliance audit **[AOC 15- 68.75(c)].**

40 C.F.R. § 68.77 Pre-startup safety review (PSSR) – SCO personnel conduct a PSSR for any new facility or facility modification that requires a change in the process safety information (not required for replacement in kind). The review ensures that safety features, procedures, personnel, and the equipment are appropriately prepared for startup prior to placing the equipment into service. This review provides one additional check to make sure construction is in accordance with the design specifications and that all supporting systems are operationally ready. A review involves field verification of the construction and serves a quality assurance function.

EPA reviewed SCO's written PSSR procedures, as well as various PSSRs completed by the facility within the past 5 years.

40 C.F.R. § 68.79 Compliance Audits – To ensure that the accident prevention program is functioning properly, SCO periodically conducts audits to confirm the procedures and practices required by the accident prevention program are being implemented. Compliance audits are conducted at least every three years and conducted by at least one person knowledgeable in the process.

SCO failed to certify that they have evaluated compliance with the provisions of this subpart at least every three years to verify that procedures and practices developed under this subpart are adequate and are being followed. SCO's compliance audits did not include all the provisions of the RMP standard **[AOC 16- 68.79(a)]:**

Acrylics/SPU 2022: The following RMP elements were not addressed in the compliance audit: safe work practices, contractors, employee participation, offsite consequence analysis, pre-startup safety review, process safety information (pressure relief systems, etc.), compliance audits, and mechanical integrity.

Amines-Ethanolamines 2023: The following RMP elements were not addressed in the compliance audit: hot work, safe work practices, contractors, employee participation, offsite consequence analysis, pre-startup safety review, process safety information (ventilation, pressure relief systems, etc.), training, process hazard analysis, operating procedures, compliance audits, or mechanical integrity.

Butanol 1&2 2024: The following RMP elements were not addressed in the compliance audit: hot work, contractors, employee participation, offsite consequence analysis, pre-startup safety review, process safety information (ventilation, pressure relief systems, etc.), process hazard analysis, or operating procedures.

Ethoxylates Park 2022: The following RMP elements were not addressed in the compliance audit: hot work, contractors, employee participation, offsite consequence analysis, pre-startup safety review, process safety information, process hazard analysis, or operating procedures.

Hydrocarbons Olefins 1&2 2024/2025: The following RMP elements were not addressed: offsite consequence analysis and pre-startup safety review.

Hydrocarbons Olefins 1&2 2022: The following elements were not addressed: offsite consequence analysis, pre-startup safety review, employee participation, process hazard analysis, hot work, contractors, operating procedures, and compliance audits.

EPA reviewed compliance audits conducted from 2021-2024 in the Site Logistics, Poly, Oxide, Hydrocarbon, EXP, Amines, Acrylics and SPU units. SCO failed to promptly determine and document an appropriate response to each of the findings and document that deficiencies have been corrected for various compliance audits conducted from 2021 to 2024. The following finding from the Poly 2022 compliance audit were repeat items from the previous compliance audit had been corrected and completed:

i. Twenty-five MOCs originating and approved in 2020 or 2021 were still in the "Approved" status rather than "In Service" to notify personnel the change had been made. Five of these Approved MOCs have MOC Owners that are no longer working in the Polyethylene Unit. Four of these Approved MOCs have Final Approvers that are no longer working in the Polyethylene Unit.

ii. SCO did not promptly document that deficiencies have been corrected. It has not been documented that the following findings from the 2022 Ethoxylates compliance audit have been corrected and completed:

- Review all LOPA scenarios involving Process Containing Equipment not protected by a relief device.
- Document the High Integrity Protection Systems (HIPS) and the Alternative Overpressure Protections
- (AOP) used for the Process Containing Equipment and ensure the HIPS and AOP conditions are followed.

[AOC 17- 68.79(d)].

