DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Scheduled Inspection

A285132570

FACILITY: Anderson Development Company		**SRN / ID:** A2851
LOCATION: 1415 East Michigan Street, ADRIAN		**DISTRICT:** Jackson
CITY: ADRIAN		**COUNTY:** LENAWEE
CONTACT: Christopher Goeloe , Vice President, Quality & Responsible Care		**ACTIVITY DATE:** 12/16/2015
STAFF: Michael Gabor	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** SM OPT OUT
SUBJECT: Full Compliance Evaluation (FCE) and Inspection (PCE) of Anderson Development Company's Synthetic Minor / Opt-Out Source.		
RESOLVED COMPLAINTS:		

Synthetic Minor / Opt-Out Source. Full Compliance Evaluation (FCE) and Inspection (PCE) of Anderson Development Company's facility located at 1415 East Michigan Street, Adrian, Michigan 49221.

State Registration Number (SRN): A2851

Facility Contact

Chris Goeloe (CG), Vice President of Quality and Responsible Care, 517-438-5324 (office), Chris.Goeloe@anddev.com.

Jennifer Grover (JG), Environmental Manager, 517-483-5325 (office), Jennifer.Grover@anddev.com.

Purpose

On December 16, 2015, I conducted a scheduled, announced inspection of the Anderson Development Company (ADC) facility located in Adrian, Michigan (Lenawee County) at 1415 East Michigan Street. The purpose of the inspection was to determine the facility's compliance status with applicable federal and state air pollution regulations, particularly Michigan Act 451, Part 55, Air Pollution Control Act and administrative rules, and conditions of ADC's Permit to Install (PTI) number 131-04D. This inspection also included a follow up investigation of a fallout compliant received on October 10, 2015. A separate compliant investigation activity report, dated December 16, 2015, was generated. This facility was last inspected on September 27, 2010.

Facility Location

The facility is located within the city limits of Adrian. It is immediately surrounded by commercial / industrial sources, while pockets of residential areas are located about 1000 feet east and west of ADC.

Facility Background

ADC was foundered by Mr. Anderson in 1967. He also founded several other companies in the Adrian-area. He

ran the company until 1989, which was then purchased by Mitsui Chemicals, Inc. ADC continues to operate as an independent subsidiary, while employing 125 workers. ADC is a member of the American Chemistry Council and operates under the Responsible Care Company Program, and is also International Organization for Standardization (ISO) 14001 and 9001 certified.

ADC manufacturers a wide range of specialty and custom chemical products, mostly organic in nature. The current permit, PTI 131-4D was recently issued in January 13, 2015, in an attempt to streamline regulatory requirements and to allow ADC the flexibility to manufacturer a wide range of chemical products without the need to make changes, modifications, or revisions to their permit after issuance. The past permit, 131-04C, was cumbersome and rigid in regards to ADC's business model. It was also cumbersome to determine compliance with permit conditions (per last inspection activity report, dated September 27, 2010) and also required increased energy and financial costs to maintain compliance (e.g. use of nitrogen to maintain compliance temperature of a thermocoupler).

Main products include: (1) high performance, volatile organic compounds (VOC) - free acrylic resins used by the automotive industry and others; (2) polyurethane chemicals intended to supply the CASE (Coatings, Adhesives, Sealants, and Elasticants) market; (3) boron compounds for use in the electronics and pharma industrial sectors and as catalysts; (4) custom chemical development / custom toll manufacturing, which includes lab bench-scale development, to pilot testing, to full scale production. The facility generally operates 24 hours per day, 7 days a week.

Chemical production is done in either of one of the two chemical plants onsite. The permit distinguishes plant 1 and plant 2 as "PLT1" and "PLT2," respectively. PLT1 consists of 1 line, while PLT2 consists of 4 lines. In addition, the emission units (EU) listed in the permit are organized by manufactured product or manufacturing activity. EUPLT1 covers activities / products associated with polyurethane polymers and curatives. EUPLT2LINE1 covers activities / products associated with acrylic polymers. EUPLT2LINE3 covers miscellaneous activities / products. EUPLT2LINE4 covers activities / products associated with thermoplastic resins.

