

Region 6 - Enforcement & Compliance Assurance Division

INSPECTION REPORT

Inspection Date(s):	June 22-24, 2021	
Media Program:	Air	
Regulatory Program(s)	Clean Air Act Section 112(r) and 40 Code of Federal Regulations (C.F.R.) Part 68 Chemical Accident Prevention Provisions – Risk Management Program (RMP)	
Company Name:	Nouryon	
Facility Name:	Nouryon Houston Plant	
Facility Physical Location:	15200 Almeda Road	
(city, state, zip code)	Houston, Texas 77053	
Mailing address:	15200 Almeda Road	
(city, state, zip code)	Houston, Texas 77053	
County/Parish:	Harris	
Facility Phone Number	(713) 433-7289	
Facility Contact:	Brad Green	Health, Safety, and Security Manager
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FRS Number:	110000461884	
Identification/Permit Number:		
Media Identifier Number:	1000 0004 8566 (RMP ID)	
NAICS:	32599 (All Other Chemical Product and Preparation Manufacturing)	
SIC:	N/A	
Personnel participating in inspection:		
Justin McDowell	US EPA Region 6	Inspector
Brent Burke	Nouryon	Site Director
Brad Green	Nouryon	Health, Safety, and Security Manager
Niti Shrivastava	Nouryon	Process Safety Management Engineer
Chris Dickson	Nouryon	Health, Safety, and Security Specialist
Terry Stroud	Nouryon	Engineering Manager
Hennie Kriel	Nouryon	Production Manager
Chris Waddel	Nouryon	Maintenance Manager
Scott Miller	Nouryon	Production Specialist
EPA Lead Inspector Signature/Date		
	Justin McDowell	Date
Supervisor Signature/Date		8/23/2021
	Samuel Tates	Date

Section I – INTRODUCTION

PURPOSE OF THE INSPECTION

I, United States Environmental Protection Agency (EPA) Region 6 inspector Justin McDowell, arrived at the Nouryon Houston Plant (Nouryon) at 9:00 AM on Tuesday June 22, 2021, for an announced inspection. I met with Brent Burke, Brad Green, Niti Shrivastava, Chris Dickson, Terry Stroud, Hennie Kriel, and Chris Waddell for an opening meeting. I presented my credentials and informed Nouryon personnel that this was an EPA inspection to determine compliance with the federal Chemical Accident Prevention Program. The scope of the inspection was a partial compliance evaluation (PCE), which included an evaluation of the facility's compliance with the Clean Air Act (CAA) Section 112(r) and the Chemical Accident Prevention Provisions in 40 C.F.R. Part 68. Nouryon's Risk Management Plan (RMP) is listed as a Program Level Three (3), Title V process facility. I inquired if an employee representative was available pursuant to section 112(r)(6)(L) of the CAA to participate in this inspection and was informed that the Nouryon plant is a non-union facility.

FACILITY DESCRIPTION

Nouryon is located at 15200 Almeda Road in Houston, Texas 77053 split between Harris and Fort Bend counties. Nouryon's regulated chemical product and preparation manufacturing process involves the use of alkoxylation to produce surfactants that yields hundreds of chemicals and everyday products. The plant consists of reactors, storage vessels and shipping and receiving stations for bulk tank trucks as well as rail cars. Nouryon's oxylation process has two regulated toxic chemicals under the Risk Management Program – Propylene oxide (CAS #75-56-9) and Ethylene oxide (CAS #75-21-8). Nouryon is manned using a digital control system (DCS) and operates 24 hours a day, 365 days per year. The facility has approximately 140 full time employees.

Section II - OBSERVATIONS

On Wednesday June 23, 2021, I was accompanied by Nouryon personnel to conduct a facility tour. I observed the control room and process area, which included the storage vessels and reactors. Prior to the facility tour, I completed the facility's visitor safety video and discussed relevant process safety information (block flow diagrams and piping and instrumentation drawings (P&IDs)) that assisted during the tour. All regulated chemicals enter the facility via rail car and the final products exit via rail car or truck. The Nouryon facility was a well-kept facility, despite the challenges from the freezing weather that impacted the site in February 2021. The inspection mostly consisted of documentation review and interviews with persons responsible for the implementation of the individual requirements of the risk management program.

