UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

SEP 15 2017

OFFICE OF
SOLID WASTE AND
EMERGENCY RESPONSE

NOW THE
OFFICE OF LAND AND
EMERGENCY MANAGEMENT

The Honorable Tom Carper
Ranking Member
Committee on Environment and Public Works
United State Senate
Washington, DC 20510

Dear Senator Carper:

Thank you for your September 1, 2017, letter regarding the chemical fires that occurred at the Arkema facility in Crosby, Texas, as well as implementation of the Risk Management Program. The agency recognizes your concerns about the potential for a worst-case release from the facility.

Initial assessments have not identified any catastrophic releases of RMP-regulated substances at the Arkema facility and other RMP-regulated facilities in the area affected by Hurricane Harvey. In fact, the nationwide accident rate at RMP-regulated facilities is lower now than it was 10 years ago. In 2007, there were 204 such accidents, and in 2016, the most recent data available, there were 93 such accidents.[1]

The Risk Management Program regulation[2] requires companies to use conservative assumptions for the worst-case analysis. The toxic endpoints that facilities are required to use for the analysis are set low enough that most people could be exposed at that level for up to an hour without any serious health effects. In addition, the worst-case analysis is carried out using very conservative assumptions about weather and release conditions. Several of the required modeling conditions for a worst-case release (e.g., maximum recent local temperature, low wind speed and stable atmosphere) occur together rarely and are unlikely to persist for very long, but would be necessary to produce worst-case distances. Additionally, to achieve the maximum distance estimated for a worst-case toxic release, the release would have to go in a particular direction, making it unlikely to simultaneously affect all of the "vulnerable zone" (i.e., areas around the facility that are within a circle with a radius set at the worst case distance). Therefore, the area

[1] Numbers represent accidents that met RMP accident reporting criteria under § 68.42 as indicated in the RMP National Database. The 2016 value could increase slightly when RMP five-year updates are received in 2019.
[2] 40 CFR part 68 is titled, "Chemical Accident Prevention Provisions," but is more commonly known as the "RMP regulation," the "RMP rule," or the "Risk Management Program." This document uses all three terms to refer to 40 CFR part 68.

ED_002938A_00000318-00001

associated with the distance to the endpoint estimated under worst-case conditions should not be considered a zone in which the public would likely be in danger; instead, it is intended to provide an estimate of the maximum possible area that might be at risk in the unlikely event of catastrophic conditions. EPA intends the worst case scenario to provide a basis for a discussion among regulated facilities, emergency planners and responders, and the public, rather than a basis for any specific predictions or actions.

With regard to the incident at Arkema's facility in Crosby, Texas, EPA shares your concerns about the loss of offsite and emergency backup power, and the required evacuation of facility personnel due to the extreme flooding from Hurricane Harvey. EPA and the state of Texas have requirements for companies to prevent accidental releases from industrial plants, and we continue to inspect and educate companies in Houston and across the state of Texas to prevent releases.

TCEQ has an open investigation into the Arkema incident that will include an evaluation of any impacts due to the fires at the site. Additionally, after the final notifications are received, the TCEQ will evaluate the reported emissions events to determine compliance with applicable rules, permit provisions, and notification and reporting requirements. In addition, through a Clean Air Act Section 114 information request letter, EPA has ordered Arkema to provide a detailed timeline of events and to respond quickly to questions about the handling of organic peroxides, which are combustible if not kept refrigerated, the amount of chemical materials, and the measures taken in advance to guard against flooding and loss of electricity. A copy of the letter is enclosed. Moreover, the U.S. Chemical Safety Board has initiated an investigation at the Arkema plant in Crosby.

If you have further questions, please contact me, or your staff may contact Carolyn Levine in EPA's Office of Congressional and Intergovernmental Relations at levine.carolyn@epa.gov or 202-564-1859.

Sincerely,

Barry N. Breen
Acting Assistant Administrator

Enclosures

Enclosure

U.S. EPA Supplemental Responses to Senator Tom Carper:

1) In what year was the Arkema facility in Crosby, TX last inspected under the Risk Management Plan program? Please provide documentation of any adverse findings associated with that inspection.

EPA Response: EPA has not conducted an RMP inspection of the Arkema Crosby facility based on available records back to 2003.

2) In what year was every other Arkema facility in the U.S. that is subject to the Risk Management Plan program last inspected? Please provide documentation of any adverse findings associated with all such inspections.

EPA Response: Arkema has 11 RMP facilities in the United States. Of these, EPA has identified the previous inspections set out in the table below.

EPA inspections of Arkema Facilities with Risk Management Plans

Facility Name	Location	Inspection Date	Violations	Penalties Assessed
Arkema Inc.	Piffard, NY	July 2010	Minor deficiencies in prevention program	none
Arkema Inc.	Calvert City, KY	Oct 2010	Deficiencies in process hazard analysis	$12,700
Arkema Inc. Mobile	Axis, AL	Nov 2015	Deficiencies in piping and instrument diagrams, mechanical integrity and operating procedures	$20,153
Coatex, Inc.[1]	Chester, SC	Sept 2013	None	None
Arkema Coatings Resins[2]	Alsip, IL	March 2007	None	None
Odor-Tech LLC	Pineville, LA	March 2013	None	None

[1] Inspected by delegated state program, not EPA

[2] Was owned by Union Carbide Corporation at time of inspection.

ED_002938A_00000318-00003

3) Please describe any requirements EPA inspectors evaluate that are related to the placement or maintenance of back-up power supplies such as emergency diesel generators. For example, must these systems be stored in flood-proof containers or installed at elevations that can withstand a 1,000-year flood such as the one caused by Hurricane Harvey? How many days' worth of diesel fuel is required to be stored onsite, and do these fuel supplies also have to be flood-proofed or elevated? If no such measures are required to be implemented or evaluated by EPA inspectors, why not?

EPA Response: EPA inspections focus on determining whether or not a facility is in compliance with the requirements of the Risk Management Program regulation (40 CFR Part 68). The Arkema facility in Crosby, TX, is covered by the RMP rule because the facility holds two regulated substances – sulfur dioxide and 2-methyl propene – above applicable threshold quantities.

The RMP regulations require that facilities identify the hazards associated with their process and regulated substances and the safeguards used or needed to control or mitigate the hazard. Such hazards could include, among other things: loss of power, flooding, or hurricanes. However, the RMP regulations do not have specific requirements for flood-proof containers or installation at elevations to withstand a 1,000-year flood, or specific requirements for backup power fuel. Such considerations are chemical, process, and site-specific; and, therefore the regulations require facilities to best determine the measures needed to address such hazards at their facility, using best industry practices and recognized and generally accepted good engineering practices (RAGAGEP), such as consensus industry codes and standards. RMP regulations are designed to have companies meet performance-based standards, rather than follow specific prescriptions, since each facility and the chemicals and volumes are unique.

Therefore, in the event that RAGAGEP requires measures such as backup power supplies, EPA would evaluate those measures against the requirements of the applicable industry codes and/or standards.

4) Does EPA plan to require Risk Management Plan facility owners to update their Plans (and implementation thereof) to account for the increase in frequency and intensity of extreme weather events such as hurricanes, floods and wildfires that may be attributable to climate change? If not, why not?

EPA Response: 40 CFR Part 68 requires covered facilities to update and revalidate their process hazard analyses (PHA) at least once every five years to ensure the PHA addresses all relevant hazards (including extreme weather events). Also, RMP facilities are required to manage changes to process chemicals, technology, equipment, procedures, and changes to the facility that could affect a covered process.

5) In light of this incident, do you continue to support the President's FY 2018 proposed 35 percent reduction in funds for the Risk Management Plan program? If so, why? If not, why not?

EPA Response: The Risk Management Program is in effect and includes both federal and some state level delegated implementation. EPA will continue to implement this program and focus on improvements in efficiency and effectiveness. The agency prioritizes the highest risk facilities based upon their accident history, quantity of on-site dangerous chemicals stored, and proximity to large residential populations. EPA expects to conduct another 175 inspections nationwide in fiscal year 2018.

6) In light of this incident, do you continue to support the two-year delay in the implementation date of the update of the Risk Management Rule you recently promulgated, and if so, why?

EPA Response: It is important to note that the extension of the effective date from January 2017 to February 2019 had no effect on the major safety requirements that applied to the Arkema Crosby facility.

ED_002938A_00000318-00005

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 Ross Avenue
Dallas, Texas 75202-2733

September 7, 2017

CERTIFIED MAIL - RETURN RECEIPT REQUESTED: 7003 0500 0003 0872 5477

JeanMarie Cencetti
Director of Environment and Sustainable Development
Arkema Inc.
900 First Ave
King of Prussia, PA 19406

Dear Ms. Cencetti:

Enclosed is an Information Request (Request) issued to Arkema Inc. This request is being made pursuant to the authority set forth in Section 114(a) of the Clean Air Act (CAA), 42 U.S.C. § 7414(a). Pursuant to this authority, the United States Environmental Protection Agency (EPA), Region 6 may require facilities to submit information in order to determine compliance with related provisions of the CAA.