Permit special condition (SC) III.1 requires that the facility not operate any processes in its EU unless an operation and maintenance (O&M) / malfunction abatement plan (MAP) for each EU and associated control devices, has been submitted to the division, and is implemented and maintained. The O&M / MAP allows for flexibility in product development, as it is what specifies various operational parameters for the respective process and associated air pollution control devises in order to maintain compliance with applicable emission limits. As new products are manufactured, ADC updates its O&M / MAP to maintain compliance with its permit.

ADC's 2014 Michigan Air Emissions Reporting System (MAERS) reported 11,660 pounds / 5.83 tons VOC, which is well below the limit of 50 tons-per-year (tpy) specified by permit SC I.1.

Emission Unit / Flexible Group Details

EMISSION UNIT SUMMARY TABLE

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

Emission Unit ID	Emission Unit Description (Process Equipment & Control Devices)	Flexible Group ID
EUPLT1	Manufacturing and associated unit operations for polyurethane polymers and curatives. The processes consist of reactors, vacuum pumps, a still and storage tank. The process equipment will be controlled by evaporators, a condenser, carbon adsorption units and scrubbers. Previously known as EU00009, EU00012, EU00016 and EUANDURSTRIP.	FGFACILITY
EUPLT2LINE1	Manufacturing and associated unit operations for acrylic polymers. The process consists of reactors, storage tanks, process tanks and associated vacuum pumps. The processes are controlled by a condenser, caustic scrubber and activated carbon adsorption. Previously known as EU00003.	FGFACILITY
EUPLT2LINE2	Manufacturing and associated unit operations for catalysts. The process consists of reactors, process tanks, waste tanks and vacuum pumps. The processes are controlled by a condenser, caustic scrubber and activated carbon unit. Previously known as EU00004.	FGFACILITY
EUPLT2LINE3	Miscellaneous manufacturing and associated unit operations. The processes consist of reactors, a vacuum pump and other equipment. The processes are controlled by a condenser, caustic scrubber and activated carbon units. Previously known as EU00007 and EU00015.	FGFACILITY
EUPLT2LINE4	Manufacturing and associated unit operations for thermoplastic resins. The process consists of storage tanks, distillation feed storage, reactors, filters, dryers and vacuum pumps. The processes are controlled by	FGFACILITY

	two condensers that each uses a different type of coolant. Previously known as EU00014.	
Changes to the equipment described in this table are subject to the requirements of R 336.1201, except as allowed by R 336.1278 to R 336.1290.		

FLEXIBLE GROUP SUMMARY TABLE

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
FGFACILITY	All process equipment source-wide including equipment covered by other permits, grand-fathered equipment and exempt equipment.	EUPLT1, EUPLT2LINE1, EUPLT2LINE2, EUPLT2LINE3, EUPLT2LINE4

Regulatory Applicability

The facility is a Synthetic Minor / Opt-Out Source for VOC and for hazardous air pollutants (HAPs) emissions. ADC accepted VOC and HAPs emission limits in order to remain below major source emission thresholds. The facility is regulated by Permit to Install (PTI) 131-04D and reports its emissions to MAERS.

Arrival & Facility Contact

Visible emissions or odors were not observed upon my approach to the facility via Gulf and East Michigan Streets. I arrived at approximately 9:00 am, proceeded to the facility office to request access for an inspection, provided my identification, and asked if CG was available. A pre-inspection conference was held with CG, during which a copy of the MDEQ brochure: *Rights and Responsibilities Environmental Regulatory Inspections* was provided. I did invite CG to complete the customer service survey upon receipt of my inspection report. I informed CG of my intent to conduct a facility inspection and to review the various records required by their permit. CG extended his full cooperation during the inspection, accompanied me during the full duration of the inspection, and fully addressed my onsite questions and concerns.

Pre-Inspection Meeting

The pre-inspection began with a background presentation on ADC given by CG, and included ADC's history, operational characteristics, and product lines. I asked whether ADC experienced any recent issues or changes facility wide or with any of their air pollution control equipment? CG replied that no issues were noted and I did recognize ADC's satisfactory track record for past notification of issues or accidental releases to the Air Quality Division (AQD). I also asked if ADC had any immediate plans to modify their permit and / or a process line or to obtain a new permit / construct a new process. CG replied that ADC had no such immediate plans. Next, I shared the complaint the AQD received on October 5, 2015 from Agate Manufacturing, alleging Anderson Development as the source of the fallout experienced by Agate. This complaint investigation was documented separately from this report as a "Complaint Investigation" activity report, dated December 16, 2015.

