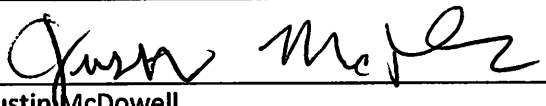


Region 6 Enforcement and Compliance Assurance Division

INSPECTION REPORT

Inspection Date(s):	May 13-17, 2019		
Media:	Air		
Regulatory Program(s)	Clean Air Act Section 112(r) and 40 C.F.R. Part 68 Chemical Accident Prevention Provisions, Risk Management Plan (RMP)		
Company Name:	Indorama Ventures Olefins, LLC		
Facility Name:	Lake Charles Facility		
Facility Physical Location:	4300 Highway 108 W		
(city, state, zip code)	Westlake, Louisiana 70669		
Mailing address:	4300 Highway 108 W		
(city, state, zip code)	Westlake, Louisiana 70669		
County/Parish:	Calcasieu Parish		
Facility Contact:	Robert Lynch	HSSE Director	
	Robert.Lynch@us.indorama.net		
FRS Number:	110000748040		
Identification/Permit Number:	LDEQ AI#: 5337; Title V Permit 0520-00107-V3 issued 2/2/18		
Media Number:	AFS #: LA0000002201900107; RMP #: 1000 0014 6969;		
NAICS:	325199 All Other Basic Organic Chemical Manufacturing		
SIC:	2869 Industrial Organic Chemicals, Not Elsewhere Classified		
Personnel participating in inspection:			
Justin McDowell	US EPA	Inspector/ Enforcement Officer	(214) 665-6557
Anthony Gaglione	Eastern Research Group	US EPA Contractor	(703) 841-0697
Karley Vinson	LDEQ	Inspector	(225) 219-3024
Cliff Acosta	LDEQ	Inspector	(225) 219-3140
Keri Meyers	LDEQ	Inspector	(225) 219-3101
Glen Jenkins	LDEQ	Inspector	(225) 219-3312
George Fox	USCG	Inspector	(504) 208-5890
Robert Lynch	IVOL	HSSE Director	(337) 502-4678
Anna Istkott	IVOL	HSS Systems & Processes Mgr.	(337) 502-4678
Steve Bordwine	IVOL	PSM Manager	(337) 502-4678
Darryl Helton	IVOL	Production / Technology Mgr.	(337) 502-4678
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Aravind Subraman	IVOL	CES Mechanical Engineer	(337) 502-4678
Anoop Srivastanva	IVOL	MM Manager	(337) 502-4678
Prateek Rama	IVOL	I & E Manager	(337) 502-4678
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Brad McFarlanin	IVOL	Process Control Engineer	(337) 502-4678
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EPA Lead Inspector Signature/Date		7/16/2019
	Justin McDowell	Date
Supervisor Signature/Date		7/16/2019
	Samuel Tate	Date

Section I – INTRODUCTION

PURPOSE OF THE INSPECTION

I, United States Environmental Protection Agency (EPA) Region 6 inspector Justin McDowell; Eastern Research Group inspector Anthony Gaglione (contractor for USEPA); Louisiana Department of Environmental Quality (LDEQ) Chemical Accident Prevention Program inspectors Keri Meyers, Glen Jenkins, Cliff Acosta and Karley Vinson; and, United States Coast Guard inspector George Fox, arrived at the Indorama Ventures Olefins, LLC Lake Charles Facility (Indorama) at 9:00 AM on Monday, May 13, 2019, for an announced inspection. The facility is located at 4300 Hwy 108 S in Westlake, Louisiana. We met with Robert Lynch (HSSE Director), Anna Istkott (HSS Systems & Processes Manager), Steve Bordwine (PSM Manager), Darryl Helton (Production/ Technology Manager), Valerie Kazlauskas (Trinity Consulting) and Colt Sommers (Trinity Consulting) for an opening meeting.

