United States Environmental Protection Agency

Region 6 Enforcement and Compliance
Assurance Division
INSPECTION REPORT

Inspection Date(s):	04/19/2022 – 04/21/2022	
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 Risk Management Plan (RMP)	
Company Name:	Indorama Ventures USA Holdings	
Facility Name:	**Indorama Ventures Oxides**	
Facility Physical Location:	6001 Highway 366	
(city, state, zip code)	Port Neches, Texas 77651	
Mailing address:	2701 Spur 136 P.O. Box 847	
(city, state, zip code)	Port Neches, Texas 77651	
County/Parish:	Jefferson	
Facility Contact:	Heather Clark	Process Safety Team Leader
	Heather.Clark@us.indorama.net	
FRS Number:	110000599567	
Identification/Permit Number:	O-2287	
Media Identifier Number:	RMP 1000 0011 5779	
NAICS:	32511 Petrochemical Manufacturing	

Personnel participating in inspection:		
Tony Robledo	U.S. EPA	Inspector/Enforcement Officer
Dan Williams	U.S. EPA	Inspector/Enforcement Officer
Kimberly Hoyt	Indorama	Site Director Port Neches Operations (PNO)
Barry Hoekstra	Indorama	Senior Manager – Maintenance PNO
Michael Maier	Indorama	Operations Manager – Surfactants and Amines PNO
Bruce Collins	Indorama	Operations Manager – Utilities PNO
Kevin Choate	Indorama	Operations Manager – PO/MTBE
Beau Beckham	Indorama	Health & Safety Manager PNO
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Bill Pop	Indorama	Senior Human Resources Manager PNO
Brian Hurtado	Indorama	Quality Logistics Manager PNO
Jack Hemmert	Indorama	Senior Manager Cap/Rel Systems PNO
Matthew Kott	Indorama	Process Safety Management (PSM) Engineer PNO
Armando Hernandez	Indorama	IOD Process Safety Manager
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Sophie Gutierez	Indorama	Process Safety Engineer PNO
Micah Mosley	Indorama	Manufacturing Excellence Leader PNO
David Avanzato	Indorama	Sr. Operations Manager - PO/MTBE/Utilities PNO
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Michael DuBois	Indorama	Environmental Manager PNO
Brandon Pippin	Indorama	Emergency Response Specialist PNO
Jack Tindel	Indorama	Sr. Operations Manager – Olefines & Oxides PNO
Heather Clark	Indorama	Process Safety Lead PNO
Ed Gunderson	Indorama	IOD Senior Manager - EHS Legal

EPA Lead Inspector Signature/Date	ANTHONY ROBLEDO Digitally signed by ANTHONY ROBLEDO DN: c=US, o=U.S. Government, ou=Environmental Protection Agency, cn=ANTHONY ROBLEDO, 0.9.2342.19200300.100.1.1=68001003655529 Date: 2022.05.04 11:39:36 -05'00'
	Tony Robledo
Supervisor Signature/Date	SAMUEL TATES Digitally signed by SAMUEL TATES Date: 2022.05.04 22:22:10 -05'00'
	Samuel Tates

Section I – INTRODUCTION PURPOSE OF THE INSPECTION

We, Environmental Protection Agency (EPA) Region 6 inspectors Tony Robledo and Dan Williams, arrived at Indorama Ventures Oxides (Indorama) at approximately 9:00 a.m. on April 19, 2022, for an announced inspection. We met with Indorama managers and staff at the opening meeting. We presented our credentials, and informed them that this was an EPA inspection to determine compliance with the Clean Air Act (CAA) Sections 112(r)(1) and 112(r)(7). The scope of the inspection was a partial compliance evaluation (PCE) and included evaluation of the compliance with 40 C.F.R. Part 68 – Chemical Accident Prevention Provisions.

FACILITY DESCRIPTION

The facility produces olefins, ethylene oxide, propylene oxide, Methyl tertiary-butyl ether (MTBE), ethylene glycols, propylene glycols, ethanolamines, morpholine/Diglycolamine (DGA) surfactants. The facility is divided into nine process areas. The first area contains the propylene glycol unit G2. The second area contains the morpholine/DGA unit E7. The third area contains the ethanolamines unit E4. The fourth area contains the surfactants units E3 and E6. The fifth area are the ethylene oxide units F4, F6 and F8 and ethylene glycol units G1, G5 and G6. The sixth area is the propylene oxide (PO)/MTBE unit known as F5. The seventh area contains the Receiving and Shipping. The eighth area contains Utilities. The ninth area contains the ethylene unit A3. The facility handles both regulated flammable and toxic substances above there threshold quantities. There are 589 full-time employees at this union facility. The plant operates 24 hours a day, 7 days a week.

Section II – OBSERVATIONS

EPA Inspectors conducted a walk-through of the facility, accompanied by Indorama personnel, to observe the facility process, equipment, pressure vessels, and emergency response operations. We observed no spills, leaks, or fugitive hydrocarbon emission trails with the Forward Looking Infrared (FLIR™) Series GF320 camera. Additional observations and findings are found on the RMP Program Level 3 Checklist, located in **Appendix #1**.