The purpose of this Request is to obtain information regarding the Arkema facility in Crosby, Texas in order to determine compliance with the CAA, including Section 112(r) of the CAA, 42 U.S.C. § 7412(r), and the Chemical Accident Prevention Provisions promulgated at 40 C.F.R. Part 68.

Please provide the information requested within ten (10) calendar days of your receipt of this letter to the person identified in Enclosure A. If you have any technical questions, please direct them to Marie Stucky at (214) 665-7560. If you have any other questions, need to request an extension, or wish to schedule a meeting to discuss this Request, please contact James Murdock of the Office of Regional Counsel at (214) 665-7302. Thank you for your attention to this matter.

Sincerely,

Cheryl T. Seager
Director
Compliance Assurance and
Enforcement Division

Enclosures
cc: Ramiro Garcia Jr., TCEQ

ENCLOSURE A

ARKEMA CROSBY INFORMATION REQUEST

The Environmental Protection Agency (EPA) is issuing this request for information to Arkema Inc. regarding its Crosby, Texas facility pursuant to Section 114(a) of the Clean Air Act (CAA) 42 U.S.C. § 7414(a), for the purpose of determining compliance with the CAA, including Section 112(r) of the CAA, 42 U.S.C. § 7412(r), and the Chemical Accident Prevention Provisions promulgated at 40 C.F.R. Part 68. Section 114(a) authorizes the Administrator of EPA to require the submission of information. The Administrator has delegated this authority to the Director of the Compliance Assurance and Enforcement Division, EPA Region 6. Therefore, Arkema, Inc. is required to provide a response to this Request regarding the Arkema Inc. facility in Crosby, Texas (the Facility).

The information requested must be submitted whether or not you regard part or all of it a trade secret or confidential business information. You may, if you desire, assert a business confidentiality claim on all or part of the information submitted. Any information subsequently determined to constitute a trade secret will be protected under 18 U.S.C. § 1905. Unless you make a claim at the time that you submit the information, it may be made available to the public by EPA without further notice to you. You should read 40 C.F.R. Part 2 carefully before asserting a business confidentiality claim, since certain categories of information are not properly the subject of a claim. Emission data is exempt from claims of confidentiality under Section 114 of the Act, and the emissions data that you provide may be made available to the public. Information subject to a business confidentiality claim is available to the public only to the extent allowed under 40 C.F.R. Part 2, Subpart B. Failure to assert a business confidentiality claim makes all submitted information available to the public without further notice.

Information submitted in response to this Request must be certified as true, accurate, and complete by an individual with sufficient knowledge and authority to make such representations on behalf of Arkema Inc. A Statement of Certification for making such representations is provided as Enclosure B. A knowing submittal of false information in response to this Request may be actionable under 18 U.S.C. § 1001 and 42 U.S.C. § 7413(c). See also 18 U.S.C. §§ 1341 and 1519. Furthermore, failure to fully comply with this Request may subject Arkema Inc. to an enforcement action under Section 113 of the CAA, 42 U.S.C. § 7413.

EPA may use any information submitted in response to this request in an administrative, civil, or criminal action.

If information responsive to this request was previously provided to EPA subsequent to a recent EPA Air Compliance Inspection, EPA does not require that such information be submitted again. In lieu of resubmitting such information, please indicate which information was already provided, the date that the information was submitted to EPA, and to whom it was provided. If the Texas Commission on Environmental Quality has taken enforcement action in response to information responsive to this request, please provide the Notice of Violation and/or relevant enforcement documents.

All information responsive to this request should be sent to the following:

Samuel Tates, Chief
Chemical Accident Enforcement Section (6EN-AS)
Air Enforcement Branch
Compliance Assurance and Enforcement Division
U.S. EPA - Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

Please be advised that some companies may qualify as a "small business" under the Small Business Regulatory Enforcement and Fairness Act (SBREFA). To help small business owners assess their small business status, the U.S. Small Business Administration (SBA) has established a Table of Small Business Size Standards, which can be found at: http://www.sba.gov/sites/default/files/Size_Standards_Table.pdf. If Arkema Inc. qualifies as a small business, please review the SBREFA Information Sheet designed to provide information on compliance assistance to entities that may qualify as small businesses as well as to inform them of their right to comment to the SBREFA Ombudsman concerning EPA enforcement activities. The SBREFA Information Sheet can be found at: http://nepis.epa.gov/Exe/ZyPDF.cgi/P100BYAV.PDF?Dockey=P100BYAV.PDF. Please be aware that SBREFA does not eliminate Arkema Inc.'s responsibility to respond in a timely fashion to any complaint or information request that EPA may issue or other enforcement action that EPA may take, nor does SBREFA create any new rights or defenses under the law other than the right to comment to the SBREFA Ombudsman. If you are unable to access the links provided or need a hard copy, please contact Samuel Tates, listed above.

Notice is hereby given, pursuant to 40 CFR §§ 2.301(h) and 2.310(h), that EPA may disclose confidential information provided by Arkema to EPA's authorized representatives, including its contractors, Eastern Research Group ("ERG"). Confidential information may be disclosed to EPA's authorized representatives for the following reasons: to assist with document handling, inventory and indexing; to assist with document review and analysis for verification of completeness; and to provide expert technical review of the contents of the response. Pursuant to 40 CFR §§ 2.301(h) and 2.310(h), Arkema may submit, along with its response to this Information Request, any comments regarding EPA's disclosure of confidential information to its authorized representatives.

This request is not subject to the Paperwork Reduction Act, 44 U.S. C. § 3501 *et seq.*, because it seeks collection of information from specific individuals or entities as part of an administrative action or investigation.

I. GENERAL INSTRUCTIONS

1. If information or documents not known or not available to you as of the date of submission of a response to this Request should later become known or available to you, you must supplement your response to EPA. Moreover, should you find, at any time after the submission of your response that any portion of the submitted information is false or misrepresents the truth, you must notify EPA of this fact as soon as possible and provide EPA with a corrected response. There are significant penalties for submitting false information, including the possibility of fine or imprisonment.

2. Please identify each person answering and each person consulted in preparing to answer each Question and subpart of each Question.

3. For every Question contained herein, please identify all documents consulted, examined, or referred to in the preparation of the answer or that contain information responsive to the Question, and provide true and accurate copies of such documents.

4. Please provide a separate response to each question or subquestion in this Request, and precede each answer with the number of the question to which it responds.

5. Please submit all information for each question in a logically sequenced, electronic format (e.g., PDF). Data should be provided in searchable and editable electronic format (e.g., spreadsheet). This information may be provided on a USB drive or CD, and labelled sequentially, if applicable.

6. If Arkema Inc. has previously submitted the requested information to EPA, it may identify the document instead of resubmitting the document

7. The enclosed Affidavit (Enclosure B) must be filled out and submitted along with your responses to this Request.

8. Please submit confidential business information (CBI) and non-confidential information on separate media devices and identify as such. Please mark each page that is confidential business information as such. To make a CBI claim on hard copy documents, mark each page that is claimed, by cover sheet, stamp, or other suitable form of notice with language such as "trade secret," "proprietary," or "company confidential." Allegedly confidential portions of otherwise non-confidential documents should be clearly identified and submitted separately to facilitate identification and handling by EPA. The assertion and substantiation requirements for CBI claims are discussed in a subsequent section of this document.

II. DEFINITIONS

The following definitions shall apply to the following words as they appear in Enclosure A:

1. The terms "document" and "documents" shall mean any object that records, stores, or presents information, both electronic and tangible, and includes writings of any kind, formal or informal, whether or not wholly or partially in handwriting, including by way of illustration and not by way of imitation, any invoice, manifest, bill of lading, receipt, endorsement, check, bank draft, canceled check, deposit slip, withdrawal slip, order, correspondence, record book, minutes, memorandum of telephone and other conversations, including meetings, agreements and the like, diary, calendar, desk pad, scrapbook, notebook, bulletin, circular, form, pamphlet, statement, journal, postcard, letter, telegram, telex, report, notice, message, analysis, comparison, graph, chart, interoffice or intraoffice communications, photostat or other copy of any documents, microfilm or other film record, any photograph, sound recording on any type of device, any hard drive, USB drive, CD, DVD, or other type of memory generally associated with computers and data processing (together with the programming instructions and other written material necessary to use such hard drive, USB drive, CD, DVD, or other type of memory and together with printouts of such hard drive, USB drive, CD, DVD, or other type of memory); and (a) every copy of each document which is not an exact duplicate of a document which is produced, (b) every copy which has any writing, figure or notation, annotation or the like on it, (c) drafts, (d) attachments to or enclosure with any document, and (e) every document referred to in any other document.