Anthony and I presented our credentials and informed Indorama personnel that this was an EPA inspection to determine compliance with the facility's 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), which includes the Chemical Accident Prevention Provisions in 40 C.F.R. Part 68 [112(r)(7)] and the General Duty Clause, [112(r)(1)]. This inspection was prompted due to numerous complaints to LDEQ by both adjacent facilities and residents. This is the second Clean Air Act (CAA) Section 112(r) inspection at this facility prompted by complaints. At the time of the previous inspection on June 18-22, 2018, Indorama did not have more than threshold quantities of regulated toxic or flammable substances, as listed in 40 C.F.R. §68.130, in a process on site; therefore, Indorama was not yet subject to the Chemical Accident Prevention Provisions. At the time of this inspection, the Chemical Accident Prevention Provisions in 40 C.F.R. Part 68 and the General Duty Clause were now applicable to Indorama due to storage of regulated substances in excess of threshold quantities.

I inquired if an employee representative was available pursuant to section 112(r)(6)(L) of the CAA to participate in this inspection. Mr. Lynch stated that the Lake Charles Facility is a non-union facility.

Table 1: Opening Meeting Attendance, Monday May 13, 2019

NAME	POSITION
Justin McDowell	US EPA inspector
Anthony Gaglione	Eastern Research Group inspector
Karley Vinson	LDEQ inspector
Cliff Acosta	LDEQ inspector
Keri Meyers	LDEQ inspector
Glen Jenkins	LDEQ inspector
George Fox	USCG
Robert Lynch	IVOL HSSE Director
Anna Istkott	IVOL HSS Systems & Process Manager
Steve Bordwine	IVOL PSM Manager
Darryl Helton	IVOL Production/ Technology Manager
Valerie Kazlauskas	Consultant
Colt Sommers	Consultant

FACILITY DESCRIPTION

The Indorama Ventures Olefins plant in Westlake, Louisiana primarily produces ethylene and propylene. Indorama's parent company is IVOL based in Bangkok, Thailand. The site begins with thermal cracking of ethane and propane feedstocks at 1,500° - 1,800° F. The cracking takes place in eight direct-fired furnaces (one of the eight furnaces is always off-line for decoking or stand-by). Heat from the furnace effluent is recovered by convection to produce steam at 625 pounds per square inch. Cracked gas from the furnaces is cooled in the Quench Tower with recirculating water. The condensed steam, heavy oil, raw gasoline and recirculating water from the quench tower bottom are separated in an oil / water separator. Cooled cracked gas from the quench tower overhead is compressed by Feed Gas Compressor then treated for acid gas removal in two caustic towers. Cracked gas is then dried in primary driers and then sent forward for product distillation. The ethylene and propylene are separated from the byproducts by cryogenic fractionation. There are separate refrigeration units / compressor for ethylene and propylene. The products are then shipped directly to customers via pipeline, truck, or railcar or are stored on-site in storage vessels (propylene). A portion of the stored propylene is used for refrigeration at the facility. Indorama in the future will be a manned facility using a digital control system (DCS) control system and operating 24 hours a day/ 365 days per year, with the exception of limited planned shutdowns due to the complexity of the Olefins plants. Indorama currently has 150 total employees, including seven direct employee operators and contract operators working 12-hour shifts.

Section II - OBSERVATIONS

The week leading into the inspection brought severe inclement weather to the Indorama plant. On Thursday May 9, 2019, it is believed that a lightning strike impacted the entire process unit area, leading to the boilers being tripped, and resulting in a loss of steam to the flare and the loss of the flare pilot flame. The loss of steam and the flare pilot flame in turn resulted in an accidental release of ethylene and propylene to the atmosphere. On Saturday May 11, 2019, while working to bring the unit back on line after the lightning strike, maintenance was working on one of two air compressors. The second air compressor and associated boilers tripped off line, causing the process unit to lose steam, and resulted in another accidental release of ethylene and propylene. Both release events are still currently under internal incident investigation, and only preliminary findings were available.

The inspection team took multiple facility tours:

On May 13, 2019 at approximately 1:30 PM, Anthony, George and Cliff conducted a driving "windshield" tour with Anna and other Indorama personnel.

On May 14, 2019, at approximately 8:30 AM, the inspection team watched Indorama's safety video at the security office before proceeding inside the plant to the process areas, accompanied by Darryl, Valerie, Anna, Rob and four Indorama Emergency Response Team members who monitor the process areas. We toured the ammonia tank and unloading area, ammonia vapor suppression system, control room, and rail car area. There was debris/housekeeping observed around and on the top of the ammonia tank. This piping and spare equipment made it difficult to navigate and observe the process lines and created a tripping hazard.