Subpart A – General

40 C.F.R. § 68.10 Applicability – Nouryon is the owner/operator of a stationary source that has more than a threshold quantity of two toxic substances (propylene oxide and ethylene oxide) in a covered process, as listed in 40 C.F.R. § 68.130, and as such, is subject to the Chemical Accident Prevention

Provisions. Nouryon has an Air Operating Permit ID: O1328 and is classified under the North American Industrial Classification System (NAICS) code 32599 as “All Other Chemical Product and Preparation Manufacturing”. Nouryon is subject to the OSHA process safety management (PSM) standard, 29 C.F.R. § 1910.119, and has one (1) Program Level Three (3) process.

40 C.F.R. § 68.10 Program Eligibility – Nouryon re-submitted an RMP as required under 40 C.F.R. 68.190 (b)(1) as a 5-year update on July 26, 2019. The re-submitted RMP plan requires the facility to: develop and implement a management system; conduct a hazard assessment; implement the prevention requirements of 40 C.F.R § 68.65 - § 68.67; develop and implement an emergency response program; and, include the data elements from 40 C.F.R §68.175 in their RMP. Nouryon will re-submit an RMP to update the current Site Director Brent Burke as the name and title of the person and position responsible for Part 68 (RMP) Implementation.

40 C.F.R. § 68.15 Management – Nouryon has developed a management system to oversee the implementation of risk management program elements, has documented persons responsible for implementing the individual requirements of the risk management program, and has defined the lines of authority using its Responsible Accountable Consultable Informed (RACI) chart. Nouryon uses Letters of Appointment to assign qualified persons for the development, implementation, and integration of the risk management program elements. Brad Green was the primary point of contact for this inspection.

Subpart B – Hazard Assessment

40 C.F.R. § 68.20 Applicability – Nouryon has one Program Level 3 process subject to this subpart. The facility is required to prepare an off-site consequence analysis and complete the five-year accident history.

40 C.F.R. § 68.22 Offsite Consequence Analysis Parameters – I reviewed Nouryon’s off site consequence analysis and supporting documentation. For both the worst-case and alternative case scenarios involving toxics, the facility used the endpoints provided in Appendix A of 40 CFR Part 68, appropriate wind speeds and stability classes, ambient temperatures and humidity values, values for height of the release, and surface roughness values for the release scenario analyses. The offsite consequence analysis documentation provided was extremely organized and thorough.

40 C.F.R. § 68.25 Worse-case Release Scenario Analysis – Nouryon analyzed and reported in the RMP one worst-case release scenario, estimated to create the greatest distance to endpoint, and resulting from an accidental release of a regulated toxic substance from a covered process under worst-case conditions. The worst-case release quantity was determined as the greatest amount held in a single vessel, taking into account administrative controls that limit the maximum quantity released. The facility used RMP*Comp™ as the technique for modeling the release scenarios.

40 C.F.R. § 68.28 Alternative Release Scenario Analysis – Nouryon identified and analyzed two alternative release scenarios, one for each regulated toxic substance held in a covered process, using a scenario that is likely to occur (transfer hose releases due to splits or sudden hose uncoupling). The plant used the parameters defined in 68.22 to determine distance to endpoint and RMP*Comp™ as the technique for modeling the release scenarios and considered relevant possible release factors. Nouryon ensured that the passive and active mitigation systems, if considered, are capable of withstanding the release event triggering the scenario. The facility has also considered the five-year accident history provided in 68.42 and the failure scenarios identified under 68.50.