2. The term "Arkema" includes any officer, director, agent, or employee of Arkema, including any merged, consolidated, or acquired predecessor or parent, subsidiary, division, or affiliate thereof, and any related partnerships or limited partnerships.

3. The term "you" or "yours" refers to Arkema.

4. The term "facility" refers to the Arkema facility located at 18000 Crosby Eastgate Road, Crosby, Texas.

5. The term "event" refers to planning and response activities for the severe weather and flooding, and the subsequent incident at the facility from the start of weather preparations through the completion of response activities.

6. The terms "identify" or "identification" means when used in reference to a natural person, to provide his or her name, present or last known address, his or her present or last known employment position or affiliation, and his or her positions during the time period covered by this Request.

7. All terms used in the Request will have their ordinary meaning unless such terms are defined in the Clean Air Act, 42 U.S.C. § 7401 *et* seq. or the Chemical Accident Prevention Provisions, 40 C.F.R. Part 68, in which case such statutory or regulatory definitions apply.

8. The term "organic peroxides" will have its ordinary meaning and will include, but not necessarily be limited to, the temperature-sensitive material moved by Arkema in response to flooding at the facility.

9. The terms "and" and "or" shall be construed either disjunctively or conjunctively as necessary to bring within the scope of this Request, any information which might otherwise be construed to be outside its scope.

10. Words in the masculine shall be construed in the feminine, and vice versa, and words in the singular shall be construed in the plural, and vice versa, where appropriate in the context of a particular question or questions.

11. The terms "relate to" or "pertain to" (or any form thereof) shall mean constituting, reflecting, representing, supporting, contradicting, referring to, stating, describing, recording, noting, embodying, containing, mentioning, studying, analyzing, discussing, evaluating or relevant to.

III. QUESTIONS

1. Please provide a detailed description and timeline of the event. Include the best known start time and duration of the incident. The timeline should address in detail the following events as well as any other relevant points:

    a. Primary power failure.

    b. Use of backup power supply and subsequent failure.

    c. Use of liquid nitrogen and related equipment and subsequent failure.

    d. Removal of organic peroxides material to each of the nine refrigerated trailers, and which specific organic peroxides materials were placed in each trailer.

    e. Relocation of each of the nine refrigerated trailers.

    f. Temperature readings on each of the nine trailers.

    g. Failure of primary and backup refrigeration systems in trailers.

    h. Initial ignition and combustion of materials in each of the nine trailers.

    i. Controlled burn of each trailers.

    j. Other emergency response activities.

2. Please provide any documents associated with the identification of hazards posed by organic peroxides at your facility, operating procedures related to organic peroxides, and procedures related to flood, hurricane, loss of power, and emergency operations, and shutdown.

3. What are the names and Chemical Abstract Service (CAS) Numbers of the organic peroxides moved to the refrigerated trailers?

   a. How and where are organic peroxides normally stored at the facility?

   b. How much organic peroxides are stored at the facility at any one time?

   c. What layers of protection or other release prevention measures are in place for the storage of organic peroxides on site?

   d. Under what conditions are organic peroxides moved to refrigerated trailers? Prior to the incident, when and for how long did you store materials, including organic peroxides, in refrigerated trailers?

   e. Are organic peroxides ever moved off site for safe storage? If so, where are they moved, and what conditions trigger such movement?

4. What backup power and safety systems were in place prior to the flooding?

   a. What "Recognized And Generally Accepted Good Engineering Practices" are followed by Arkema for the design, installation, operation, maintenance, and reliability of the backup power and safety system?

   b. What were the engineering and administrative controls for the safety and power systems, and what were their known consequences of failure, and what additional safety measures were in place in event of such failure?

5. What measures did Arkema take in response to the flooding to minimize consequences of an accidental release or fire/explosion involving either RMP-regulated substances or other hazardous chemicals held at the site, including organic peroxides?

Enclosure B

Clean Air Act Section 114 Information Request
Statement of Certification

I certify under penalty of law that I have examined and am familiar with the information in the enclosed documents, including all attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are, to the best of my knowledge and belief, true and complete. I am aware that there are significant penalties for submitting false statements and information, including the possibility of fine and imprisonment for knowing violations.

Signature: _____

Printed Name: _____

Office or Title: _____

Date: _____

FINAL

CLEAN AIR ACT SECTION 112(r) INSPECTION REPORT

Arkema Inc.

Piffard, NY

GENERAL INFORMATION

Stationary Source	Arkema Inc.
Date of Inspection	July 27, 2010
USEPA Inspector	Francesco Maimone – USEPA, REGION II (Edison, NJ)
Contract Auditor	Neil Mulvey, OHC (Subcontractor)
Description of Activities	• Opening meeting with facility representative. • Program audit. • Closing meeting with facility representatives. Program audit consisted of the following activities: 1. Document review. 2. Field verification. 3. Personnel interviews

STATIONARY SOURCE INFORMATION

EPA Facility ID #	1000 0005 5931
Date of Latest Submission (used for RMP inspection)	Receipt Date: June 3, 2009 (Re-submission) Anniversary Date: June 3, 2014
Facility Location	3289 Genesee Street Piffard, NY 14533 Livingston County Tel. (585) 243-6332
Number of Employees	*RMP*Submit* states 89 employees (per RMP registration) Union workforce (United Steel Workers)

Description of Surrounding Area	The facility is located on 300 acres in a rural area approximately 2.5 miles NW of Geneseo, NY. Site operations are performed within approximately 150,000 square feet of building space. The site has a significant buffer of farmland, trees, or other undeveloped land around all sides. The nearest resident is approximately 0.5 miles to the West.
Participants	Participants included representatives from: Francesco Maimone, USEPA – Region II, Edison, NJ Neil Mulvey, USEPA Contractor Scott Case, Plant Manager – Arkema Inc. Richard Gahagan, HES Manager – Arkema, Inc.* John T. Hassett, HES Specialist – Arkema Inc. Colleen Magnussen, Operations Manager – Arkema Inc. Eileen Maher, QA/QC Manager – Arkema, Inc. Joseph Vay, Technical Manager – Arkema, Inc. * Lead representative for Arkema

REGISTRATION INFORMATION

Process ID #	1000001818 – Storage-NPCF
Program Level (as reported in RMP)	Program 3
Process Chemicals	Propyl chloroformate (NPCF) @ 74,000-lbs.
NAICS Code	325199 (All Other Basic Organic Chemical Manufacturing)

GENERAL COMMENTS

Operations began at the Piffard, NY site in 1953 as a Wallace & Tiernan company. Through the years the site has been owned by Pennwalt Corporation (1969), Elf Aquitaine (1989), Atochem (2000), and currently Arkema (2004). The facility produces specialty chemicals, including organic peroxides used in the production of plastics, including acrylics, elastomers, low density polyethylene (LDPE), polyesters, polystyrene, and polyvinyl chlorine (PVC).

Site operations include:

- Nine active process buildings
- Seven storage buildings / areas
- One refrigerated product storage building (Freon is refrigerant)
- Three general warehouses
- Two office buildings
- Maintenance / storeroom building
- A wastewater treatment plant (WWTP) (biological; no chlorine used; facility did however report that anhydrous ammonia is used in the treatment process; facility reported on-site inventory of approximately 8,000-lbs.)

The site layout provides ample separation between process buildings and storage areas. The facility generally operates 24/7, 365, on 12-hour shifts. The Plant Manager is responsible for all site operations. The Operations Manager is responsible for production operations. Four Production Supervisors report to the Operations Manager. There is one Production Supervisor per shift. A Maintenance Supervisor is responsible for equipment maintenance.

Manufacturing includes three continuous processes and eight batch processes. The continuous processes include:

- Benzoyl peroxide production (Building 21)
- Flour bleach grinding (Building 25)
- Peroxydicarbonate production (Building 35)

The percarborate process utilizes the RMP regulated material, n-propyl chloroformate (NPCF). Important characteristics of NPCF follow:

- Colorless liquid (BP > 237 deg.F)
- Highly flammable (FP @ -58 deg.F)
- Water reactive
- When heated to decomposition, emits toxic fumes of chlorine containing compounds
- Vapors may travel to a source of ignition and flash back
- Unstable, decomposes spontaneously to form hydrochloric acid and other products

NPCF is received in isotainers via tractor trailers. The liquid is transferred from isotainers via pump (P-48) into the single bulk storage tank on-site (T-3548; 8,900-gallons). A nitrogen pad is applied to T-3548 to provide an inert atmosphere, displacing moist air. The tank is top filled but utilizes a fill tube that runs to the bottom of the vessel. Approximately one isotainer is received and transferred every two months. It takes approximately 90-minutes to transfer the contents of an isotainer into T-3548. An isotainer contains between 32,000 – 35,000-pounds of NPCF. T-3548 is equipped with a

high level switch interlocked to close an automated valve on the fill line in the event of high level in the tank. P-48 is equipped with a high pressure shutdown switch and high motor AMP shutdown.