On May 15, 2019, we conducted another plant tour. George Fox and Robert Lynch proceeded ahead to observe the fuel oil tank (FA-712) area. During the tour, the inspection team detected an odor near both the control room and the fuel oil tank. Emergency response personnel notified the inspection team that a benzene reading was detected at 0.2 ppm. We observed dents on the FA-712 tank near the bottom

north side. Indorama personnel could not initially explain when the dents occurred or verify the status of the tank operation subsequent to the incident that caused the dents. Next, we observed the rail loading areas. Indorama uses SGS contractors for the loading and unloading of rail cars similarly to other regulated facilities in the area. I then observed the propylene storage tank spheres. Sphere 404 was not in service. Sphere 401 was currently being used to store off specification product, and Sphere 402 contained final product awaiting offsite shipment. Each tank sphere was made by Horton and built in 1956. Each sphere originally had a 30,000-pound (lb) capacity. The spheres were re-fabricated in 1988 and repaired again in October 2018 after Indorama acquired the facility but this did not impact storage capacity. Anthony, Anna and I climbed the propylene Sphere 402 to observe the process equipment on top. Lastly, the inspection team observed the pyrolysis gasoline (Pygas) tank. The Pygas tank had dents and an impression at the top of the tank near the insertion of the foam/fire water injection system. Indorama could not provide information on how these dents occurred. Sphere 402 is a tank purchased after the facility was acquired by Indorama.

I initially observed only one wind sock. Indorama personnel later clarified that the facility has seven wind socks: at the administration building, at Boiler 201, at Tower 206, at Tower 301, at Tower 10, north of the old fire station, and, near the wastewater area.

Subpart A – General

40 C.F.R. § 68.10 Applicability – Indorama is the owner or operator of a stationary source that has more than a threshold quantity in a process of regulated toxic and flammable substances, as listed in 40 C.F.R. §68.130, and is therefore subject to the Chemical Accident Prevention Provisions. Indorama has a CAA Title V Permit No. 0520-00107-V3 for their Basic Organic Chemical Manufacturing process (NAICS code 325199). Indorama is subject to the Occupational Safety and Health Administration (OSHA) process safety management (PSM) standard, 29 C.F.R. § 1910.119, and has one Program Level 3 process. Indorama brought the regulated flammable chemical propylene onsite on October 18, 2018.

40 C.F.R. § 68.12 General requirements – Indorama submitted their initial RMP in early December 2018 and re-submitted a voluntary update on December 14, 2018. This re-submission listed one covered process containing one regulated toxic chemical (anhydrous ammonia) and 17 regulated flammable chemicals (butene, 2-butene-trans, ethylene, isopentane, 1-pentene, ethane, methane, 1-butene, propylene, vinyl acetylene, 1,3- butadiene, isoprene, pentane, butane, 2-butene-cis, propane, 1,3-pentadiene and a flammable mixture). This requires Indorama 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 submit the data elements from 40 C.F.R. § 68.175 in their RMP.

40 C.F.R. § 68.15 Management – Indorama has developed a management system to oversee the implementation of risk management program elements. Indorama has an organizational chart that covers their entire facility, and which include some, but not all, of the persons responsible for implementing the individual requirements of the risk management program, and the defined the lines of authority in each procedure pertaining to each individual element. **[AOC 1]** Indorama lists Charvi Payghode (PSM Engineer) as the name and title of the person responsible for Part 68 RMP implementation, but she did not participate in the inspection.

Subpart B – Hazard Assessment

40 C.F.R. § 68.20 Applicability – Indorama is a program level three (3) stationary source subject to this subpart. Indorama is required to prepare an offsite consequence analysis and complete the five-year accident history.

40 C.F.R. § 68.22 Offsite Consequence Analysis Parameters – I reviewed and discussed Indorama's offsite consequence analysis and supporting documentation. Indorama uses RMP*Comp™ to document endpoints for offsite consequence analyses for both worst-case and alternative release scenarios from the rule. RMP*Comp™ ensures the appropriate wind speeds and stability classes, ambient temperatures and humidity values, and values for height of the release for the release analyses, and surface roughness values for the release scenarios, are within parameters specified by EPA.