40 C.F.R. § 68.81 Incident investigation – SCO is required to investigate each incident which resulted in, or could reasonably have resulted in, a catastrophic release of a regulated substance. SCO has an incident investigation procedure that requires investigation for an employee injury/accident, equipment failure, loss of product containment, fire, explosion, and in some cases, near misses. The facility uses Event Action Tool (EAT) and the Compliance Plan Approval Tool (CPA) for all incident investigation reports to document and track detailed information about the incident. Facility representatives noted that initial incident investigation reports are generated and filed electronically in EAT within 48 hours of the incident and undergo a formal root cause investigation led by the Corrective And Preventative Actions (CAPA) Team. Appropriate investigation team members are determined based on the nature of the incident, such as a person knowledgeable in the process or a contract employee if the incident

involved a contractor. SCO uses a root cause investigation methodology to identify probable causes, corrective actions or recommendations, and lessons learned. Recommendations are tracked in EAT and CPA and may lead to development of action items in other systems, such as MOCs, training assignments, SOP modifications, and generated Work Orders.

EPA reviewed incident investigations from 2021 to 2025 and identified the following:

SCO failed to initiate an incident investigation within 48 hours for the following incident reports **[AOC 18- 68.81(b)]**:

UNIT	Incident Management ID	Incident Date	Investigation Start Date
Olefins	74271	3/27/2023	4/25/2023
Amines	64870	1/24/2022	4/4/2022
Hydrocarbons	70196	9/23/2022	10/12/2022
Hydrocarbons	85003	5/31/2024	6/3/2024
Poly	72035	1/3/2023	11/21/2024

In the Polyethylene Unit, Union Carbide did not begin four incident investigations within 48 hours of the incident event as identified in their 2022 Polyethylene compliance audit **[AOC 18- 68.81(b)].**

SCO failed to include the team members who participated on the RCI investigation team or document if they were knowledgeable in the process unit for the following incident reports **[AOC 19- 68.81(c)]**:

UNIT	Incident Management ID	Finding
Amines	69579	No RCI team members listed
Amines	81259	No RCI team members listed
EXP	64357	Only one RCI team member listed, but there is no documentation on if they are knowledgeable in the process

SCO failed to document an accurate event date in the EAT investigation report, which conflicted with the incident and/or event dates provided in the Incident Management Report for the following incident reports **[AOC 20- 68.81(d)(1)(2) & (d)(1)(5)]**:

UNIT	Incident Management ID	Incident Management Report, Incident Date	EAT Investigation Report, Event Date
Olefins	74271	3/27/2023	2/27/2023

Amines	64870	1/24/2022	4/4/2022
Amines	69579	9/7/2022	9/14/2022
Amines	81259	12/23/2023	12/29/2023

SCO failed to document an investigation start date for the following incidents **[AOC 20- 68.81(d)(1)(2) & (d)(1)(5)]**:

UNIT	Incident Management ID	Event Date
Oxides	72892	2/6/2023
Oxides	75781	5/6/2023
Amines	65422	2/27/2022
Amines	69579	9/7/2022
Amines	77754	8/4/2023
Amines	81259	12/23/2023

SCO failed to address and resolve the following incident's action IDs in a timely manner or by the assigned target date. SCO also failed to document resolutions and corrective actions for action ID 432788, which required a Risk Evaluation to be completed and evaluated **[AOC 21- 68.81(e)]:**

UNIT	**Action ID**	**Target Date**	**Complete Date**	**Findings**
Oxides	432788	12/31/2023	1/3/2024	3 days past due; No documentation of the completed Risk Evaluation
Oxides	475626	05/03/2024	10/21/2024	Revised target date: 10/31/2024
Amines	535647	11/30/2024	2/26/2025	Revised target date: 2/28/2025; due to incidents/unplanned events (UPEs) occurring.
Amines	535654	2/28/2025	N/A	Revised target date: 7/31/2025
Hydrocarbons	379103	5/31/2023	2/29/2024	Revised target date: 2/29/2024
Hydrocarbons	379105	5/31/2023	3/31/2024	Postponed due to work reduction efforts by CAPA team for 2023 TA.