NPCF is continuously fed to a reactor (T-40) along with hydrogen peroxide, sodium hydroxide, and other raw materials. NPCF is fed to the reactor at approximately 10-lbs./min. The exothermic reaction is controlled by the NPCF feed rate, the feed rate of other raw materials, by reactor cooling and by agitation. Material is then transferred by gravity to a second reactor (T-41) where the reaction is completed. The facility considers the end of the RMP regulated process to be T-41.

A Senior Material Handler is responsible for unloading NPCF isotainers. Three process operators, specifically qualified for B-35 operations, are assigned per shift during NPCF use. The process operators report to the Production Supervisor. The NPCF process operates for several hundred hours per year, based on demand.

The NPCF Process is considered a Program Level 3 Process because the facility operates under NAICS code: 325199 "All Other Basic Organic Chemical Manufacturing". This NAICS code is one of ten NAICS codes which require compliance with Program Level 3 Prevention requirements located in 40 CFR 68 Subpart D. The Risk Management Program regulatory threshold for NPCF is 15,000 lbs.

RMP DOCUMENTATION

RMP documents are contained in various manuals, files, and reports. Documents and records were readily available upon request. Facility management demonstrated an excellent understanding of Risk Management Program requirements, the facility's Risk Management Program documentation, and program implementation.

Management System [*40 CFR 68.15*] & Registration

Scott Case, the facility's Plant Manager, is responsible for the overall development and implementation of the Risk Management Program at the facility. The facility also maintains an organizational chart which delineates several positions which implement specific portions of the Risk Management Program. Positions identified in this organizational chart include the Health, Environment, Safety/Loss Control Manager, Training Coordinator, Technical Manager, and Operations Manager.

Hazard Assessment [*40 CFR 68.20-68.39*]

The facility used EPA's "Risk Management Program Guidance for Offsite Consequence Analysis" document (OCA Guidance document), and its associated appendices in order to determine the Worst Case (WCS) and Alternate Case (ACS) scenarios. The facility provided a copy of handwritten WCS and ACS calculations in a document titled "RMP Revision #2 May 2002". These calculations were performed in accordance with

referenced equations and tables from the OCA Guidance document. Appropriate parameters were used for each WCS and ACS calculation.

The facility used a population density method in order to determine the population within the WCS distance-to-endpoint. Census 2000 data was used to determine the population density information. There were no offsite receptors for the ACS because the estimated distance-to-endpoint did not exceed the facility property limits.

Although the facility maintained sufficient Hazard Assessment information, the facility failed to perform a re-validation of the Offsite Consequence Information every five years, as required in 40 CFR 68.36(a). Specifically, a review and update of the "RMP Revision #2 May 20002" document was not performed by May 2007. Rather, it appears that the required review and update was performed in May 2009.

During a review of the WCS reported in the facility's June 3, 2009 Risk Management Plan (RMP) submission to EPA, it was noted that the release duration under the WCS was incorrect. Additionally, the June 3, 2009 RMP submission incorrectly indicates a pipe leak scenario as the ACS, while the "RMP Revision #2 May 20002" indicates that the ACS is a vessel release scenario. The facility must ensure that ACS information reported in the RMP corresponds with information maintained in the Risk Management Program documentation. EPA requests that the facility revise all incorrect information under the WCS and ACS portions of the RMP via RMP*eSubmit.

Process Safety Information (PSI) [*40 CFR 68.65*]

The facility maintains extensive process safety information, including:

- MSDS for NPCF
- Block flow diagram (BFD)
- Piping and instrument diagrams (P&IDs)
- Electrical area classification
- Process chemistry
- Process limits and consequences of deviations
- Electrical area classification designations
- Relief system design and design basis (verified for T-3548)
- Ventilation system design information

The following P&IDs depict the covered process:

- G-2135; Rev. 3; 7/21/10 – NPCF Storage Tank T3548
- G-2680; Rev. 5; 3/9/10 – B35 Cell 2 LT Production Unit
- G-2680; Rev. 6; 4/22/10 – B35 Cell 2 LT Production Unit

The P&IDs appeared adequately detailed. For example, they indicated valves, instruments, lines, pumps, vessels, and interlocks related to the covered process. Valve numbers on the drawings are also tagged in the field. A spot field check of select

portions of P&ID# G-2135 (Rev. 3; 7/21/10 – NPCF Storage Tank T3548) was performed, and the actual installation matched the P&ID. However, several of the equipment / valve tags in the field had fallen off, and should be replaced, as per facility common practice and generally accepted good engineering practice.

The facility maintains extensive documentation regarding electrical area classification designations, including a written procedure for establishing and reviewing classifications.

PSI includes extensive documentation regarding ventilation system design criteria, including an Air Balancing Report (March 2010) and information specific to Building 35.

Documentation reviewed to evaluate whether the facility has documented that equipment complies with recognized and generally accepted good engineering practices included three design drawings (one for T-3548, one for reactor piping, and one for reactor tank details), issued in 1974. This information is over 35-years old and does not demonstrate that the facility as designed and operated in 2010, or at the time the Risk Management Program regulation became effective in 1999, is consistent with recognized and generally accepted good engineering practices.

Process Hazard Analysis (PHA) [*40 CFR 68.67*]

The facility has a written policy/procedure for conducting process hazard analyses (PHAs) (SP# SF-008-04; 11/1/06). This procedure provides a good description of how and when PHAs are to be performed. The document includes a description of the procedure for performing PHAs, team member requirements, qualifications of the team leader, and PHA follow-up.

The two most recent PHA reports were reviewed.

PHA of B-35; 10/18/07; Rev.0

- Used state-of-the-art software (*PHA*Works*™) for study documentation
- Completed over period April 2007 – August 2007
- Notes previous PHA was 2/2002.
- 11 PHA sessions, between dates of 6/18/07 – 9/11/07
- Four team members knowledgeable of process; description of titles and years experience
- Team Leader was Corporate Process Safety Engineer
- Detailed HAZOP worksheets including description of hazard scenarios, including: causes, consequences, ranking, safeguards, and recommendations
- Includes description of parameter intention
- Includes checklist review for facility siting and human factors
- Includes tracking and documentation of resolution of the 15 recommendations identified during the PHA.
-

The 2007 PHA also include a layer of protection analysis (LOPA).

December 11-12, 2001 & February 20-23, 2002 PHA Revalidation

- Used state-of-the-art software (*PHA*Works*™) for study documentation
- Six PHA sessions
- Team members knowledgeable of process; description of titles and years experience
- Detailed What-If worksheets including description of hazard scenarios, including: causes, consequences, ranking, safeguards, and recommendations
- Includes tracking and documentation of resolution of recommendations identified during the PHA.

PHA revalidations are required to be performed at least every five years. As noted PHA information above, there was an approximate four-month lapse between the February 20-23, 2002 PHA and the initial June 18, 2007 meeting date of the October 18, 2007 PHA.

Standard Operating Procedures (SOPs) [*40 CFR 68.69*]

Two detailed and well written operating procedures exist for the NPCF process.

- N-Propyl Chloroformate Unloading, B35; SP# T-003-10; 2/1/10 (22 pages)
  Includes procedures for unloading NPCF from isotainers into storage tank, T-3548

- SP# T-051-20; 6/18/10 (109 pages)
  Includes procedures for the transfer of NPCF from storage (T-3548) to reactor T-40), and reaction.

The procedures appeared sufficient in content, and included the following information:

- Description of critical process safety conditions including acceptable operating ranges, description of potential deviations, and description of corrective actions in the event of process deviation
- Instructions for exposure control, including required PPE
- Step-by-step instructions with 'key' points for each step describing the important aspect of that particular step
- Hazard Analysis (process limits & consequences of deviations & corrective actions & description of process interlocks)
- Flow diagrams
- Calibration charts
- Revision history

The procedures include references to valves/instruments by number, which were checked against the P&IDs and field tags and found to be accurate.

There was documentation of annual SOP certification.

During the field inspection, it was confirmed that the date of SOP SP# T-051-20 from the documentation review portion of the inspection was the same date as the one available for use by operators.

Training [*40 CFR 68.71*]

The facility had an extensive training program. Initial training for operators consisted of computer-based training on Risk Management Program requirements and the covered process. Initial training is also comprised of on-the-job training that is determined by the appropriate supervisor. Initial training is signed-off by both the process lead operator and production supervisor.

Refresher training on the covered process is performed annually. Operators must re-qualify in order to operate the Building 35 NPCF process. Refresher training consists of computer-based and on-the-job training, which is signed-off by the production supervisor.