Together with CG, I then reviewed the general and special conditions of PTI 131-04D. SC I.1 through 3 specify emissions limits for VOC (50 tpy), each individual HAP (8 tpy), and aggregate HAPs (20 tpy), respectively. CG informed me that ADC was well under those emission limits.

SC III.1 includes various conditions and requirements for the facility's O&M / MAP. Compliance with this condition was not evaluated again during this inspection, as staff conducted a full review and worked with CG to request edits to the initial draft submitted to the AQD on April 15, 2015. The AQD accepted the final version of the O&M / MAP on July 31, 2015. All requested edits were made and staff questions / concerns were fully addressed. CG confirmed that no additional changes have been made to it since AQD's review.

SC III.2 includes requirements to keep in-place a Leak Detection and Repair (LDAR) monitoring program for all pipe fittings, flanges and pump seals in FGFACILITY. The last LDAR was conducted in May 2015 using in-house employees with calibrated meters. No leaks or issues were identified. I requested a summary of the LDAR results by COB Wednesday, December 23, 2015, which was provided by CG. I did inform CG that this SC requires such results be provided to the District Supervisor within 30 days after completion of the monitoring event. He responded that in the future they would comply with this requirement.

SC IV.1 requires all operating EUs to have associated control devices installed, maintained, and operated in a satisfactory manner. Air pollution control (APC) equipment is required to control generated emissions is dictated by what chemical product is manufactured. The MAP document dictates what APC equipment is required for each EU. For example, an acidic product is best controlled by a caustic scrubber. In addition, internal batch documents dictate requirements. CG informed me that the facility employs a batch document system, which is specific to each chemical product manufactured on site. The product's batch document is also used to summarize the chemical / reagent recipe, it specifies operational and monitoring requirements / parameters, and dictates which APC equipment is required to control emissions (e.g. evaporators, condensers, carbon adsorption / activated carbon units, or scrubbers). CG stated that they conduct weekly checks for carbon-based control equipment. CG did acknowledge that ADC employs more APC equipment than what is indicated by the permit.

SC IV.2 requires the facility to equip and maintain each process in the EU listed above that has a control device with a device to monitor the parameters specified in the O&M/MAP, required by SC III.1. The monitoring equipment is calibrated in-house. The main types of meters used by the facility to monitor parameters according to their MAP include temperature indicators and pH meters. The calibration frequency varies by process, and it is indicated in the facility's MAP. During the inspection, facility staff pointed-out the various meters used for monitoring, but were generally not safely accessible to me.

SC VI.2 require the facility to maintain VOC emission calculation records for the last monthly and 12-month rolling time periods. I requested records from December 2014 through November 2015. CG provided these records on December 23, 2015.

SC VI.3 requires the facility to maintain individual and aggregate HAP emission calculation records for the last 12-month rolling time period. I requested records from December 2014 through November 2015. CG provided these records on December 23, 2015.

SC VI.4 requires the facility to maintain the following records, listed below, for each emission unit in FGFACILITY:

- The number of batches in each reactor. As indicated above, the facility employs a batch record for each product batch manufactured. Operators complete each batch form and it includes the recipe for the respective product (a confidential business item (CBI)), directions on how to make it, records of the amounts of each reagent added to the process, records of the final product yield, a summary of what they did, etc. Each batch record is a custom report, tailored to the products produced and contains specific instructions regarding what required air pollution control equipment, per the MAP, is required, and includes operational parameters. The number of batches numbers, per EU, is reported in the 2014 MAERS backup record, as the number of batches is used to calculate emissions. Their electronic batch record system is also tied into their accounting system in order to track their usage / expenses. The operational and monitoring parameters captured by each batch record are a method used by ADC to verify and demonstrate quality assurance to their customers. I viewed the electronic batch system during my inspection, and the facility appears to be in compliance with this condition.

- The weight and composition of each batch produced in each reactor. I viewed the electronic batch system during my inspection, and the facility appears to be in compliance with this condition.