40 C.F.R. § 68.25 Worst-case Release Scenario Analysis – Indorama has identified and documented a worst-case release scenario analysis for their RMP covered toxic and flammable substances. The distance to endpoint for the worst-case analyses were calculated using RMP*Comp™. One worst-case toxic substance release scenario was evaluated for anhydrous ammonia. Indorama indicated that ammonia is normally classified as a gas at ambient temperature and handled as a gas or liquid under pressure. Indorama should review this classification. To determine the worst-case for regulated flammable substances, Indorama looked at the three largest volumes to assume the worst-case; however, not all regulated flammable substances present on site were evaluated. The three analyses conducted for flammable worst-case scenarios were 1,3-butadiene, Pygas, and propylene.

40 C.F.R. § 68.28 Alternative Release Scenario Analysis – Indorama has identified and documented one alternative release scenario for their regulated toxic substance (anhydrous ammonia). In the initial RMP submission, Indorama also identified and documented three alternative release scenarios for their regulated flammable substances (1,3-butadiene, Pygas and propylene). The scenarios were documented based on the three largest volumes. The December 2018 RMP re-submission included a change from propylene to the flammable mixture for the alternative case scenario for flammables.

40 C.F.R. § 68.30 Defining Offsite Impacts - Population – Indorama's offsite consequence analysis documented the methodology for both worst-case and alternative case scenarios. The current census data was used (2010) in the methodology. The estimated population that was identified in the distance to endpoint in the RMP was represented by a map with the release point at the center and a radius of the potential impacted areas.

40 C.F.R. § 68.33 Defining Offsite Impacts - Environment – Indorama's offsite consequence analysis documented the methodology for both worst-case and alternative release scenarios regarding possible affected receptors by using RMP*Comp™. Indorama identified environmental receptors that would be impacted in the distance to endpoint based on a circle with the release point in the center and a radius of the potential impacted areas.

40 C.F.R. § 68.36 Review and Update – Indorama must document that reviews and updates of the offsite consequence analyses occur at least every five years.

40 C.F.R. § 68.39 Documentation – I reviewed all documentation for offsite consequence analyses provided by Indorama. For the worst-case scenario, a description of the vessel or pipeline, the substance selected as worst-case, and the rationale for selection was included. Likewise, assumptions included use

of any administrative controls and any passive mitigation that were assumed to limit the quantity that could be released, the estimated quantity actually released, the release rate, and duration of release. The methodology used to determine distance to endpoint was documented from RMP*Comp™. The rationale for the alternative case scenario vessel was determined based on the three flammable substances with the largest volumes. Indorama should verify the status of their stationary propylene rail cars, as a potential release scenario from these vessels may impact different receptors than those previously identified. An off-site consequence analysis may identify a potential release scenario that is different in impacts or radius of affected area. [AOC 2]

40 C.F.R. § 68.42 Five-year accident history – Indorama does not currently have any accidents reported under their Five-year accident history. Indorama has May 9, 2019, and May 11, 2019, investigations currently in progress to determine if they meet the criteria for this subpart for inclusion of release events that have occurred during the past five years.

Subpart D – Program 3 Prevention Program

40 C.F.R. § 68.65 Process Safety Information – All process safety information is available to all employees on SharePoint. Any update made to process safety information is made thru the management of change (MOC) approval process. The recognized and generally accepted good engineering practices (RAGAGEP) maintenance plans were developed for fixed and rotating equipment as well as instrumentation. Fixed and rotating plans were completed in August 2018, and instrumentation was completed in March 2018. The initial process diagram reviewed was incorrect, as we began the overview of the facility prior to completing tours. T-206 has two towers not one. The piping and instrumentation diagram (P&ID) for the ammonia tank was not an accurate representation of what was actually present during my walking tour. [AOC 3] I reviewed several safety data sheets (SDS). SDSs are provided via *MSDS Online* and stored online separate from the site's SharePoint system. I discussed the flares and relief systems with Sadanand (Technology Manager). The facility has three flares: the main flare (F-4), a railcar flare (F-6), and a backup flare (F-7). I inspected Indorama's Alarm Philosophy document to review the metrics used for alarm maintenance and management.