Hydrocarbons	449674	12/31/2023	10/31/2024	Revised target date: 10/31/2024
Hydrocarbons	538337	1/31/2025	2/26/2025	Revised target date: 2/28/2025
Hydrocarbons	538339	1/31/2025	2/19/2025	Revised target date: 2/28/2025
Hydrocarbons	451368	1/31/2024	9/30/2024	Revised target date: 10/31/2024
Hydrocarbons	542386	2/28/2025	3/13/2025	Revised target date: 3/31/2025
Hydrocarbons	542387	3/31/2025	N/A	Target date revision: 10/31/2025; pushed back for scope development several times.
Hydrocarbons	542388	2/28/2025	3/31/2025	Target date revision: 2/28/2025
Hydrocarbons	542389	3/31/2025	N/A	Target date revision: 11/30/2025
Hydrocarbons	542392	3/31/2025	N/A	Target date revision: 7/31/2025
Hydrocarbons	542393	2/28/2025	N/A	Target date revision: 7/31/2025
Hydrocarbons	473959	6/30/2024	2/18/2025	Target date revision: 2/28/2025
Hydrocarbons	559007	6/30/2025	N/A	Target date revision: 8/31/2025
Hydrocarbons	559011	6/30/2025	N/A	Target date revision: 8/31/2025
Poly	406618	7/31/2023	N/A	Action Item canceled on 11/8/2023
Poly	406619	9/29/2023	8/21/2024	Target date revision: 10/31/2024

i. In the Polyethylene Unit, SCO failed to ensure that 12 of the 15-process safety near miss (PSNM) events, meeting SCO's root cause investigations trigger criteria; were completely investigated, the resolutions and corrective actions were documented, and findings were completed within 60 days as required by the facility policy, as identified in the 2022 Polyethylene compliance audit.

ii. In the Acrylics/SPU Unit, SCO failed to ensure that an incident investigation had documented corrective actions or resolution. Also, three incident investigation reports did not include evidence that the incident investigation had been initiated within 48 hours of the event and the investigation findings had been reviewed with affected personnel; as identified in the 2022 Acrylics & SPU compliance audit.

SCO failed to document or assign action items for resulting MOCs to be reviewed with affected personnel whose job task are relevant to the incident findings. There are nine incidents that had action items that resulted in MOCs, but no action items for conveying the changes to the affected personnel documented in the EAT Incident Report **[AOC 22- 68.81(f)]:**

Unit	Action ID
Oxide	72829

Amines	69579, 81259
Hydrocarbons	67133, 70196, 77079, 80169, 81272
EXP	324079

40 C.F.R. § 68.83 Employee participation – Employees participate on PHA teams and have access to all HAZOP and LOPA information and recommendations. Operation manuals are developed, updated, and reviewed by Operations personnel and the Training Department. Safety meetings are held regularly for Operations, Maintenance, Terminal, Administration, and Contract personnel. Selected topics for the safety meetings are relevant to respective personnel assigned duties, and general and specific information is provided informally to enhance employee participation in facility-wide safety performance. SCO provided EPA with their written employee participation plan.

40 C.F.R. § 68.85 Hot Work Permit – SCO's hot work procedure requires that detailed permitting takes place before, during, and after any job that has the potential to provide a source of ignition. The permit is followed through to completion of the work and those permits are maintained by the EHS Department. The facility implements other work permits as necessary to assure safe work conditions are communicated to maintenance and contract personnel. EPA reviewed hot work permits and the corresponding hot work policy. The facility has developed and implemented a hot work safety procedure for any work that involves burning, welding, brazing, soldering, grinding and creating sparks in areas where flammable liquids or gases may be present. This procedure is applicable to all SCO employees and contractors, and it outlines the responsibilities of the operations worker, supervisors, fire watch, and superintendents. The procedure delineates the different types of hot work permits, pre-requisites and procedures for conducting hot work, and duties of the fire watch which align with the fire prevention and protection requirements in 29 CFR 1910.252(a).

EPA reviewed hot work permits since May 2024 that required fire prevention and protection requirements in 29 CFR 1910.252(b). SCO failed to include the time in which the fire watch remains on site or the name of the individual performing fire watch activities on the hot work permits, to ensure there is a fire watch who remains on site for a half hour after the hot work is completed. Permits identified as needing a fire watch and missing a name and time signed out included but not limited to permits Poly E 2/9/25, Poly E 5811-2/19/25, EA2-3/20/25, EA2-3530A-4/7/25, EA2-3530A-12/9/24, EA2-3530A-12/7/24. EPA reviewed an electronic permit from 5/7/25 in the Olefins unit which did document the fire watch name, but did not document that the fire watch remained on site for a half hour after the hot work was completed and there was no attached roster. UCC/DOW stated verbally, documenting the fire watch and their time on the job site on the job site for hot work is not required by their policy **[AOC 23-68.85(b)].**