SC VI.5 requires the facility to monitor and record the parameters for each control device, as specified in the O&M / MAP, once per batch, while the process is operating. I viewed the electronic batch system during my inspection, and the facility appears to be in compliance with this condition.

SC VIII lists the requirements for 18 stacks. The facility confirmed that during the PTI 131-04D application process, the facility verified stack heights and diameters and confirmed that no additional changes were made since then. Each stack was pointed out to me during the inspection and each appeared to be in compliance (note: I did not conduct actual measurements, but instead used my professional judgement), except for one stack, SV00318. The permit requires that it be at least 40 feet above the ground, while during the inspection it appeared to be much shorter. I requested the facility to review their last permit modification application to determine if this was due to an error / oversight. CG provided an email explanation on December 23, 2015 (attached) stating that the error was due to a misinterpretation of a drawing. On January 5, 2016, I received an email confirmation from Jeff Rathbun, AQD Permit Section that based on the review for PTI 131-04D, Rule 227(1)(a) was used for demonstrating compliance with Rule 225 for all Toxic Air Contaminants (TACs), therefore, no modeling was required (attached). Subsequently, ADC will need to submit a permit application to request a change to specified stack height for SV00318. On January 11, 2016, I informed ADC via a telephone message and an email to submit a permit application (attached). Permit restrictions for each stack / vent and its associated EU are provided below:

Stack Number & Vent ID	Maximum Exhaust Diameter / Dimensions (inches)	Minimum Height Above Ground (feet)	Associated Emission Unit (EU) / Process
1. SV00356	2	55	EUPLT1 (formally EU00009)
2. SV300301	2	42	EUPLT1 (formally EU00012)
3. SV00302	4	41	EUPLT1 (formally EU00012)
4. SV00318	2	40*	EUPLT1 (formally EU00012) *Note: This stack height will be corrected via a PTI application requesting modification.
5. SV00391	2	26	EUPLT1 (formally EUANDURSTRIP)
6. SV00500	2	36	EUPLT1
7. SV00502	2	36	EUPLT1
8. SV00530	2	36	EUPLT1 (formally EU00009)
9. SV331331	2	26	EUPLT1 (formally EU00016)
10. SV00003	12	45	EUPLT2LINE1 (formally

			EU00003)
11. SV00004	2	80	EUPLT2LINE2 (formally EU00004)
12. SV00004T	6	45	Used during delivery truck unloading
13. SV00081	2	20	EUPLT2LINE3 (formally EU00007)
14. SV00135	2	45	EUPLT2LINE2 (formally EU00004) and EUPLT2LINE3 (formally EU00007)
15. SV01609	4	40	Out-of-Service
16. SV00015C	2	40	Out-of-Service
17. SV00165	10	55	EUPLT2LINE4 (formally EU00014)
18. SV00014	6	50	EUPLT2LINE4 (formally EU00014)

CG then confirmed several processes that are exempt from operating under a PTI. One mineral spirit based cold cleaner is operated onsite and is exempt from obtaining a PTI under Rule 281. In addition, ADC operates two processes under a Rule 290 PTI exemption, the Wax product line and the Pilot Plant. To demonstrate compliance with Rule 290, the following items are required: (1) An emission unit which meets any of the criteria specified under Rule 290(a)(i) through Rule 290(a)(iii); (2) A description of the emission unit is maintained throughout the life of the unit; (3) Records of material use and calculations identifying the quality, nature, and quantity of the air contaminant emissions are maintained in sufficient detail to demonstrate that the emissions meet the emission limits outlined in this rule; and (4) The records are maintained on file for the most recent 2-year period and are made available to the air quality division upon request. Records for the past 12 months were requested (December 2014 through November 2015) by COB December 23, 2015. An extension to January 8, 2016 was offered. A follow up email was sent and a telephone message was left on January 11, 2016 to request a status update for providing the requested records.