40 C.F.R. § 68.67 Process hazard analysis (PHA) – The initial PHA, completed at the beginning of Indorama's ownership of the facility, was determined to be insufficient, and resulted in the December 2018 resubmission. Indorama has performed an initial process hazard analysis that identified, evaluated and controlled the hazards involved in the entire process. This PHA conducted on August 31, 2018, includes the entire facility. Indorama uses the Hazard and Operability Study (HAZOP) technology to conduct a process PHA. Indorama had HAZOP review sessions to integrate findings from the EPA/LDEQ June 2018 joint inspection. PHA Pro is the tool used by Indorama to process HAZOP worksheets, and the guidance document for recommendations uses the risk matrix identified in Indorama's Risk Assessment Procedure. The colors and content in the risk matrix for the PHA was not consistent with the Risk Assessment Procedure. [AOC 4]

40 C.F.R. § 68.69 Operating Procedures – I interviewed Darryl Helton for operating procedures. Operators currently work 12 hour shifts as double-shifted days and nights. The facility plans to transition to the 4 days on, 3 days off operator shift schedule once operations are stabilized. In 2017, Indorama had approximately 17 operators. They are now down to 7, creating the need for hiring contractor operators to get the facility past the commissioning process and start-up. I reviewed a table of contents for all operating procedures completed September 20, 2018. All operating procedures have been internally reviewed and finalized with correct identifications per the findings from the 2018 EPA/LDEQ

inspection. Changes to operating procedures are managed via DocuSign for routing approvals; then, modified procedures are posted to SharePoint. In addition, hard copies of the latest versions are located inside the control room. Indorama anticipates that some procedures will need updating again once operations are stabilized. Annual operating procedure certification(s) were not included in the procedures I reviewed. **[AOC 5]** I requested the following operating procedures for review: IVOL-OPR-3-407; IVOL-OPR-3-408; IVOL-OPR-3-256; IVOL-OPR-3-292; IVOL-OPR-3-293; IVOL-OPR-3-061; IVOL-OPR-3-062; IVOL-OPR-3-063; IVOL-OPR-3-064; IVOL-OPR-3-104 IVOL-OPR-3-008; and, IVOL-OPR-3-366.

40 C.F.R. § 68.71 Training – I interviewed Mike Dixon (Site Training Coordinator). Operators receive general training via a Virtual Training Assistant (VTA). This system notifies employees of training and refresher updates available, which include tests or written statements of understanding. Indorama stated that all operators are currently trained on the most updated operating procedures. Newly hired operators spend three days with the Training Coordinator for onboarding awareness training, followed by shadowing with an experienced operator in the designated work areas to complete qualification.

40 C.F.R. § 68.73 Mechanical Integrity – I reviewed Indorama’s mechanical integrity procedure completed in July 2018. First, I spoke with Aravind, the Central Engineering Service mechanical engineer to discuss the reliability, inspection, and equipment evaluation process for piping and process safety valves (PSVs). Inspection historical records are stored on the facility’s computer shared drive. Inspection records will be migrated to a plant condition monitoring software (PCMS) system that will reference American Petroleum Institute (API) standards for inspection frequencies, and the facility will use an electronic simplified business management system (SBMS) for maintaining rotating equipment. Indorama is currently establishing baseline inspections on piping circuits but stated that all other process equipment has received baseline inspections. There remain unanswered questions regarding: underground process piping at the facility; risk-based inspections at the facility; corrosion prevention planning and current corrosion studies; equipment life-span calculations; retro PMI and preventative maintenance on rotating equipment.

Our second mechanical integrity interview was with Anoop for mechanical maintenance. Mechanical maintenance technicians have daily and weekly meetings to prioritize inspections that are attended by operations. Mechanical maintenance work orders are also generated by the SBMS.