40 C.F.R. § 68.30 Defining Offsite Impacts - Population – Nouryon used the MARPLOT mapping program to define the affected off-site population. The documentation describes how the facility estimated the population that would be affected in the distance to endpoint in the RMP, based on a circle with the point of release at the center. It also identified the presence of institutions, parks and recreational areas, major commercial, office, and industrial buildings in the RMP. The facility used the most recent 2010 Census data estimated to two significant digits in the documentation.

40 C.F.R. § 68.33 Defining Offsite Impacts - Environment – Nouryon identified environmental receptors within a circle where its center is the point of the release and a radius determined by the distance to endpoint. The plant relied on information provided on local United States Geographical Survey (U.S.G.S.) maps and data to identify environmental receptors.

40 C.F.R. § 68.36 Review and Update – Nouryon reviewed and updated the off-site consequence analyses at least once every five years.

40 C.F.R. § 68.39 Documentation – For the worst-case and alternative release scenarios, a description of the vessel or pipeline and substance selected, assumptions and parameters used, the rationale for selection, and anticipated effect of the administrative controls and passive mitigation on the release quantity and rate was provided.

40 C.F.R. § 68.42 Five-year accident history – Nouryon has not had any accidental releases from covered processes that resulted in one or more of the following: on site deaths, injuries, significant property damage on site, known off site deaths, injuries, evacuations, sheltering in place, property damage, or, environmental damage in its accident history.

Subpart D – Program 3 Prevention Program

40 C.F.R. § 68.65 Process Safety Information – Nouryon compiled written process safety information, which includes information pertaining to the hazards of the regulated substances used or produced by the process, information pertaining to the technology of the process, and information pertaining to the equipment in the process. SDSs for process chemicals propylene oxide and ethylene oxide are provided by the distributor and detail process safety information that contains the following for the hazards of the substances: toxicity information, permissible exposure limits, physical data, reactivity data, corrosivity data, thermal and chemical stability data, and the hazardous effects of inadvertent mixing of materials that could foreseeably occur. I reviewed documentation concerning the technology of the process, which included a block flow diagram, process chemistry, maximum intended inventory, safe upper and lower limits for such items as temperatures, pressures, flows, or compositions (found on standard operating procedures) and an evaluation of the consequences of deviation (found on standard operating procedures). I reviewed documentation pertaining to the equipment of the process including: materials of construction, piping and instrumentation diagrams (P&IDs), electrical classification, relief system design and design basis (PSV systems), ventilation system design, design codes and standards employed, material and energy balances, and safety systems (process interlocks, safety instrumentation systems – SIS, fire systems, deluge systems and LEL alarm systems). The plant documented that the equipment complies with recognized and generally accepted good engineering practices using their “List of Applications” documentation. Nouryon does not have any existing equipment that is designed and constructed in accordance with codes, standards, or practices that are no longer in use.

40 C.F.R. § 68.67 Process hazard analysis (PHA) – Nouryon performed an initial process hazard analysis (PHA) that identified, evaluated, and controlled the hazards involved in the process in 1999. Nouryon currently conducts one PHA for the entire Alkoxylation covered process but plans to divide the PHA to better cover the process unit. The PHAs performed use the Hazard and Operability Study (HAZOP) and Layers of Protection Analysis (LOPA) technologies to identify hazards. The March 2010 and December 2015 PHAs addressed the hazards of the process; identification of any incident that had a likely potential for catastrophic consequences; engineering and administrative controls applicable to hazards and their interrelationships; consequences of failure of engineering and administrative controls; stationary source siting; human factors; and an evaluation of a range of the possible safety and health effects of failed controls. The March 2010 and December 2015 PHAs were performed by a team that consisted of both facility and third-party staff. Nouryon used Enablon and PHA Pro as repository systems for PHA team findings. Team findings are discussed and then assigned to appropriate staff and given risk rankings using the plant's risk matrix. I could not verify that the PHA recommendations are resolved in a timely manner and documented; that the facility documented what actions are to be taken; completed actions as soon as possible; developed a written schedule of when these actions are to be completed; and communicated the actions to operating, maintenance, and other employees whose work assignments are in the process and who may be affected by the recommendations. There were no 2010 or 2015 PHA recommendations tracked to completion, as the facility changed databases and they were not all tracked in one location. PHA action items are available but not tracked to completion. **[AOC 1 – §68.67(e)]** The PHAs had not been updated or revalidated by a team every five years after the completion of the initial PHAs to assure that the PHAs are consistent with current processes (Figure 1). The PHAs were conducted March 2010, December 2015 and scheduled for July 2021. **[AOC 2 – §68.67(f)]** Nouryon has not retained the PHA updates or revalidations for each process covered, as well as, the resolution of recommendations for the life of the process by not maintaining described in paragraph (e) of this section for the life of the process for the most recent two PHAs. **[AOC 3- §68.67(g)]**