Initial and refresher training records were reviewed, and included name, date of training, and method used to verify that course content was understood. Quiz grades consisted of Satisfactory and Pass grades. Computer-based portions of initial and refresher training were also observed, and included both general Risk Management Program and process-specific information.

Mechanical Integrity [*40 CFR 68.73*]

The facility has a written program, titled Mechanical Integrity Practices & Procedures (SP# M-001-09; 3/1/09). The program includes detailed instructions and procedures for the following areas:

- Equipment risk classification – classification of equipment as Class A, B, or C. Class A is described as equipment with the highest potential of resulting in immediate emergency if a failure or loss of containment was to occur. The purpose of classification is to provide a means to develop and implement consistent inspection and testing frequencies and focus preliminary or extra inspection efforts on those systems that have the highest potential consequences if failure should occur.
- Written inspection and test procedures, including purpose, scope, responsibility, and requirements.
- Piping, vessels, and tanks, including inspection criteria and appropriate industry references
- Relief systems, including inspection criteria and appropriate industry references
- Protective instrumentation and interlocks
- Rotating equipment
- Quality assurance

- Maintenance training
- Fitness for service

A check of inspections and tests on the following randomly selected instruments was performed:

- T-3548, LSHH T-48B & Interlock (level switch high high and interlock)
- PSE T-48 (pressure safety element).
- PSL T-48 (pressure switch low)
- PAL T-48 (pressure alarm high)
- T-40, TAHH-4006 & E-stop (temperature alarm high high)
- T-40, YALL-4013 (agitator)

Documentation and records of completed inspections/tests for this equipment was available for review. The facility uses a computerized maintenance management system (*GP-Mate*) for scheduling and recordkeeping. Documentation includes 'acceptance criteria' as a means of verifying whether results are acceptable or deficient.

Management of Change (MOC) [*40 CFR 68.75*] & Pre-Startup Review (PSR) [*40 CFR 68.77*]

The facility has written procedures for: Management of Change (SP# SF-002-09; 12/1/08) and Pre-Startup Safety Review (SP# O-001-09; 2/1/10). The procedures provide detailed instructions regarding how to manage, document, and authorize MOCs and Pre-Startup Safety Reviews (PSSRs). The MOC procedure describes changes that trigger an MOC review and includes Form # 004 (Change Authorization Form). The PSSR procedure states that all MOCs that require an update to PSI will trigger a PSSR review. PSSR reviews are documented in Form # 001.

Comments regarding a review of MOC # 10-025 in Building 35 (completed on 3/2/10) follow:

- Change to P-31 (NPCF feed pump from storage tank to reactor). Change involved removal of strainers.
- Sufficient documentation and authorization of change
- Checklist review of items that require update as a result of change
- Corresponding PSSR for this change (Form # 001)

A change to the process was noted on P&ID G-2135 (Rev. 3; 7/21/10), involving removal of brine supply from the pipe jacket on NPCF storage tank T-3548. The P&ID was updated on 7/21/10 to reflect this change; however, there was no completed MOC or PSSR on file to manage and authorize this change.

Compliance Audits [*40 CFR 68.79*]

Copies of the two most recent PSM/RMP compliance audits were on-site and available for review.

PSM / RMP Audit, October 6 – 10, 2008

- Four member audit team, including representatives from other Arkema facilities and corporate
- Complete written report of audit detailing purpose, scope, and objective including description of RMP elements reviewed and findings
- Audit appeared to be complete and thorough
  Sufficient documentation regarding tracking of audit recommendations to resolution

PSM / RMP Audit, June 19 – 23, 2006

- Audit performed by corporate personnel
- Complete written report of audit detailing purpose, scope, and objective including description of RMP elements reviewed and findings
- Audit appeared to be complete and thorough
- Good documentation regarding tracking of audit recommendations to resolution

Incident Investigation [*40 CFR 68.81*] / Five-Year Accident History [40 CFR 68.42]

The facility did not have any applicable incidents or accidents that would require the implementation of Incident Investigation or Five-year Accident History procedures.

Employee Participation [*40 CFR 68.83*]

The facility adequately discusses Employee Participation in its Risk Management Program materials. The facility's Risk Management Program Employee Participation Plan was developed with input from the facility's Safety and Health Committee, and reviewed by the facility's union PSM/RMP Committee. The PSM/RMP Committee consisted of plant members of the Local 1-0620 Paper Allied Industrial Chemical & Energy Workers International Union. These union plant members were involved in reviewing procedures and assisting with the formulation of the plant's PSM/RMP programs. The Employee Participation Plan also discusses how the facility involves employees in several Risk Management Program items such as Process Safety Information, Process Hazard Analysis, and Mechanical Integrity.

The facility also implements several aspects of Employee Participation. For example, the facility encourages employee feedback regarding PSM/RMP, and holds monthly Union/Management Safety & Health meetings. Written minutes from these minutes are posted on bulletin boards in Building 40.

Facility personnel indicated that plant operators are no longer represented by Local 1-0620 Paper Allied Industrial Chemical & Energy Workers International Union; rather, plant operators are now represented by the United Steel Workers Union. It is recommended that the facility consult with the United Steel Workers Union in order to ensure that operators remain actively involved in Risk Management Program elements.

Operators were interviewed during the inspection, and indicated that they were informed that the Risk Management Program inspection would occur on July 27, 2010. This notification was provided at the monthly loss control meeting, which also serves as a safety meeting, and included union participation. Additionally, operators indicated that they have been involved in the development of several Risk Management Program elements, and have Risk Management Program documentation and standard operating procedures available for reference. Operators also indicated that the training methods ensured that they are able to successfully perform operating procedures.

Hot Work Permit [*40 CFR 68.85*]

The facility has a written Hot Work Program and adequately implements Hot Work Permits for hot work performed at or near the covered process. Contractors performing Hot Work are issued a Hot Work Permit as part of their Contractor's Work Permit.

Contractor Safety [*40 CFR 68.87*]

Risk Management Program requirements for Contractor Safety are addressed both at the corporate and facility levels. On the corporate level, contractors are required to submit safety records and an annual verification of statutory insurance. Based on safety, health, and other considerations, a list of approved contractors is provided to the facility's procurement department. Once approved for work, the facility issues the contractor a Contractor's Work Permit. The facility also provides a safety video to all contractor workers.

Arkema's contractor procedures and policies for confined space, lock-out/tag-out, fall protection, trenching and excavation, scaffolds, overhead rigging, respirator use, plant emergency, head counting, hazardous chemical discussion, gas leaks, and Material Safety Data Sheets were observed in document SP# SF-015-09. Additionally, document SP# SF-014-05 detailed the facility's contactor safety evaluation procedures. Implementation of this documentation was observed in the facility's "Contractor Safety Evaluation Form 016" document. Additionally, the facility completes "Contractor Safety Report Form 019" documentation when desired, when a contracted project lasts greater than one month, or when ten or more contracted employees perform work on-site.

In addition to "Contractor Safety Evaluation Form 016" and "Contractor Safety Report Form 019", the facility also performs random contractor audits. When capital projects are being performed, safety audits are performed at least once a week.

The facility provides written documentation to the contractor whenever contractor violations of Arkema policies are found.

Emergency Response [*40 CFR 68.90 – 68.95*]

The facility is a first-responder, and performs frequent inspections of response equipment. As first responders, the facility maintains a mobile emergency response equipment trailer which contains response equipment. Included in the emergency response equipment are Self-Contained Breathing Apparatus (SCBA) and cartridge-based air purifying respirators. All operators are trained for use of cartridge-based respirators, and only a limited amount of operators are trained for SCBA use. The facility implements a Respirator Protection Program.

SCBAs are inspected by both a contractor and facility personnel. The facility's SCBA contractor performs periodical visual and functional tests of the SCBAs, and determines whether each SCBA is fit for service. An initial hydrotest date is present for each SCBA, in addition to the next due date for testing. The latest set of visual and functional tests by the contractor were performed on 6/10/09.

Facility personnel perform a monthly inspection of response equipment. Monthly checks for SCBAs consist of cylinder number, appropriate comments, hydrotest dates, harness numbers, regulator numbers, regulator testing, 5-minute alarm test for SCBAs, and escape bottles. The facility also performs a monthly inventory of emergency response equipment in the trailer and Building 22.

The facility's Emergency Response Plan, document SP# SF-028-07, is dated June 5, 2008. This document classifies emergencies into three categories, and delineates when training on the Emergency Response Plan is required. Additionally, this document identifies the training requirements for various roles and functions in the facility's Incident Command System. The Emergency Response Procedures contain an "Emergency Response Outside Contacts" list, which includes phone numbers for local hospitals, fire department, law enforcement, Local Emergency Planning Committee, the New York State Spill Hotline, the National Response Center, and various other local, state, and federal agencies.