The third mechanical integrity interview was with Prateek to discuss the instrumentation and electrical systems. SBMS serves as a primary tool for scheduled and un-scheduled maintenance. The system sends notifications for due dates to assign foremen to complete field preventative maintenance activities. Unscheduled maintenance work orders come from managers based on the field data for a breakdown. Some maintenance work in these areas are conducted by a third-party contractor. With regard to the observed dents on the FA-712 tank near the bottom north side that were not initially explained, Aravind informed us on the last day of the inspection on Friday that the tank was inspected according to the protocols of API Standard 653, and that the observed dents were not a significant concern.

With regard to the observed dents and impression at the top of the Pygas tank, near the insertion of the foam/fire water injection system, Indorama was unable to provide information as to how these dents occurred. Indorama is in the process of increasing the frequency of inspections to monitor the dents in both tanks. **[AOC 5]**

40 C.F.R. § 68.75 Management of Change (MOC) – Indorama’s MOC procedure is currently being updated and is not adequate to manage changes at this time [AOC 6]. Indorama discussed the facility’s process and protocols to manage changes to process chemicals, technology, equipment, and procedures, and changes to stationary sources that affect a covered process. The MOC initiator, who is generally a process engineer, maintenance personnel, or management, submits a proposal as a permanent MOC or temporary MOC (lasting no more than six months) with P&IDs and specification sheets containing a detailed description of the technical basis for the change. The initiator then assigns an engineer who distributes evaluation questions to affected personnel. Everyone assigned is emailed to answer the questions in order to move the MOC into approval stages while the initiator updates the changes. Once approved, the MOC is assigned a number and issued work orders for completion. Indorama uses iProcess as an electronic repository to track the progress and status of MOCs. Indorama has a separate provision for changes that are replacement-in-kind. Pre-startup action items are implemented in the pre-startup safety review with pre-determined questions, depending on the nature of the change. We reviewed several MOCs to verify the appropriate components were implemented: MOC-2018-264; MOC-2019-314; M-MO-2018-258; M-MO-2018-222; M-TE-2019-339; M-MO-2019-265; M-MO-2018-255; and, M-MO-2019-284.

40 C.F.R. § 68.77 Pre-startup Safety Review (PSSR) – The same four approval individuals required to approve an MOC are required to also approve start-up after a PSSR. They are also involved in ensuring PSSR post start-up actions are completed.

40 C.F.R. § 68.79 Compliance Audits – Indorama had not yet conducted a compliance audit for this subpart.

40 C.F.R. § 68.81 Incident Investigation – Indorama has an incident investigation policy that has been updated since the 2018 inspection, but which will not become final until late May 2019. The policy will direct the facility to use a risk matrix for incident investigations. The IVOL parent company provides a short form for basic investigations in terms of an after-action review. For each applicable incident, an incident notification form is completed and submitted to the (Health/Safety/Security/ Environmental (HSSE) Department by the shift supervisor. The team ensures the situation is stabilized for personnel and plant operations, sends applicable internal/ external notifications, and discusses if the event has exceeded reportable quantities. The investigation team, which varies due to the nature of the incident, via the risk matrix will gather witness statements from those involved, and will share those with the engineering team to obtain recommendations for remedies. The final incident report will share causal factors, corrective/preventative actions to prevent future incidents, and a means to track progress of corrective actions. Indorama will conduct a “tap root” investigation for high priority level three investigations. Historical incident investigations are tracked using a Microsoft Excel spreadsheet, but Indorama is in the process of transferring all incident tracking data to an iProcess database. At the time of the EPA inspection, all incidents post start-up had been transferred to iProcess. We reviewed several recurring incidents that had similar outcomes for creating fires within the entire process. There are incident investigations that are still under facility review. EPA is awaiting final incident reports for incidents that have occurred at the facility [AOC 7].

40 C.F.R. § 68.83 Employee Participation – Indorama has an employee participation plan that describes how personnel are involved in activities related to the elements of the RMP. Indorama also has quarterly safety “all hands” meetings to keep employees informed of investigations at the facility.

40 C.F.R. § 68.85 Hot Work Permit – Indorama completes a hot work form for all hot work (e.g. welding) near a covered process. The hot work procedure lists two documents: a hot work permit and a safe work permit. The permits describe the scope of work and personnel involved. Permits have a maximum duration of 12 hours but may be extended if needed. The permit has two copies, one remains with the issuing individual and the other with the team performing the work until work is completed. I reviewed hot work permit #141638 for hot work performed on April 10, 2019, which was closed out on May 7, 2019 [AOC 8].