Then the Michigan Air Emissions Reporting System (MAERS) report for emission year 2014 was discussed, as I had several questions, comments, and concerns. At this point, JG was asked by CG to join the discussion, as she was the primary preparer. Overall, the backup data submitted / attached with the MAERS report and the MAERS report were reviewed and found to be acceptable. For future reports, I requested ADC to do the

following: (1) Update the stack information so it is consistent with the new permit issued in January 2015, (2) Update MAERS EU labels so they're consistent with the new permit EU labels (may include previous labels for a few more cycles), and (3) Provide / list units for emission factors, material throughput, and emission values (verified via backup data when not included in the electronic report). The facility did not take into account the reported control efficiencies and so all emissions were reported as uncontrolled. Recently ADC went through an engineering exercise and developed new emission factors that take into account control efficiency, mainly from the carbon drums. Future reported emissions will take into account control efficiencies and will be much lower. Overall, reported emissions were well below permitted limits. At this point, we broke for lunch and I returned to ADC at approximately 2:05 pm to conduct the facility tour.

Onsite Inspection Narrative

CG then escorted me as I conducted the onsite tour portion of the inspection. Throughout the inspection, stacks associated with permitted processes were identified, as described above. We first toured Plant 1, which includes several processes organized under EUPLT1. Mickey Henderson (MH), Plant 1 Manager, joined CG and I during this portion of the inspection.

We first observed the LFTDI Polyurethane process (formally EUANDURSTRIP). Emissions from this process are controlled via chilled glycol / condenser (operational performance monitored via a temperature probe) and carbon drums, as indicated by the MAP. The isocyanides may be removed from this process's product line using a wiped film evaporator (WFE), per customer needs. I observed date of installation (approximately November 2015) labels affixed to the carbon drums located outside. They are checked weekly by the facility and are replaced when they are less than 90% effective at remove VOCs from the airstream prior to stack discharge.
Then we observed the P20 product line (formally EU00009) consisting of reactors (R) 350 and 351. Emissions are controlled by a condenser on R-351 and by monitoring the temperature at the vapor outlet using probes, and VOCs are controlled by carbon drums, as specified by the MAP.

We then observed the Andur Still process line, consisting of R-302. Emissions are controlled by a condenser and by monitoring the temperature at the vapor outlet using a probe, and VOCs are controlled by carbon drums, as specified by the MAP.

Next the Andur process line (formally EU00012) was observed, consisting of R-300 and R-301. Emissions are controlled by condensers and by monitoring the temperature at the vapor outlet using probes, and VOCs are controlled by carbon drums, as specified by the MAP. The curatives and the Andur products are used to manufacture the final urethane product.

R-330 and R-331 (formally EU00016) were observed. Emissions are controlled only with carbon drums.

The Siegwerk process line, which produces urethane containing higher levels of solvent, was observed, consisting of R-525 and R-526. Emissions are controlled by condensers and by monitoring the temperature at the vapor outlet using probes, and VOCs are controlled by carbon drums, as specified by the MAP.

The Wax product line, which operates under a Rule 290 PTI exemption was observed.

For plant 1 (EUPLT1), I observed excellent housekeeping practices and no leaks or odors were observed during the inspection.

We then proceeded to observe operations at ADC's plant 2, and began with EUPLT2LINE1, formally EU00003, which produces acrylic powder. At this point, CG and I were joined by Terrance Stevens, Plant 2 Manager, and Gary Guinn, Plant 2 Process Manager. Emissions are controlled by a condenser, by a caustic scrubber and by monitoring the temperature at the vapor outlet using a probe, and VOCs are controlled by carbon drums, as specified by the MAP. This process is also equipped with a baghouse to control particulates.

Next, we observed EUPLT2LINE4 / Admer (thermoplastic resins) product line, formally EU00014. Emissions are controlled by condensers and by monitoring the temperature at the vapor outlet using probes, and VOCs are controlled by carbon drums, as specified by the MAP.

We then observed the Borates product line, which is a part of EUPLT2LINE3 (used to produce acrylic resins), formally EU00007. Emissions are controlled by a condenser and by monitoring the temperature at the vapor outlet using a probe, and VOCs are controlled by carbon drums, as specified by the MAP. An additional catch drum is included prior to final stack discharge.

EUPLT2LINE2, formally EU00004, which produces various catalysts, was observed. Emissions are controlled by a condenser, by a caustic scrubber, and by monitoring the temperature at the vapor outlet using probes, and VOCs are controlled by carbon drums, as specified by the MAP. An additional catch drum is included prior to final stack discharge.