Figure 1:

Nouryon Houston Plant PHA Schedule		
PHA Conducted	Completed	Deviation
2010 Alkoxylation	March 2010	
2015 Alkoxylation	December 2015	9 months past due
2020 Alkoxylation	*Tentative July 2021*	7 months past due *currently*

40 C.F.R. § 68.69 Operating Procedures – Nouryon has developed and implemented written operating procedures that provide instructions or steps for conducting activities associated with each covered process, consistent with the safety information. Operating procedures are kept in the Control Documents (ConDo) database. The operating procedures I reviewed addressed steps for each operating phase, operating limits, safety and health considerations, and safety systems with their functions. Procedures are readily accessible to employees involved in a process online via SharePoint. Operating procedures were not annually certified to assure that procedures were current and accurate but were revised as needed. **[AOC 4 – §68.69(c)]** The last revision/ certifications of the operating procedures were in 2019 (Figure 2). Operating procedures that undergo revisions are hidden in SharePoint until the final version has been approved. Changed procedures are sent to employees via training notifications and require sign-off for comprehension. The facility has developed and implemented safe work practices to provide for the control of hazards during specific operations, such as lockout/ tagout, as well as, confined space entry. Procedures for safe work practices are also maintained as ConDo.

Figure 2:

Nouryon Houston Plant Operating Procedure Certification/ Revision Timeline		
V-500 Reactor	V-600 Reactor	V-700 Reactor
July 2, 2018	November 6, 2018	November 6, 2018
April 17, 2019	April 4, 2019	December 17, 2019
October 29, 2019	April 17, 2019	

40 C.F.R. § 68.71 Training – Nouryon shared their production operator training progression presentation that demonstrates the flow of how each employee involved in operating a process and each employee before being involved in operating a newly assigned process, will be initially trained in an overview of the process and in the operating procedures. The progression of each operator goes as follows: Tech 1 (trainee), Tech 2 (blending/ utilities/ K-201/ K-600), Tech 3 (outside Alkoxylation) and Lead (board Alkoxylation). The presentation discusses how initial training includes emphasis on safety and health hazards, emergency operations, including shutdown and safe work practices applicable to the employee's job tasks. I could not verify that each employee has been initially trained or has been provided refresher training at least every three years due to missing training files. **[AOC 5 – §68.71(a)(1)/ (b)/(c)]**. Figure 3 lists the records made available for each of the four operators selected. In the absence of training records, I could not verify that the plant has ascertained and documented that each employee involved in operating a process has received and understood the training required. Records prepared should contain the identity of the employee, the date of the training, and the means used to verify that the employee understood the training. Nouryon has approximately 40 operators working a Dupont schedule. Training records were damaged/contaminated and required disposal after Hurricane Harvey in 2017.