40 C.F.R. § 68.87 Contractors – Indorama uses a procurement process to verify contractors who will perform work onsite. This process evaluates each potential contractor on their environmental, health and safety record, financial records and previous incidents. All Indorama contractors are processed through the Southwest Louisiana Safety Council where they receive site specific training. No site-specific training is given to contractors on site. In 2017, Indorama had approximately 17 operators. The number has gone down to 7, thereby creating the need for hiring contractor operators for the short term until the facility has passed the commissioning process and start-up phase.

Subpart E – Emergency Response

40 C.F.R. § 68.90 Applicability – Indorama’s contract employees are first responders that respond to on site structural and chemical fires, and chemical releases. Indorama has contracted the Rural Metro Fire Department to lead emergency response events on site. Rural Metro provides two responders per shift who are emergency medical technicians with hazardous materials (hazmat) and rescue training. The emergency response team (ERT) is equipped with a ladder truck, engine pumper, brush truck, two farm trailers, hazmat trailer and an ambulance. Rural Metro is also responsible for the emergency response training of Indorama personnel, as well as preventative maintenance on emergency response equipment. Indorama stated that they intend to conduct weekly drills in one or a combination of response areas. In mutual aid scenarios which affect neighboring facilities along Highway 108, Indorama provides a fire pump truck or a ladder truck. Indorama is a participant in the Calcasieu Parish Local Emergency Planning Committee (LEPC). Indorama uses the Community Awareness Emergency Response (CAER) system as a means of informing the public and local emergency response agencies about accidental releases.

40 C.F.R. § 68.95 Emergency Response Program – Indorama’s Emergency Response Plan (ERP) was completed on March 20, 2019, and includes an Emergency Action plan. Indorama has a separate security plan that is maintained at the facility, and the company plans to construct a fire house. All emergency response equipment records are uploaded to the ERT Manager’s computer for archiving on a monthly basis.

Subpart G – Risk Management Plan

40 C.F.R. § 68.190 Updates – Indorama’s RMP was re-submitted as a voluntary update on December 14, 2018.

40 C.F.R. § 68.195 Required corrections – Indorama’s next RMP re-submission is due by December 14, 2023, unless an update or correction is required by 40 C.F.R. § 68.190 and/or 40 C.F.R. § 68.195.

Closing Meeting- A closing meeting was held on Friday May 17, 2019. Table 2 lists the personnel present for the meeting.

Table 2: Closing Meeting Attendance, Friday May 17, 2019

NAME	POSITION
Justin McDowell	US EPA inspector
Anthony Gaglione	Eastern Research Group inspector
Karley Vinson	LDEQ inspector
Cliff Acosta	LDEQ inspector
Keri Meyers	LDEQ inspector
Glen Jenkins	LDEQ inspector
Deepak Kedia	COO
Robert Lynch	IVOL HSSE Director
Anna Istkott	IVOL HSS Systems & Process Manager
Steve Bordwine	IVOL PSM Manager
Darryl Helton	IVOL Production/ Technology Manager
Valerie Kazlauskas	Consultant
Colt Sommers	Consultant

Section III – AREAS OF CONCERN

AOC 1 – 40 C.F.R. § 68.15 (c) Management

“(c) When responsibility for implementing individual requirements of this part is assigned to persons other than the person identified under para-graph (b) of this section, the names or positions of these people shall be documented and the lines of authority de-fined through an organization chart or similar document.”

Indorama has an organizational chart that documents covers their entire facility, and which does include some, but not all, of the persons responsible for implementing the individual requirements of the risk management program, and the defined the lines of authority in each procedure pertaining to each individual element.