40 C.F.R. § 68.87 Contractors – SCO uses contractors to supplement its workforce as needed. The facility has procedures in place to ensure that contractors perform their work in a safe manner and are aware of the procedures to take during an emergency. This is accomplished by providing contractors with a

process overview, information about safety and health hazards, emergency response plan requirements, and safe work practices. SCO utilizes a third-party contractor to manage contractor qualification, who are required to go through a screening process, meeting the training credential qualifications outlined by the facility and receive a grade prior to selection. SCO reports any contractor performance issues to the third-party contractor. SCO performs an evaluation of contractors annually through their internal PO system and the third-party contractor.

Subpart E – Emergency Response

40 C.F.R. § 68.90 Applicability – SCO is a responding stationary source in case of an accidental release of a regulated substance.

40 C.F.R. § 68.93 Emergency response coordination activities – SCO coordinates response needs with local emergency planning and response organizations. SCO is a member of the St. Charles Parish Industrial Mutual Aid Association, that also provides aid to other local facilities. Meetings with St. Charles Local Emergency Planning Committee (LEPC) and the parish Hazmat response team are coordinated on an annual basis as required by 40 C.F.R. § 68.93(a). SCO also performs tabletop drills on an annual basis and include the LEPC and the local fire department.

40 C.F.R. § 68.95 Emergency Response Program – SCO maintains a written Emergency Response Plan (ERP), which aims to protect employees, public health, and the environment. The purpose of the ERP is to minimize potential adverse impacts on the facility and surrounding areas during an emergency situation. The plan consists of procedures for responding to emergencies such as fires, explosions, hazardous gas or liquid releases, natural disasters, and terrorist threats. The plan addresses all aspects of emergency response including coordination with mutual aid organizations, timely notification of authorities, maintenance of proper documentation, and guidelines for compliance with applicable government regulations.

EPA reviewed the ERP which included procedures and measures for emergency response after an accidental release of a regulated substance. SCO currently has on site multiple highly equipped response and rescue vehicles, fire pumps, portable fire extinguishers, fire hydrants with monitors and high rise monitors, portable foam tote trailer and foam generator, SCBA refilling equipment, 10,000 gpm submersible hydraulic pump, ambulance, and a loop system that supplies water (from the Mississippi River) throughout the facility for emergency response capability. SCO also utilizes spill response kits, SCBA's and Level A suits throughout the facility. SCO utilizes an audible horn and PA system and emergency phone communications in the event of an emergency, which is tested weekly. The facility has trained operators and maintenance employees who voluntarily trained in industrial firefighting, medical first responder, Hazmat tech and confined space and high angle rescue. Each shift has a selected number of members of the Emergency Response Team so that each shift contains an operational team able to respond to situations. Contractors inspect and maintain a majority of the response equipment annually, while the facility also provides weekly inspections of all equipment.

The Emergency Response Plan contains emergency notification procedures and telephone numbers for the local fire district and other agency contacts (e.g. St. Charles Parish OHSEP).

SCO Emergency Response training qualifications for Emergency Response Team (ERT) members include a three-part initial training package, required to be taken prior to participating in any other training, an 8-hour annual industrial firefighting class, an annual first aid/CPR/AED course, bloodborne pathogen

course and three quarterly training sessions per calendar year. EPA requested initial and the last two years of training records for 8 individuals to review. Records were missing or late for 7 out of 8 ERT individuals. **[AOC 24- 68.95(a)].**

SCO failed to maintain the fire deluge system appropriately. EPA noted multiple reoccurring deficiencies noted in the annual inspections performed from 2022-2024 in the Acrylics, SPU, Site Logistics, Amines, Olefins 1 and Olefins 2 Units. Deficiencies such as but not limited to **[AOC 25- 68.95(a)(2)]:**