Section III – AREAS OF CONCERN

Closing Meeting – We convened a closing meeting on Thursday, April 21, 2022, to discuss the Areas of Concern (AOC) noted during the inspection, the completion process, and to answer questions from Indorama personnel.

AOC 1 – 40 C.F.R. § 68.65(d)(3) Process Safety Information

> *(3) For existing equipment designed and constructed in accordance with codes, standards, or practices that are no longer in general use, the owner or operator shall determine and document that the equipment is designed, maintained, inspected, tested, and operating in a safe manner.*

Indorama failed to document that gaskets on the E-F5-032A exchanger were designed, maintained, inspected, tested, and operating in a safe manner which resulted in an air release and fire at the E-F5-32A Isothermal Reactor on April 28, 2021. Contributing factors to this incident included human error, improper procedures, maintenance inactivity, and improper gasket design.

Indorama noted that the original double-jacketed gaskets were specified per API 660 – 4th edition (1982): Shell-and-Tube Heat Exchangers for General Refinery Services (Reaffirmed, December 1987), and continuous use of double-jacketed gaskets are in accordance with the Code of Construction in API 510 – 10th edition (2014): Pressure Vessel Inspection Code: In-Service Inspection, Rating, Repair, and Alteration (Addendum 1, May 2017, and Addendum 2, March 2018). Indorama further noted that API 510 – 10th edition (2014), states "The code or standard to which a vessel was originally built…". Indorama stated that after the April 2021 incident, the double jacketed gaskets in E-F5-032A exchanger, and also the E-F5-032E exchanger, were changed to the Kammprofile style for improved seal ability characteristics, as allowed, but not required by the API standards. Indorama concluded that the site has documented inspections to ensure safe operations with the double-jacketed gaskets and the Kammprofile gaskets.

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

> *(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.*

Indorama failed to resolve PHA recommendations in a timely manner, document the resolution, and complete actions as soon as possible. Indorama provided documentation of 43 PHA's completed over a five-year schedule from years 2017 to 2022, and identified 511 recommendations with 201 still open or unresolved (about 39%).

Indorama noted that only 39% of the actions from the current PHA Layers of Protection Analysis (LOPA) Studies remain open as they have been verified as capital project(s) and/or awaiting the next unit turnaround for implementation.

AOC 3 – 40 C.F.R. § 68.69(a)(1)(i);(vi) Operating Procedures

> *(a) 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;(vi) Normal shutdown.*

Indorama failed to develop and implement written startup and shutdown operating procedures that resulted in an air release at the E-7 Main Splitter Tower Reboiler on February 14, 2021. Contributing factors to this incident included improper procedures, over pressurization, upset conditions, and unusual weather conditions.

AOC 4 – 40 C.F.R § 68.69(a)(2)(i) Operating Procedures

> *(a) 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. (2) Operating limits: (i) Consequences of deviation.*

Indorama failed to include in its operating procedures for the Propylene Oxide (PO) Methyl tert-butyl ether (MTBE) F5 unit consequences of deviation.

Indorama noted that the required 3-year Internal Process Safety Management/RMP Compliance Audit was performed in 2021 where this deficiency was identified. The Consequence of Deviation procedures development is estimated ~80% complete, and expected to be implemented by May 31, 2022.

AOC 5 – 40 C.F.R § 68.75(d) Management of Change

> *(d) If a change covered by this paragraph results in a change in the process safety information required by § 68.65 of this part, such information shall be updated accordingly.*

Indorama failed to document the corrected P&ID drawing in MOC 2021540-001 – Install Seal Pot Fill System for P-F5-115B that had been previously closed and completed on April 14, 2022.

AOC 6 – 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.*

Indorama failed to promptly document that deficiencies had been corrected from its most recent compliance audit completed on June 18, 2021. Indorama provided documentation of its most recent compliance audit action item status, and identified 37 action items with 13 still open or unresolved (about 35%).

Indorama noted that 100% of the 2018 compliance audit actions were completed, and that while the recent audit was only completed less than a year, 24 actions out of 37 have been completed already (65%). Indorama concluded that this is significant progress for a compliance audit which is less than 1 year old.

AOC 7 – 40 C.F.R § 68.195(a) Risk Management Plan

> *(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.*

Indorama failed to submit new accident history information into its RMP for incidents that occurred on February 14, 2021, and April 28, 2021, within six months of the release. Both incidents were submitted past the six-month release date with the February 14, 2021, incident (ID 1000072978) submission due by August 14, 2021, and the April 28, 2021, incident (ID 1000072980) due by October 28, 2021. The RMP Central Data Exchange (CDX) identified that the February 14, 2021, incident and the April 28, 2021, incident were submitted into the RMP CDX on November 2, 2021.

Section IV – FOLLOW UP

There were no additional records requested and no additional follow up for this inspection.

Section V – LIST OF APPENDICES

Appendix #1 – RMP Program 3 Checklist
Inspection Symbol Key: Y - Yes, N - No, N/A - Not Applicable;
S - Satisfactory, M - Marginal, U - Unsatisfactory.