Also, the former EU00015, which is now a part of EUPLT2LINE3, is used to recycle xylene, and its emissions are controlled by venting through a condenser and the same caustic scrubber used by EU00004 above, and then VOCs are controlled by carbon drums, as specified by the MAP.

For plant 2, I observed excellent housekeeping practices and no leaks or sustained odors were observed during the inspection.

Post-Inspection Meeting

We proceeded back to a conference room and held a brief post-inspection meeting. I informed CG that I did not have any immediate concerns at that time. Throughout the entire inspection, CG and the staff of ADC extended their full cooperation. I thanked CG for his time and departed the facility at approximately 4:30 pm.

Recordkeeping Review

I requested Recordkeeping items stipulated by SCs VI.2 and VI.3, and Rule 290 compliance demonstrations for the Pilot Plant and the Wax product line for the last 12 months, specifically December 2014 through November 2015. CG provided VOC and HAP emissions records on December 23, 2015. These emission records indicate compliance with SCs I.1 through I.3, VI.2 and VI.3. CG also submitted examples of preventive maintenance (PM) records temperature and pH instruments. He also provided a summary, per SC III.2 of their last Leak Detection and Repair (LDAR) monitoring, which took place during May 2015. No leaks, etc. were detected. I provided an extension for the submittal of Rule 290 related records until January 8, 2016 (see attached email dated December 23, 2015).

On January 11, 2016, I followed up via a telephone message and an email (attached) regarding: (1) previously requested Rule 290 records, (2) details on the required course of action to address the height of stack number 4, ID SV00318 (to be done via a PTI application request for modification), (3) status of the complaint investigation (documented separately in my December 16, 2015 complaint investigation activity report), (4) a request for the carbon system exhaust check monitoring log / carbon change out records, per the recordkeeping section of MAP, for December 2014 through November 2015, and (5) a request for comment on the table associating each stack with its process / EU.

On January 14, 2016, CG acknowledged receipt of my previous emails and indicated that he would respond shortly. However, CG did not indicate a timeline for responding to the DEQ's request for records. On January 22, 2016, I sent a compliance concern letter to CG requesting all recording keeping items requested by my January 11, 2016 email by February 5, 2016, COB, and by what date ADC will submit a PTI application to the AQD to address the identified issue with stack number 4, ID SV00318.

On February 5, 2016, CG hand delivered the requested items to the Jackson District Office and I met with him to discuss. CG informed me that they will be submitting a PTI modification application to address the stack height issue shortly and also showed me a draft application. He also provided records for the carbon system exhaust / change out activities. The submitted Rule 290 records (identified as Confidential Business Information by ADC) for the Pilot Plant and Wax product lines indicate substantial compliance, except for one issue ADC discovered during the recordkeeping reviewing.

The facility discovered and self-reported that one of the chemicals produced by the Pilot Plant, toluene diisocyanate (TDI), CAS # 26471625, was ineligible to operate under Rule 290 due to its IRSL of 0.03. Upon discovery, the facility immediately shifted production to permitted process equipment.

In order to determine the magnitude of this issue, I requested Keisha Williams of the AQD's Toxics Unit to review ADC's TDI emissions and to suggest the past impact to public health (e.g. minimal, moderate, extreme). I provided the monthly, uncontrolled emissions of TDI from the Pilot Plant reported by ADC on February 19, 2016. Her email response is attached and she indicated that the approximate ambient impact would be minimal on public health. ADC has taken action to address this issue and will no longer produce TDI. Since the TDI emissions were marginal and the impact to public health was determined to be minimal, the AQD will not take additional action regarding this item.

Compliance Summary

Based upon the visual observations and the review of the records, ADC appears to be in substantial compliance with the requirements of their permit. ADC will also submit a PTI application regarding stack ID SV00318.

I note that multiple communications via email, telephone, and a compliance concern letter were required to obtain Rule 290-related records from ADC. Once submitted, the Rule 290 records indicate substantial compliance, except for the issue regarding TDI emissions. ADC has taken satisfactory action to address this issue.

NAME Michael M. Kibby DATE 2/22/16 SUPERVISOR