-Acrylics unit: broken tee's, rusted fittings, strainers not rotating, missing hangers, broken lines, block valve leaking, broken valves on multiple pieces of equipment.
-SPU unit: alarms not reporting on the SPU mounds, rusted out pipes, broken nozzles, leaking valves, hole in headers, clogged nozzles, bad strainers and piping supports missing on multiple pieces of equipment. The SPU mound alarms failed to ring or report to a manned location on seven out of twelve quarterly inspections.
-Site Logistics: broken tee's, broken pipes, hole in pipe, missing heads, missing hangers, nozzles rusted out and cracks in multiple pieces of equipment. The EO mound alarms failed to ring or report to a manned location on nine out of twelve quarterly inspections.
- Amines: strainers not turning, clogged pipes, busted elbows, no flow on pumps, indicators not moving, broken handles and busted pipes on multiple pieces of equipment.
-Olefins 1: pipes not connected or plugged, broken pipes, no flow on nozzles, valve broken, broken tee's, broken hangers, unsupported pipe and alarm not ringing on several pieces of equipment.
-Olefins 2: pipes not connected or plugged, broken pipes, no flow on nozzles, valve broken, broken tee's, broken hangers, unsupported pipe and alarm not ringing on several pieces of equipment.

Subpart G – Risk Management Plan

40 C.F.R. § 68.150 Submission – SCO submitted their 5-year update to their RMP on February 2, 2021, and a voluntary update on February 19, 2024. The re-submission was within the 5-year timeframe as required by 40 C.F.R. § 68.150.

40 C.F.R. § 68.160 Registration – SCO included in their RMP all regulated substances present at the site above their designate threshold quantity as required by 40 C.F.R. § 68.160.

40 C.F.R. § 68.190 Updates – SCO's RMP submittal was on February 2, 2021, and the previous submittal for this facility was on November 28, 2017.

40 C.F.R. § 68.195 Required Corrections – SCO failed to update the RMP within six months of the release on February 03, 2023, which should have been completed by August 3, 2023. The most recent update was dated February 19, 2024 **[AOC 26-68.195(a)].**

Section III – AREAS OF CONCERN

AOC 1- 40 C.F.R. § 68.39(a) & (b) – Documentation

(a)For worst-case scenarios, a description of the vessel or pipeline and substance selected as worst case, assumptions and parameters used, and the rationale for selection; assumptions shall include use of any administrative controls and any passive mitigation that were assumed

to limit the quantity that could be released. Documentation shall include the anticipated effect of the controls and mitigation on the release quantity and rate.
(b) For alternative release scenarios, a description of the scenarios identified, assumptions and parameters used, and the rationale for the selection of specific scenarios; assumptions shall include use of any administrative controls and any mitigation that were assumed to limit the quantity that could be released. Documentation shall include the effect of the controls and mitigation on the release quantity and rate.

SCO failed to include the rationale for selection of the vessel or pipeline and substance used in the worst case and alternative case release scenarios.

AOC 2- 40 C.F.R. §68.65(d)(1)(v) – Process Safety Information

***The owner or operator shall complete a compilation of written process safety information before conducting any process hazard analysis required by this part and shall keep process safety information up to date. The compilation of written process safety information is to enable the owner or operator and the employees involved in operating the process to identify and understand the hazards posed by those processes involving regulated substances. This process safety information shall include information pertaining to the equipment in the process which includes ventilation system design*.**

SCO failed to document the process safety information for the design of ventilation systems located in electrically classified (Class 1 Division 2) areas. SCO also failed to document the effectiveness of ventilation systems present in buildings designated as shelter-in-place locations by performing suitable inspections and tests to ensure that toxic and flammable gases and vapors will not enter buildings.

AOC 3- 40 C.F.R. §68.65(d)(2) – Process Safety Information

(d)(2) The owner or operator shall document that equipment complies with recognized and generally accepted good engineering practices.

SCO failed to ensure that the process equipment and piping were labeled, or color coded to indicate contents, direction of flow, and potential hazards, per ASME standard A13.1(2023) in the Olefins 1 & 2 and Oxides covered process areas.

AOC 4- 40 C.F.R. §68.67(a) - Process Hazard Analysis

The owner or operator shall perform an initial process hazard analysis (hazard evaluation) on processes covered by this part. The process hazard analysis shall be appropriate to the complexity of the process and shall identify, evaluate, and control the hazards involved in the process.