Figure 3:

Nouryon Houston Plant Training Records			
Operator A - SR		Operator C - DJ	
AOW outside operator recertification test	06/08/2020	AOW outside operator recertification test	05/08/2020
AOW general recertification test	04/24/2020	AOW inside operator test	05/08/2020
Operator B - JA		Operator D - JP	
Initial K-600	10/16/2019	AOW outside operator recertification test	12/22/2018
Sponto Test	06/14/2020	R100 recertification	12/22/2018
		R300 recertification	05/30/2020
		V500 recertification	05/20/2021

40 C.F.R. § 68.73 Mechanical Integrity – Nouryon has established written procedures to maintain the on-going integrity of the process equipment (Procedure: HOU-MI-PRC-070). The procedure details the RAGAGEP used to maintain equipment including American Society of Mechanical Engineers (ASME) Section VIII and the American Petroleum Institute (API) 510, 571, 572, and 576. Nouryon does not train any employees involved in maintaining the on-going integrity of process equipment and contracts equipment maintenance to a third-party. Contract employees provide their certifications related to the time-based inspections being performed such as ultrasonic thickness, condition monitoring locations (CMLs,) and thickness management locations (TMLs) for fixed and rotation equipment. The plant uses

Systems Applications and Products (SAP) preventative maintenance system to autogenerate maintenance inspections on process equipment. I reviewed several equipment maintenances records. For the 1-year V700-P5700 (that has an inspection plan due March 30 each year) was completed on 4/23/20 and currently tentatively scheduled for 2021. The plant has not ensured the frequency of inspections and tests of process equipment is consistent with applicable manufacturers' recommendations, good engineering practices, and prior operating experience for the following records reviewed: PO vessel, EO vessel, V-500, V-600 and V-700. Figure 4 [AOC 6 – §68.73(d)(1)/(d)(3)]. The plant has not documented each inspection and test that had been performed on process equipment and identified the following: the date of the inspection or test; the name of the person who performed the inspection or test; the serial number or other identified of the equipment on which the inspection or test was performed; a description of the inspection or test performed; and the result of the inspection or test. [AOC 7 – §68.73(d)(4)]. There were no data sheets for the SAP records for relief valves, lower explosive limit (LEL) alarms, and pumps.

Figure 4:

Nouryon Houston Plant Equipment Inspection List	
Equipment	Inspection Date/ Type
EO Tank (T-0801)	10/11/2004 External
	11/19/2008 External
	11/09/2013 Internal
	11/03/2020 External
PO Tank (T-0802)	2004
	2008
	01/27/2015 External
	11/03/2020 External
	11/04/2020 Ultrasonic Thickness
V-500	2004 External
	04/28/2009 Internal / External
	01/27/2015 External
	11/16/2020 Internal
V-600	02/12/2009 Internal / External
	01/21/2015 External
	02/04/2016 Internal
	05/05/2021 External (only current past due) Scheduled week of 06/22/2021
V-700	01/07/2009 Internal / External
	09/03/2016 Internal
	2016 Repair
	2016 Repair
	11/06/2020 External

40 C.F.R. § 68.75 Management of Change (MOC) – Nouryon has established and implemented written procedures to manage changes to process chemicals, technology, equipment, procedures, and changes to stationary sources that affect a covered process (HSE-PSM-002-MOC Procedure). An MOC initiated by a team leader begins with information gathering and P&ID drawing, confirming a change with a process engineer, submitting proposed changes in the Enablon database (where the system auto populates the MOC reviewers), approval is executed to make the change, PSSR is completed, approval to start-up then

completing any remaining post start-up action items. The procedures assure that the following considerations are addressed prior to any change: the technical basis for the proposed change, impact of change on safety and health, modifications to operating procedures, necessary time period for the change (normal or temporary) and authorization requirements for the proposed change. Employees involved in operating a process, and maintenance and contract employees whose job tasks would be affected by a change in the process, were informed of, and trained in, the change prior to start-up of the process or affected parts of the process. If applicable to each MOC, process safety information and operating procedures were updated accordingly. The MOCs I reviewed met these requirements.

40 C.F.R. § 68.77 Pre-startup Safety Review – I reviewed selected PSSRs related to the MOCs reviewed. The pre-startup safety reviews I reviewed confirmed the following prior to the introduction of a regulated substance to a process: construction and equipment was in accordance with design specifications; safety, operating, maintenance, and emergency procedures were in place and were adequate; for new stationary sources, a process hazard analysis had been performed and recommendations had been resolved or implemented before startup; modified stationary sources meet the requirements contained in management of change; and the training of each employee involved in operating a process had been completed.