Additionally, the facility's Emergency & Headcounting Procedures portion of the Emergency Response Plan indicates that a log will be kept of all injured personnel containing the nature of their injury and the hospital they have been transported to. In addition to the log information, the Emergency & Headcounting Procedures indicate that a Patient Information Form will be completed for any person who requires treatment for injury or illness by a First Aid Team member. Although the Emergency Action Plan references these forms, it is recommended that they be included in the Emergency Response Plan.

The Emergency Response Plan also indicates that it will be reviewed annually by the Emergency Planning Committee, and that each employee with responsibilities in the plan has input regarding aspects of the plan that would require revision.

The Emergency Response Plan provided to EPA, dated June 5, 2008, did not contain the referenced Appendices. The facility is reminded to include all appropriate emergency response checklists and chemical reportable quantities, as referenced in the Appendices section of the Emergency Response Plan.

FACILITY TOUR

Several items noted during the facility tour include:

- Facility management described operating philosophy targeted to minimizing the need for operating personnel to be in the production area (i.e., near equipment handling NPCF and other hazardous materials). Facility is achieving this goal by increased automated process monitoring and through the use of surveillance cameras to observe plant operations.

- Facility management allowed and encouraged inspectors to interview process operators during the inspection. Operators demonstrated an excellent understanding of the process, emergency operations, and SOPs.

FINDINGS

Hazard Assessment [*40 CFR 68.20-68.39*]

- An Off-Site Consequence Analysis re-validation was performed on May 13, 2009. This was performed approximately seven years after the May 2002 Off-Site Consequence Analysis revision. **The facility must review and update off-site consequence analyses at least once every five years, as required in 40 CFR 68.36(a).**

Process Safety Information (PSI) [*40 CFR 68.65*]

- A spot field check of select portions of P&ID# G-2135 (Rev. 3; 7/21/10 – NPCF Storage Tank T3548) was performed. Actual installation matched the P&ID; however, some of the equipment / valve tags in the field had fallen off. The facility's current practice is to label equipment and valves, and it is a generally accepted good engineering practice to ensure that applicable equipment and valves are appropriately labeled in accordance with the P&ID information. **The facility must review and document that equipment used in the covered process complies with recognized and generally accepted good engineering practices, as required by 40 CFR 68.65(d)(2).**

- Documentation reviewed to evaluate whether the facility has documented that equipment complies with recognized and generally accepted good engineering practices included three design drawings (one for T-3548, one for reactor piping, and one for reactor tank details), issued in 1974. This information is over 35-years old and does not demonstrate that the facility as designed and operated in 2010, or at the time the Risk Management Program regulation became effective in 1999, is consistent with recognized and generally accepted good engineering practices. **The facility must review and document that equipment used in the covered process complies with recognized and generally accepted good engineering practices, as required by 40 CFR 68.65(d)(2).**

Process Hazard Analysis (PHA) [*40 CFR 68.67*]

- PHA revalidations are required to be performed at least every five years. There was an approximate four-month lapse between the February 20-23, 2002 PHA and the initial June 18, 2007 meeting date of the October 18, 2007 PHA. **The facility must update and revalidate the PHA for the covered process at least every five years in order to ensure that it remains consistent with the current process, as required in 40 CFR 68.67(f).**

Management of Change (MOC) [*40 CFR 68.75*] & Pre-Startup Review (PSR) [*40 CFR 68.77*]

- A change to the process was noted on P&ID G-2135 (Rev. 3; 7/21/10), involving removal of brine supply from the pipe jacket on NPCF storage tank T-3548. The P&ID was updated on 7/21/10 to reflect this change; however there was no completed MOC or PSR on file to manage and authorize this change. **The facility must ensure that MOC and PSR reviews are completed for all changes to the regulated process, as required by 40 CFR 68.75(a) and 40 CFR 68.77(a) & (b).**

RECOMMENDATIONS

EPA recommends that the facility revise incorrect information in the Worst Case Scenario (WCS) and Alternate Case Scenario (ACS) portions of the RMP. Such revisions must be performed in the "correction" option in RMP*eSubmit. Details on performing Risk Management Plan corrections can be found at the following website: http://www.epa.gov/oem/content/rmp/rmp_correct.htm

It is recommended that the facility maintain all referenced appendices with the Emergency Response Plan so that they are readily available when needed. Additionally, it is recommended that the Emergency Response Plan include template first aid logs and forms that are referenced in the Emergency Response Plan.

United States Environmental Protection Agency / Region 4

Risk Management Program Inspection Report

Arkema Inc. – Mobile Facility
Axis, Alabama
November 9, 2015

1.0 Introduction

Several planning and legislative initiatives are part of the Environmental Protection Agency's (EPA) efforts to reduce the likelihood and severity of chemical accidents. These include the National Contingency Plan, the Emergency Planning and Community Right-to-Know Act, and the Accidental Release Prevention requirements under Section 112(r) of the Clean Air Act (CAA), as amended in 1990. This report outlines an inspection of the Risk Management Program as mandated by Section 112(r)(7) of the CAA.

The focus of this inspection was to assess the RMP requirements for processes at the Arkema Incorporated Mobile Facility located in Axis, Alabama. The inspection, which was conducted November 9, 2015, consisted of an examination of program documentation as well as site reviews of various aspects of facility operations. Personnel from the facility participated throughout the inspection. Numerous documents were duplicated for review off-site. This report will provide a background of the facility and a listing of observations.

2.0 Background

Arkema Incorporated (Arkema) is a global chemical company headquartered in King of Prussia, PA. The manufacturing facility located in Axis, Alabama is located along Highway 43 North in an industrial area. The facility sits on 220 acres with 87 acres developed for the manufacturing, warehouse, and distribution centers and the undeveloped space located north and south of the manufacturing facility. The facility produces products based on acrylic polymer, thio chemical, and organo tin chemistry. The facility was started in 1980 with the first manufacturing units coming online in 1981. The facility began manufacturing Dura-strength and Plasti-strength products around 1985. The Arkema facility's acrylic polymer products are used as additives to improve the properties and processing of a wide variety of plastic items.

The facility uses 1,3-butadiene as one of the raw materials for some of the facility's major products and this RMP chemical is present above the minimum RMP threshold quantity. 1,3-butadiene is brought in by railcar where it is unloaded through a shell and tube chiller to a chemical storage sphere. From the chemical sphere, the butadiene is transferred to a purified tank and from there to the production reactor. In the past, inhibitor in the butadiene was removed (through a purification process) prior to the purification tank. Facility engineers found that the removal of the inhibitor was unnecessary and the purification process was taken out of service in the fall of 2013. That part of the process was blinded off and locked out. The butadiene in the chemical sphere can be recirculated through the chiller as needed to control the chemical temperature within a range of 52 °F – 65°F. Once the butadiene reaches the first production reactor, it is combined with other feeds and a catalyst and undergoes an exothermic reaction prior to other processing steps.

Arkema reported one process subject to the RMP requirements of 40 CFR Part 68 in the facility RMP. The facility is also subject to the requirements of OSHA Process Safety Management (PSM) in accordance with 29 CFR 1910.119. This site inspection was conducted by Eastern Research Group, Inc. personnel. The background specifics are summarized as follows:

Facility Identification:
Name: Arkema Inc. – Mobile Facility
Street Address: 13755 Highway 43 North
City: Axis County: Mobile State: AL Zip: 36505
EPA Facility ID No: 1000 0006 5261
Latitude: 30.979167
Longitude: -088.028833

Owner/Operator: Arkema, Inc.
Mailing Address: 13755 Highway 43 North
City: Axis State: Alabama
Phone: (610) 205-7000

Facility Contact Information:
Responsible for 40 CFR Part 68 Implementation: John Lakenan
Title: Plant Manager
Phone: (251) 829-4212
Email: john.lakenan@arkema.com

Emergency Contact: John Lakenan
Title: Plant Manager
Day phone: (251) 829-4212
24-hour Phone: (251) 829-9421
Email: john.lakenan@arkema.com

Date and Program Level of Submitted Risk Management Plan:
Date of most recent submission: 9/28/2012

Process	Process ID	Program Level	Chemical Name	Quantity (lbs.)	NAICS Code
Butadiene	1000037475	3	1,3-Butadiene	770,820	325211

EPA Inspection Team:
Lead Inspector: Mark Briggs, Eastern Research Group, Inc.
Inspector: Mary Willett, Eastern Research Group, Inc.