SCO's facility siting 2015 & 2019 process hazard analysis' were not appropriate to the complexity of the process as it did not correctly identify, evaluate, and control the hazards involved in the process.

AOC 5- 40 C.F.R. §68.67(c)(3) - Process Hazard Analysis

The process hazard analysis shall address engineering and administrative controls applicable to the hazards and their interrelationships such as appropriate application of detection methodologies to provide early warning of releases. (Acceptable detection methods might include process monitoring and control instrumentation with alarms, and detection hardware such as hydrocarbon sensors.

SCO failed to address the installation of engineering controls applicable to the hazard resulting from the release of extremely toxic and flammable chemicals from the 2015 and 2019 facility siting (Occupied Building Impact Study). Such hazard controls for buildings, including shelter-in-place locations, would incorporate positive pressure ventilation systems and detection methodologies such as alarms and sensors.

AOC 6- 40 C.F.R. §68.67(c)(5) & (e) - Process Hazard Analysis

§ 68.67(c)(5) The process hazard analysis shall address the hazards of the process including stationary source siting; and

68.67(e) ***The owner or operator shall establish a system to promptly address the team's findings and recommendations; assure that the recommendations are resolved in a timely manner and that the resolution is documented; document what actions are to be taken; complete actions as soon as possible; develop a written schedule of when these actions are to be completed;***

SCO failed to address, resolve or mitigate the hazards posed by toxic chemicals and explosions resulting from the uncontrolled release of flammable chemical from the 2015 and 2019 facility siting PHA's. SCO also failed to promptly address a finding from the "Union Carbide Response to PHA Recommendations, 3.4.2 regarding "interim" guidance for low occupancy buildings which has not been updated since 2015.

AOC 7- 40 C.F.R. §68.67(g) - Process Hazard Analysis

(g)The owner or operator shall retain process hazards analyses and updates or revalidations for each process covered by this section, as well as the documented resolution of recommendations described in paragraph (e) of this section for the life of the process.

SCO failed to retain documentation for the process hazard analysis and updates or revalidations for action item 114197 of the 2019 EXP RCPHA EAT report.

AOC 8- 40 C.F.R. §68.69(a) - Operating Procedures

The owner or operator shall develop and implement written operating procedures that provide clear instructions for safely conducting activities involved in each covered process consistent with the process safety information and shall address at least the following elements.

(1) Steps for each operating phase: (i) Initial startup; (iv) Emergency shutdown including the conditions under which emergency shutdown is required, and the assignment of shutdown

responsibility to qualified operators to ensure that emergency shutdown is executed in a safe and timely manner (vii) Startup following a turnaround or after an emergency shutdown.
(2) Operating limits (i) Consequences of deviation (ii) steps required to correct or avoid deviation.
(3) Safety and Health Considerations (i) Properties of, and hazards presented by, the chemicals used in the process; (ii) Precautions necessary to prevent exposure, including engineering controls, administrative controls, and personal protective equipment; (v) Any special or unique hazards.

SCO failed to develop and implement written operating procedures that provide conditions under which emergency shutdown is required, consequences of deviation, steps required to correct or avoid deviation and the proper safety and health considerations or precautions necessary to prevent exposure. SCO also failed to ensure that an operating procedure involving relief pressure provided clear instructions for safely conducting activities

AOC 9- 40 C.F.R. §68.73(b) – Mechanical Integrity

Written procedures. The owner or operator shall establish and implement written procedures to maintain the on-going integrity of process equipment.

SCO failed to implement its mechanical integrity program by not ensuring that pressure safety valves specified above were inspected and tested at the required a 24-month frequency interval. SCO also failed to develop periodic maintenance schedules for two safety instrumented systems as required by LPP 15.2.

AOC 10- 40 C.F.R. §68.73(d)(1) – Mechanical Integrity

***Inspections and tests shall be performed on process equipment*.**

SCO failed to ensure that inspection and tests were performed in November 2021 on pressure vessels C-1301 Rx3 and C-561 NaOH tank and equipment identified as Group 9. SCO also failed to calculate the minimum thickness for Acrylic Acid Storage Tank TK-2514 per API 653 and document the results and resolution as recommended.