40 C.F.R. § 68.79 Compliance Audits – Nouryon provided their two most recent certified RMP Compliance Audit reports, completed on December 15, 2018 and October 17, 2019. The 2016 compliance audit prior to the 2018 audit did not cover all of the RMP requirements. Each audit was conducted by a team of Nouryon staff and third-party contractors. The audit findings were documented in each report. The plant uses the Enablon system to track audit recommendations. The recommendations are assigned due dates using a risk matrix. Due dates are generally assigned by low risk (90 days), medium risk (60 days) and high risk (30 days). Nouryon has not promptly determined and documented an appropriate response to findings of the 2018 and 2019 audit and documented that deficiencies had been corrected. [AOC 8 – §68.79(d)] Figure 5.

Figure 5:

Nouryon Houston Plant Compliance Audit Recommendations			
Finding	Start Date	Due Date	Completion Date
2019- Establish a PM program for inspection of process hoses MI...	09/28/2019	03/13/2020	01/07/2021
2018- Contractors	07/09/2019	08/31/2019	01/27/2020
2018- Emergency Planning: Revise the ERP to include PPE matrix for the hazmat chemical protection clothing to ensure PPE is consistent for maximum chemical concentration and exposures. (ID: 2183)	07/24/2019	08/30/2019	04/01/2020

40 C.F.R. § 68.81 Incident Investigation – Nouryon provided their procedure for Incident Investigation reporting (DOC-HSE-PSM-007). Nouryon stated that the plant does not have any incidents that resulted in or could reasonably have resulted in a catastrophic release of a regulated substance. Enablon is also used for the incident management system. If an incident occurs, it will be reported in Enablon within 24 hours. The incident will be reviewed by a gatekeeper who then determines if an investigation is needed. If needed, the incident is assigned to an event owner who develops a team to investigate the incident

using technologies such as the “Five Why” or “Taproot” investigations. The results are shared with the operators.

40 C.F.R. § 68.83 Employee Participation – Nouryon has developed a written plan of action regarding the implementation of the employee participation required by this section, which is integrated into the program elements. The plant has consulted with employees and their representatives on the conduct and development of process hazard analysis and on the development of the other elements of process safety management in chemical accident prevention provisions. The plant has provided access to process hazard analysis and all other information required to be developed under this rule.

40 C.F.R. § 68.85 Hot Work Permit – Nouryon provided their hot work procedure that detailed guidance for hot work that does and does not generate an external flame or spark. I reviewed three hot work permits that involved an external flame or spark in the process area: Permit #15773 (June 1, 2021), Permit #15715 (May 25, 2021), and Permit #17356 (May 17, 2021). The permits reviewed documented that fire prevention requirements were implemented, as well as, the dates authorized for hot work and the object(s) upon which hot work would be performed. Permits are retained onsite and then kept in storage offsite.

40 C.F.R. § 68.87 Contractors – Nouryon uses the *ISNetWorld* contractor database to evaluate information regarding contractor’s safety performance and programs. All contractors must have a minimum grade of a “C” or an approved waiver to be permitted to work onsite. The plant uses the Houston Area Safety Council (HASC) to educate contractors of the known fire, explosion, or toxic release hazards related to the contractor’s work and the process. The HASC also explains site specific provisions of the emergency action program. The HASC gives the contractors a badge to control the entrance, presence, and exit of the contractors while onsite. Once the contractor arrives onsite, they meet at the guard shack, which receives a list of approved contractors for the day and escorts the contractor to the facility contact for final discussions before beginning work. Contractors are periodically evaluated multiple times a year via *ISNetWorld*’s insurance check, OSHA logs, and the start of new work onsite.