Facility Personnel Contacted During the Inspection:

Name	Title	Phone	Email
John Lakenan	Plant Manager	251-829-4212	John.lakenan@arkema.com
Michelle Haney	Environmental Manager	251-829-4314	Michelle.haney@arkema.com
Jeff Walker	Production Leader	251-829-4321	Jeffrey.walker@arkema.com
Jerry Hollingsworth	Logistics Leader	251-829-4272	Jerry.hollingsworth@arkema.com
David Averette	Safety Coordinator	251-829-4285	David.averette@arkema.com

ED_002938A_00000318-00029

Name	Title	Phone	Email
Danny Mitchem	Safety Specialist	251-829-4296	Danny.mitchem@arkema.com
Woody Jones	Mechanical Integrity Specialist	251-829-4267	Woody.jones@arkema.com
Chris Shelly	Controls and Reliability	251-510-2851	Chris.shelly@arkema.com
Gary Ganey	IEC Coordinator	251-829-4292	Gary.ganey@arkema.com
Gerald Drakeford	Lab Supervisor	251-829-4250	Gerald.drakeford@arkema.com
Mark Rollins	Reliability Leader	251-829-4277	Mark.rollins@arkema.com
Glen Bornhoft	Regional HR Manager	251-829-4323	Glen.bornhoft@arkema.com
Joaquin Amezaga	Technical Services Manager	251-829-4268	Joaquin.amezaga@arkema.com
Sarah Colmer	Utility/WWTP	251-829-4328	Sarah.colmer@arkema.com
Sam Gibbs	Maintenance Technician	251-829-4296	Sam.gibbs@arkema.com

Note: This is not a union facility.

3.0 Observations

The inspection of Arkema's Axis, Alabama facility evaluated compliance of all sections of the RMP regulations (40 CFR Part 68, Program Level 3) and the inspection checklist included in "Guidance for Conducting Risk Management Programs Inspections under Clean Air Act Section 112(r). The inspection included discussions with the facility representatives regarding a myriad of issues related to the operation of its process, the facility's RMP implementation, a review of paperwork associated with the facility's most recent RMP submission, and a tour of the facility. An inspection in-brief and out-brief were conducted. Observations from the RMP inspection at Arkema are discussed below:

- 40 CFR § 68.65(d)(1)(ii) requires its process safety information to include piping and instrument diagrams pertaining to the equipment in the process

  A comparison of P&ID No. MB-85-X-002-D-14 with actual field installed equipment found that a local pressure indicator (PI-01) had been removed and replaced with a blinded flange on the top of 1,3-butadiene storage sphere. The P&ID had not been updated with this change.

  A comparison of P&ID No. MB-86-X-004-00-D-16 with actual field installed equipment found that piping labeled BD-1 ½"-P29 used to transfer 1,3-butadiene to 321R reactor had been disconnected and a blind added at the valve flange. The P&ID had not been updated with this change. In addition, the valve on the disconnected pipe BD-1 ½"-P29 was also not included on the P&ID.

- 40 CFR 68.73(e) requires the owner or operator to correct deficiencies in equipment that are outside acceptable limits (defined by process safety information) before further use or in a safe and timely manner when necessary means are taken to assure safe operation.

  Inspectors observed a broken electrical conduit adjacent to the piping header carrying 1,3-butadiene was repaired by electrical tape and a cover plate was removed from electrical conduit exposing live electrical wiring in an area above the piping header carrying 1,3-butadiene. According to the National Fire Protection Association (NFPA) 70[1] Section 344.42, couplings and connectors used with electrical conduit shall be made

[1] National Fire Protection Association, National Electrical Code, 70, 2014.

tight. Electrical tape used to bind two sections of electrical conduit together does not provide a tight connection. NFPA 70 Section 314.17 states that openings in conduit bodies should remain closed. The missing cover plate on the electrical conduit provides an opening that could expose flammable gasses to live electrical wiring.

Disconnected piping was not secured with piping supports, and piping supports were corroded at the floor level and broken. The American Petroleum Institute (API) 570[2] Section 5.5.4, specifies that external visual inspections should be performed to determine the condition of the outside of the piping, insulation system, painting, and coating systems, and associated hardware. API 570, Section 5.5.4 further indicates that external inspections shall include surveys for the condition of piping hangers and supports. Instances of cracked or broken hangers, support shoes displaced from support members, or other improper restraint conditions shall be reported and corrected.

A walkthrough of the process piping adjacent to piping header BD-6"-20120-P29 transferring 1,3-butadiene to reactor R-20101 identified instances where installed equipment was not suitable for the process application in which they were used. Rope was being used to suspend piping and hold insulation in place and process piping above the 1,3-butadiene pipe header was being supported by electrical conduit.

- 40 CFR § 68.75(a) requires the owner or operator to establish and implement written procedures to manage changes to process chemicals, technology, equipment and procedures that affect a covered process.

  Arkema has developed a written procedure for management of change (MOC) that describes how permanent and temporary changes are proposed, evaluated, and approved before being implemented to prevent inadvertent or unintended changes.

  Although Arkema's procedure indicates changes should follow the MOC process, none of the observations surrounding the disconnection of process piping carrying 1,3-butadiene, the use of rope to suspend piping or secure piping insulation, or the repair of broken electrical conduit with electrical tape adjacent to the 1,3-butidene piping header were documented in the facility's MOCs. When inspectors asked the Environmental Manager if these types of changes or temporary repairs should have followed the MOC process, she stated these would not qualify for an MOC. However, the statement by the Environmental Manager contradicts Arkema's MOCs for other portions of the 1,3-butadiene process which indicate an MOC was established and completed to remove unused piping in the butadiene purification process. In addition, changes that include blinding off or disconnecting a section of process piping that was previously used in the process inherently changes that process. Arkema did not implement the written procedure that was developed for MOCs regarding these particular changes.

[2] American Petroleum Institute, Piping Inspection Code: In-service Inspection, Rating, Repair, and Alteration of Piping Systems, API 570, Third Edition, November 2009.

Signatures:

Lead Inspector:

Mark Briggs, ERG Date

Inspector:

Mary Willett, ERG Date

Region 4 RMP Coordinator:

Deanne Grant Date

Approved by Section Chief:

Robert Bookman Date

ED_002938A_00000318-00032

RMP INSPECTION REPORT

Arkema, Inc.
Calvert City, Marshall County, Kentucky
October 26, 2010

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4
ATLANTA, GEORGIA

CONTENTS

1.0 INTRODUCTION 1

2.0 BACKGROUND 1

TABLE 1: INSPECTION INFORMATION SUMMARY 1

3.0 RESULTS: DEFICIENCIES AND RECOMMENDATIONS 3

3.1 RISK MANAGEMENT PROGRAM AND PLAN (SUBPART A) 3
3.2 PROGRAM 3 PREVENTION PROGRAM (SUBPART D) (68.65 – 68.79) 3
3.3 EMERGENCY RESPONSE (SUBPART E) 68.90 – 68.95 6
3.4 RISK MANAGEMENT PLAN (SUBPART G) (68.150 – 68.200) 6

Appendices

A	*TABLE 2: COMPLIANCE DEFICIENCY and SPPE RMP PRIORITIES and PERFORMANCE MEASURES*
B	*PHOTOGRAPHS*
C	*ANNEX C: AUDIT CHECKLIST*
D	*SITE SECURITY CHECKLIST (CBI)*
E	*SITE INSPECTION WORKSHEET*
F	*TIER II REPORTS and CHEMICAL INVENTORY*
G	*OFF-SITE CONSEQUENCE ANALYSIS*
H	*PROCESS HAZARD ANALYSIS*
I	*COMPLIANCE AUDIT*

ED_002938A_00000318-00034

1.0 INTRODUCTION

Several planning and legislative initiatives have been introduced as part of the EPA's efforts to reduce the likelihood and severity of chemical accidents. These include the National Contingency Plan, the voluntary Chemical Emergency Preparedness Program, the Emergency Planning and Community Right to Know Act, and the Accidental Release Prevention requirements under Section 112(r) of the Clean Air Act, as amended in 1990. The Risk Management Program that is the subject of this inspection is mandated by Section 112(r) of the Clean Air Act. The focus of the inspection is the Risk Management Program for the hydrogen fluoride tank farm at the Arkema, Inc. facility in Calvert City, Kentucky. This inspection, which was conducted on October 26, 2010, consisted of an examination of program documentation and interviews with facility personnel as well as site reviews of various aspects of facility operations. Personnel from the facility were extremely helpful throughout the inspection. Numerous documents were duplicated for review off-site. These documents will be submitted to EPA with this report.

2.0 BACKGROUND

The Arkema, Inc. chemical plant in Calvert City, Kentucky uses hydrogen fluoride to manufacture refrigerants by a continuous reaction process. The facility also manufactures plastic resins with the use of vinylidene fluoride. The facility has a maximum of 8,600,000 pounds of hydrogen fluoride, 610,000 hydrochloric acid 37%, 766,000 pounds of vinylidene fluoride and 310,000 pounds of chlorine stored on site. The process is regulated as program level 3. The facility is also subject to the requirements of OSHA Process Safety management (PSM) in accordance with 29 CFR 1910.119. The background specifics are summarized as follows in Table 1.