AOC 11- 40 C.F.R. §68.73(d)(2) – Mechanical Integrity

Inspection and testing procedures shall follow recognized and generally accepted good engineering practices.

SCO failed to ensure that pressure safety valves specified above were inspected and tested every 5 years in accordance with API 510-2018 Section 6.6.3 Testing and Inspection intervals. SCO also failed to ensure that pressure vessels specified above received an internal inspection every 10 years in accordance with API 510 2018 Section 6.5 Internal, On-stream, and Thickness Measurement Inspections.

AOC 12- 40 C.F.R. §68.73(d)(3) – Mechanical Integrity

The frequency of inspections and tests of process equipment shall be consistent with applicable manufacturers' recommendations and good engineering practices, and more frequently if determined to be necessary by prior operating experience.

SCO failed to ensure that ultrasonic testing/non-destructive examinations were performed by the next calculated due date and that the pressure vessels specified above were not operated beyond their calculated thickness minimum date in accordance with the SCO's mechanical integrity program and and/or API 510 Section 6.7. SCO also failed to ensure that the pressure vessels specified above were not operated beyond their thickness minimum date and/or not inspected by the next calculated due date in accordance with API 510**.**

AOC 13- 40 C.F.R. §68.73(e) – Mechanical Integrity

Equipment deficiencies. The owner or operator shall correct deficiencies in equipment that are outside acceptable limits (defined by the process safety information in §68.65) before further use or in a safe and timely manner when necessary means are taken to assure safe operation.

SCO failed to correct deficiencies in equipment that are outside acceptable limits before further use or in a safe and timely manner when necessary means are taken to assure safe operation.

AOC 14- 40 C.F.R. §68.75(a) – Management of Change (MOC)

The owner or operator shall establish and implement written procedures to manage changes (except for "replacements in kind") to process chemicals, technology, equipment, and procedures; and, changes to stationary sources that affect a covered process.

SCO had sixteen in-service MOCs which had 45 open action items that were over one year old as identified in the Poly 2022 compliance audit.

AOC 15- 40 C.F.R. §68.75(c) – Management of Change (MOC)

Employees involved in operating a process and maintenance and contract employees whose job tasks will be affected by a change in the process shall be informed of, and trained in, the change prior to start-up of the process or affected part of the process.

SCO had approximately 136 acknowledgements of management of change modifications that were at least 30 days overdue from 38 separate MOCs dating back to June 25, 2021; as identified in their 2022 Hydrocarbon compliance audit.

AOC 16- 40 C.F.R. §68.79(a) - Compliance audits

The owner or operator shall certify that they have evaluated compliance with the provisions of this subpart at least every three years to verify that procedures and practices developed under this subpart are adequate and are being followed.

SCO failed to certify that they have evaluated compliance with the provisions of this subpart at least every three years to verify that procedures and practices developed under this subpart are adequate and are being followed. SCO's compliance audits did not include all the provisions of the RMP standard

AOC 17- 40 C.F.R. §68.79(d) - Compliance audits

The owner or operator shall promptly determine and document an appropriate response to each of the findings of the compliance audit, and document that deficiencies have been corrected.

SCO failed to promptly determine and document an appropriate response to each of the findings and document that deficiencies have been corrected for the 2022 Ethoxylates compliance audit conducted in 2022.

AOC 18- 40 C.F.R. §68.81(b) - Incident Investigation

(b) An incident investigation shall be initiated as promptly as possible, but not later than 48 hours following the incident.

SCO failed to initiate an incident investigation within 48 hours for 5 of the incident reports provided.

AOC 19- 40 C.F.R. §68.81(c)- Incident Investigation

(c) An incident investigation team shall be established and consist of at least one person knowledgeable in the process involved, including a contract employee if the incident involved work of the contractor, and other persons with appropriate knowledge and experience to thoroughly investigate and analyze the incident.

SCO failed to include the team members who participated on the RCI investigation team or document if they were knowledgeable in the process unit for three incident reports.

AOC 20- 40 C.F.R. §68.81(d)(1)(2) and (5)- Incident Investigation

(d) A report shall be prepared at the conclusion of the investigation which includes at a minimum: (1) Date of incident; (2) Date investigation began;

SCO failed to document an accurate event date in the EAT investigation report, which conflicted with the incident/event dates provided in the Incident Management Report for four incident reports. SCO also failed to document an investigation start date for the six of the incidents provided.