Subpart E – Emergency Response

40 C.F.R. § 68.90 Applicability – Nouryon is designated as a “responding stationary source”.

40 C.F.R. § 68.93 Emergency Response Coordination Activities – Nouryon has coordinated response needs with local emergency planning and response organizations to determine how the covered processes at the facility are addressed in the emergency response plan. The facility ensures that local response organizations are aware of the regulated substances in the covered processes, their quantities, the risks presented, and the facility resources and capabilities present to respond to an accidental release of a regulated substance. The plant has held joint training with local fire departments and planned tabletop exercises.

40 C.F.R. § 68.95 Emergency Response Program – Nouryon has developed and implemented an emergency response program for the purpose of protecting public health and the environment. The program includes the following elements: (1) An emergency response plan, which shall be maintained at the stationary source and contain at least the following elements: (i) Procedures for informing the public and the appropriate federal, state, and local emergency response agencies about accidental releases via the code red system; (ii) Documentation of proper first-aid and emergency medical treatment necessary to treat accidental human exposures via SDSs; and (iii) Procedures and measures for emergency

response after an accidental release of a regulated substance via the code red system; (2) Procedures for the use of emergency response equipment and for its inspection, testing, and Maintenance (Vallen is used as a third-party for the inspection and testing of emergency response equipment); (3) Training for all employees in relevant procedures (includes live firefighting training, HAZWOPER, rescue from process areas, and first-aid trainings); and (4) Procedures to review and update, as appropriate, the emergency response plan to reflect changes at the stationary source and ensure that employees are informed of changes. The owner or operator shall review and update the plan as appropriate based on changes at the stationary source or new information obtained from coordination activities, emergency response exercises, incident investigations or other available information, and ensure that employees are informed of the changes.

40 C.F.R. § 68.96 Emergency Response Exercises – (a) *Notification exercises*. At least once each calendar year, the owner or operator of a stationary source with any Program 3 process shall conduct an exercise of the stationary source's emergency response notification mechanisms required under §68.90(b)(3) or §68.95(a)(1)(i), as appropriate, before December 19, 2024, and annually thereafter. (b) *Emergency response exercise program*. The owner or operator of a stationary source subject to the requirements of §68.95 shall develop and implement an exercise program for its emergency response program, including the plan required under §68.95(a)(1).

Subpart G – Risk Management Plan

40 C.F.R. § 68.190 Updates – Nouryon's RMP was re-submitted as a 5-year update on July 26, 2019.

40 C.F.R. § 68.195 Required corrections – Nouryon's next RMP re-submission is due by July 26, 2024, unless an update or correction is required by 40 C.F.R. 68.190 and 40 C.F.R. 68.195.

40 C.F.R. § 68.200 Recordkeeping – Nouryon has not maintained records supporting the implementation of this part at the stationary source for five years such for the following: Training records, Mechanical Integrity records, and Process Hazard Analysis records. **[AOC 9 – §68.200]**

Section III – AREAS OF CONCERN

AOC 1 – 40 C.F.R §68.67 (e) Process Hazard Analysis

“(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; communicate the actions to operating, maintenance and other employees whose work assignments are in the process and who may be affected by the recommendations or actions.”

There were no 2010 or 2015 PHA recommendations to completion documents as the facility changed databases and they were not all tracked in one location.

AOC 2 – 40 C.F.R §68.67 (f) Process Hazard Analysis

“(f) At least every five (5) years after the completion of the initial process hazard analysis, the process hazard analysis shall be updated and revalidated by a team meeting the requirements in paragraph (d)

of this section, to assure that the process hazard analysis is consistent with the current process. Updated and revalidated process hazard analyses completed to comply with 29 CFR 1910.119(e) are acceptable to meet the requirements of this paragraph.”

Nouryon’s PHAs were conducted March 2010, December 2015 (9 months past due) and scheduled for July 2021 (currently 7 months past due if completed in July 2021).

AOC 3 – 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.”

Nouryon has not retained the PHA updates or revalidations for each process covered, as well as, the resolution of recommendations for the life of the process by not maintaining described in paragraph (e) of this section for the life of the process for the most recent two PHAs.