AOC 2 – 40 C.F.R. § 68.25 (a)(2)(i); § 68.25 (a)(2)(ii) & § 68.25 (a)(2)(iii) Worst-case scenario analysis

“(a) The owner or operator shall analyze and report in the RMP: 2) For Program 2 and 3 processes:(i) One worst-case release scenario that is estimated to create the greatest distance in any direction to an end-point provided in appendix A of this part resulting from an accidental re-lease of regulated toxic substances from covered process under worst-case conditions defined in § 68.22”

“(a) The owner or operator shall analyze and report in the RMP: 2) For Program 2 and 3 processes:(ii) One worst-case release scenario that is estimated to create the greatest distance in any direction to an end-point defined in § 68.22(a) resulting from an accidental release of regulated flammable substances from covered processes under worst-case conditions de-fined in § 68.22;” and

“(a) The owner or operator shall analyze and report in the RMP: 2) For Program 2 and 3 processes: (iii) Additional worst-case release scenarios for a hazard class if a worst-case release from another covered process at the stationary source potentially affects public receptors different from those potentially affected by the worst- case release scenario developed under paragraphs (a)(2)(i) or (a)(2)(ii) of this section.”

Indorama classified indicated that for its toxic substance ammonia that is are normally classified as a gas at ambient temperature, and handled as a gas or liquid under pressure. Indorama should review this classification. Indorama should verify the status of their stationary propylene rail cars, as a potential release scenario from these vessels analysis that may impact different receptors than those previously identified. An off-site consequence analysis may re-evaluation will identify a potential release scenario that is different in impacts or radius of affected area may impact or have different impacted receptors.

AOC 3 – 40 C.F.R. § 68.65(d)(1)(ii) Process safety information

“(d) Information pertaining to the equipment in the process. (1) Information pertaining to the equipment in the process shall include: (ii) Piping and instrument diagrams (P&ID’s);”

P&IDs and process flow diagrams did not match what was observed in the field.

AOC 4 – 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.”

PHA Pro is the tool used by Indorama to process HAZOP worksheets, and the guidance document for recommendations uses the risk matrix identified in Indorama’s Risk Assessment Procedure. The colors and content in the risk matrix for the PHA was not consistent with the Risk Assessment Procedure.

AOC 5 – 40 C.F.R. § 68.73 (f)(2) Mechanical Integrity

“(f) Quality assurance. (2) Appropriate checks and inspections shall be performed to assure that equipment is installed properly and consistent with design specifications and the manufacturer’s instructions.”

I observed dents on the FA-712 tank near the bottom north side. Indorama personnel could not initially explain when the dents occurred, or verify the status of tank operation subsequent to the damage. . Aravind informed us on Friday during the last day of the inspection that the tank had been inspected according to API 653, and the dent observed was not a significant concern. The Pygas tank had dents and an impression at the top of the tank near the insertion of the foam/fire water injection system. Indorama could not provide information as to how and when these dents occurred. The tank was purchased after the facility was acquired by Indorama.

With regard to mechanical integrity requirements, the inspection team has unanswered questions regarding: underground process piping underneath the facility; the status of risk-based inspections at the facility; corrosion prevention planning and current corrosion studies; equipment life expectancy calculations; and, retro PMI and preventative maintenance on rotating equipment.

AOC 6 – 40 C.F.R. § 68.75 (a) Management of Change

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

Indorama’s MOC procedure is currently being updated and no final document has been provided.

AOC 7 – 40 C.F.R. § 68.81 (e) Incident Investigations

“(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.”

Indorama has had recurring incidents, resulting in fires affecting the entire process equipment with similar causal factors.

AOC 8 – 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. The permit shall be kept on file until completion of the hot work operations.”

I reviewed hot work permit #141638 for hot work performed on April 10, 2019, which was closed out on May 7, 2019. Hot work permits are usually completed within a 12-hour shift but may be extended for longer durations.

Section IV – FOLLOW UP

The following information was requested by EPA and received on June 21, 2019 after exiting the Facility on May 17, 2019:

1. CBI documents requested from the facility on May 17, 2019.
2. Indorama’s incident register for the period from 05/18/2019 thru 06/20/2019.

At the time of the completion of this report, the Eastern Research Group report has not been finalized. Once that report becomes final, it will be included as an attachment to supplement this report and will be shared with the facility. EPA will continue to inspect documentation requested from this facility and Areas of Concern may be added or removed.

Section V – LIST OF APPENDICES

Appendix 1 – Photo Log – 32 photos taken (Confidential Business Information- not included)