AOC 21- 40 C.F.R. §68.81(e)- Incident Investigation

(e) The owner or operator shall establish a system to promptly address and resolve the incident report findings and recommendations. Resolutions and corrective actions shall be documented.

SCO failed to address and resolve twenty-one incident action IDs in a timely manner or by the assigned target date. SCO also failed to document resolutions and corrective actions for action ID 432788, which required a Risk Evaluation to be completed and evaluated.

AOC 22- 40 C.F.R. §68.81(f)- Incident Investigation

(f)The report shall be reviewed with all affected personnel whose job tasks are relevant to the incident findings including contract employees where applicable.

SCO failed to document or assign action items for resulting MOCs to be reviewed with affected personnel whose job task are relevant to the incident findings. There are nine incidents that had action items that resulted in MOCs, but no action items for conveying the changes to the affected personnel documented in the EAT Incident Report.

AOC 23- 40 C.F.R. §68.85(b) – Hot work permits

(b)The permit shall document that the fire prevention and protection requirements in 29 CFR 1910.252(a) have been implemented prior to beginning the hot work operations; it shall indicate the date(s) authorized for hot work; and identify the object on which hot work is to be performed.

29 CFR 1910.252(a) states a fire watch shall be maintained for at least a half hour after completion of welding or cutting operations to detect and extinguish possible smoldering fires.

SCO failed to include the time in which the fire watch remains on site or the name of the individual performing fire watch activities on the hot work permits, to ensure there is a fire watch who also remains on site for a half hour after the hot work is completed.

AOC 24- 40 C.F.R. §68.95(a) – Emergency Response

(a)The owner or operator shall develop and implement an emergency response program for the purpose of protecting public health and the environment.

SCO Emergency Response training qualifications for Emergency Response Team (ERT) members include a three-part initial training package, required to be taken prior to participating in any other training, an 8-hour annual industrial firefighting class, an annual first aid/CPR/AED course, bloodborne pathogen course and three quarterly training sessions per calendar year. EPA requested initial and the last two years of training records for 8 individuals to review. Records were missing or late for 7 out of 8 ERT individuals.

AOC 25- 40 C.F.R. §68.95(a)(2) – Emergency Response Program

(a) The owner or operator shall develop and implement an emergency response program for the purpose of protecting public health and the environment. Such program shall include the following elements: (2) Procedures for the use of emergency response equipment and for its inspection, testing, and maintenance.

SCO failed to maintain the fire deluge system appropriately.

AOC 26- 40 C.F.R. §68.195(a) – Required Corrections

The owner or operator of a stationary source for which a RMP was submitted shall correct the RMP as follows: (a) New accident history information—For any accidental release meeting the five-year accident history reporting criteria of § 68.42 and occurring after April 9, 2004, the owner or operator shall submit the data required under §§ 68.168, 68.170(j), and 68.175(l) with respect to that accident within six months of the release or by the time the RMP is updated under § 68.190, whichever is earlier.

SCO failed to update the RMP within six months of the release on February 03, 2023, which should have been completed by August 3, 2023. The most recent update was dated February 19, 2024.

I conducted a closing conference at the Union Carbide Corporation/ DOW Chemical Company- St. Charles Operations Facility at 8:00 AM on August 11, 2025, for the inspection during the week of May 5-9, 2025. During the closing conference, I explained the EPA inspection report process. At the time of this closing conference, documents were still under review, so we did not identify any areas of concern that were identified in this inspection report. Additionally, AOCs 1-26 were determined after the conclusion of the inspection and were not included in the closing conference.

Section IV – FOLLOW UP

EPA received documentation from SCO several dates from May 9 – August 8, 2025.

Section V – LIST OF APPENDICES

All Appendices are classified as Confidential Business Information (CBI) or Sensitive Appendices and are not included in the online published inspection report. CBI Appendices include documents that are claimed CBI by the facility. Sensitive Appendices may include appendices that will not be posted but are not explicitly CBI. These could include Personally Identifiable Information (PII) or Homeland Security sensitive information.

Appendix 1 – Opening and closing conference sign-in sheets