TABLE 1: INSPECTION INFORMATION SUMMARY

INSPECTION TEAM:

Inspector: Kelly Patten, OTIE

Date of stationary source visit: October 26, 2010

STATIONARY SOURCE INFORMATION

Name: Arkema, Inc.
Street Address: 4444 Industrial Parkway
City: Calvert City County: Marshall State: Kentucky Zip: 42029

EPA Facility ID No: 1000 0004 4427

Latitude: 37° 02' 58.2" North
Longitude: -88° 22' 01.7" West

ED_002938A_00000318-00035

Dun & Bradstreet No.: 2290773

Name, address and phone of corporate parent company:
Owner/Operator: Arkema Delaware, Inc.
Mailing Address: 2000 Market street
City: Philadelphia State: Pennsylvania Zip: 19103

Name, title, and phone of person responsible for 40 CFR Part 68 implementation:
Name: Kim Knotts Title: HES Manager
Email: kim.knotts@arkema.com

Name and title of emergency contact:
Name: Jeff Hall Title: Plant Manager
Day phone: (270) 395-6364 24-hour Phone: (270) 395-7121

DATE AND PROGRAM LEVELS OF SUBMITTED RMP

Date of resubmission: 6/16/09.

Process (Program 1,2,3) as reported in RMP:
Program Level: 3

ED_002938A_00000318-00036

3.0 RESULTS: DEFICIENCIES AND RECOMMENDATIONS

The results of the inspection of the RMP are discussed below. The sections follow the regulation (40 CFR Part 68) and the inspection checklist included in "Guidance for Auditing Risk Management Plans/Programs under Clean Air Act Section 112(r)." The checklist with results from the inspection is included in Appendix C.

3.1 Risk Management Program and Plan (Subpart A)

Applicability (68.10) – The facility owner has provided the information necessary to determine applicability of RMP and OSHA PSM requirements.
(Deficiencies None, Recommendations None)

Management (68.15) – Kim Knotts "HES Manager" has the overall responsibility for the risk management program elements. *(Deficiencies None, Recommendations None)*

3.2 Program 3 Prevention Program (Subpart D) (68.65 – 68.79)

Program 3 Prevention: Process safety information (68.65) – Complete and accurate written information concerning process chemicals, process technology, and process equipment is essential to an effective process safety management program and to process hazard analysis. Information in the PSI is also used by those who develop training programs and operating procedures, contractors whose employees will be working with the process, employees conducting pre-startup reviews, local emergency preparedness planners, and insurance and enforcement officials. Therefore, it is important that the PSI be compiled in an organized and accurate way to facilitate its many functions. The facility has the required information, but it is not organized in an easy to use format. *(Deficiencies None)*

> ***Suggested Prevention Program Enhancements #1:*** *The facility should better organize the PSI documentation.*

Program 3 Prevention: Process hazard analysis (68.67) – The process hazard analysis is one of the most important elements of the risk management plan. The PHA provides information that will assist employers and employees in making decisions for improving safety and reducing the consequences of unwanted or unplanned releases of hazardous chemicals. The initial PHA was conducted in 1995. The PHA was revalidated in 2000 and 2005. The facility is in the process of conducting the 2010 revalidation. The PHA's do not address source siting or human factors. Mr. Jason McHaney "PSM Coordinator" stated that the 2010 revalidation has nodes to address source siting and human factors. *(Recommendations None)*

> **RMP Compliance Deficiency #1:** Failure to address stationary source siting and human factors in the PHA.
>
> > ***40 CFR 68.67*** *(c) The process hazard analysis shall address: (5) Stationary source siting; and (6) Human factors.*

ED_002938A_00000318-00037

Program 3 Prevention: Operating Procedures (68.69) – Operating procedures describe tasks to be performed, data to be recorded, operating conditions to be maintained, samples to be collected, and safety and health precautions to be taken. The procedures need to be technically accurate, understandable to employees and revised periodically to ensure that they reflect current operations. The standard operating procedures meet all requirements of this section. *(Deficiencies None, Recommendations None)*

Program 3 Prevention: Training (68.71) –All employees, including maintenance and contractor employees, involved with highly hazardous chemicals need to fully understand the safety and health hazards of the chemicals and processes they work with for the protection of themselves, their fellow employees, and the citizens of nearby communities. Training will help employees to be more knowledgeable about the chemicals they work with as well as familiarize them with reading and understanding MSDS's. The facility has conducted all required training. *(Deficiencies None, Recommendations None)*

Program 3 Prevention: Mechanical integrity (68.73) – Equipment used to process, store, or handle highly hazardous chemicals needs to be designed, constructed, installed, and maintained to minimize the risk of releases of such chemicals. This requires that a mechanical integrity program be in place to assure the continued integrity of process equipment. Elements of a mechanical integrity program include the identification and categorization of equipment and instrumentation, inspections and tests, testing and inspection frequencies, development of maintenance procedures, training of maintenance personnel, the establishment of criteria for acceptable test results, documentation of test and inspection results, and documentation of manufacturer recommendations as to meantime to failure for equipment and instrumentation. The facility uses GP Mate and will be going to SAP next year to track all mechanical integrity activities associated with the covered process. *(Deficiencies None, Recommendations None)*

Program 3 Prevention: Management of change (68.75) – Failure to fully evaluate changes has caused a number of catastrophes over the years, and employers need to establish ways to detect these changes. Management of change (MOC) procedures are used to insure that the equipment and procedures of a process are evaluated according to the change. Proper documentation and review of these changes is invaluable in assuring that the safety and health considerations are being incorporated into the operating procedures and the process. The facility's MOC procedures are generally accurate and comprehensive.
(Deficiencies None, Recommendations None)

Program 3 Prevention: Pre-startup review (68.77) – A complete evaluation of a new process or existing process that has been shutdown for a period of time must be performed to ensure the safe operation of the system. PHAs, P&IDs, and operating procedures all need to be reviewed for accuracy and relevance prior to starting any process. The facility has a program in place to address pre-startup. *(Deficiencies None, Recommendations None)*

ED_002938A_00000318-00038

Program 3 Prevention: Compliance Audits (68.79) – A compliance audit is a technique used to gather sufficient facts and information, including statistical information, to verify compliance with standards. Corrective action is on of the most important parts of the audit. It not only includes addressing the identified deficiencies, but also planning, follow-up, and documentation. It is important to assure that each deficiency identified is addressed, the corrective action to be taken noted, and the audit person or team responsible be properly documented by the employer. The facility has both the 2006 and 2009 compliance audits on file. The facility has a certification statement on page 5 section E of the 2009 compliance audit, but it does not include and actual certification. *(Recommendations None)*

> **RMP Compliance Deficiency #2:** Failure to certify the 2006 and 2009 compliance audits.
>
> > ***40 CFR 68.79 (a)*** *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.*

Program 3 Prevention: Incident investigation (68.81) – Incident investigation is the process of identifying the underlying causes of incidents and implementing steps to prevent similar events from occurring. The intent of an incident investigation is for employers to learn from past experiences and thus avoid repeating mistakes. The facility has a program in place to address incident investigation. *(Deficiencies None, Recommendations None)*

Program 3 Prevention: Employee participation (68.83) – The facility has a written program for employee participation. The requirements for "Employee participation" such as having a written plan of action and providing access to information required under the chemical accident prevention rule were fulfilled. Donny Beverley "Union Rep" participated in the site inspection. *(Deficiencies None, Recommendations None)*

Program 3 Prevention: Hot work permit (68.85) – An adequate program to control hot work at the facility has been developed. The facility meets all requirements of this section. *(Deficiencies None, Recommendations None)*

Program 3 Prevention: Contractors (68.87) – Contractors are evaluated based on several factors, including their experience and a comparison of their OSHA incidents to industry standards. The facility controls the activities of contractors on site.

(Deficiencies None, Recommendations None)

ED_002938A_00000318-00039

3.3 Emergency Response (Subpart E) 68.90 – 68.95

Emergency Response: Applicability (68.90-95) – Each employer must address what actions employees are to take when there is an unwanted release of highly hazardous chemicals. Employers will need to decide if they want employees to handle and stop small or minor incidental releases. Whether they wish to mobilize the available resources at the plant or whether employers want their employees to evacuate the danger area and promptly escape to a preplanned safe zone area, and allow the local community emergency response organizations to handle the release. At a minimum, employers must have an emergency action plan which will facilitate the prompt evacuation of employees when an unwanted release of highly hazardous chemical occurs. The facility meets all requirements of this section.
(Deficiencies None, Recommendations None)

3.4 Risk Management Plan (Subpart G) (68.150 – 68.200)

Updates (68.190) – The facility must review and update the RMP as specified in paragraph (b) of this section. The facility resubmitted their RMP on 6/16/09.
(Deficiencies None, Recommendations None)

ED_002938A_00000318-00040