AOC 4 – 40 C.F.R §68.69 (c) Operating Procedures

“(c) The operating procedures shall be reviewed as often as necessary to assure that they reflect current operating practice, including changes that result from changes in process chemicals, technology, and equipment, and changes to stationary sources. The owner or operator shall certify annually that these operating procedures are current and accurate.”

Operating procedures were not annually certified to assure that procedures were current and accurate but were revised as needed. The last revision/ certifications of the operating procedures for the reactors were in 2019.

AOC 5 – 40 C.F.R §68.71 (a)(1)/ (b) / (c) Training

“(a) *Initial training.* (1) Each employee presently involved in operating a process, and each employee before being involved in operating a newly assigned process, shall be trained in an overview of the process and in the operating procedures as specified in §68.69. The training shall include emphasis on the specific safety and health hazards, emergency operations including shutdown, and safe work practices applicable to the employee's job tasks.”

“(b) *Refresher training.* Refresher training shall be provided at least every three years, and more often if necessary, to each employee involved in operating a process to assure that the employee understands and adheres to the current operating procedures of the process. The owner or operator, in consultation with the employees involved in operating the process, shall determine the appropriate frequency of refresher training.”

“(c) *Training documentation.* The owner or operator shall ascertain that each employee involved in operating a process has received and understood the training required by this paragraph. The owner or operator shall prepare a record which contains the identity of the employee, the date of training, and the means used to verify that the employee understood the training.”

I could not verify that each employee has been initially trained or has been provided refresher training at least every three years due to missing training files. Training records prior to 2018 were damaged/contaminated and require disposal during Hurricane Harvey in 2017.

AOC 6 – 40 C.F.R §68.73 (b)/ (d)(1)/ (d)(3) Mechanical Integrity

“(b) *Written procedures.* The owner or operator shall establish and **implement** written procedures to maintain the on-going integrity of process equipment.”

“(d) *Inspection and testing.* (1) Inspections and tests shall be performed on process equipment.”

“(3) 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.”

The plant has not ensured the frequency of inspections and tests of process equipment is consistent with applicable manufacturers' recommendations, good engineering practices, and prior operating experience for the following records reviewed: PO vessel, EO vessel, V-500, V-600 and V-700.

AOC 7 – 40 C.F.R §68.73 (d)(4) Mechanical Integrity

“(d) *Inspection and testing.* (4) The owner or operator shall document each inspection and test that has been performed on process equipment. The documentation shall identify the date of the inspection or test, the name of the person who performed the inspection or test, the serial number or other identifier of the equipment on which the inspection or test was performed, a description of the inspection or test performed, and the results of the inspection or test.”

The plant has not documented each inspection and test that had been performed on process equipment, and identified the following: the date of the inspection or test; the name of the person who performed the inspection or test; the serial number or other identified of the equipment on which the inspection or test was performed; a description of the inspection or test performed; and the result of the inspection or test. There were no data sheets for the SAP records for relief valves, lower explosive limit (LEL) alarms and pumps, only work orders.

AOC 8 – 40 C.F.R §68.79 (d) Compliance Audits

“(d) 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.”

Nouryon has not promptly determined and documented an appropriate response to findings of the 2018 and 2019 audit and documented that deficiencies had been corrected.

AOC 9 – 40 C.F.R §68.200 Recordkeeping

“The owner or operator shall maintain records supporting the implementation of this part at the stationary source for five years, unless otherwise provided in subpart D of this part.”

Nouryon has not maintained records supporting the implementation of this part at the stationary source for five years such as the following: Training records, Mechanical Integrity records, and Process Hazard Analysis records.

Closing Meeting - EPA Region 6 inspector Justin McDowell conducted a closing conference at the Nouryon Houston Plant on June 24, 2021 for this inspection. During the closing conference, I reviewed the 9 of Areas of Concern noted during the inspection.

Section IV – FOLLOW UP

No additional information was received by EPA after exiting the Facility on June 24, 2021.

Section V – LIST OF APPENDICES

No appendices are included with this report.