



Office of the
Secretary

STATE OF DELAWARE
**DEPARTMENT OF NATURAL RESOURCES
AND ENVIRONMENTAL CONTROL**
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

Phone: (302) 739-9000
Fax: (302) 739-6242

SETTLEMENT AGREEMENT

This Settlement Agreement ("Agreement") is made and entered into as of this 28th day of March, 2019 (the "Effective Date"), by and between Croda, Inc. ("Croda") and the State of Delaware Department of Natural Resources and Environmental Control ("DNREC" or the "Department") (collectively the "Parties") to resolve certain matters arising from an incident ("the EO Plant Incident") on November 25, 2018 at Croda's Ethylene Oxide Plant ("EO Plant") located in New Castle, Delaware.

WHEREAS, Croda owns and operates a facility located at 315 Cherry Lane in New Castle, Delaware, where it manufactures surfactants that promote the mixing of oil and water- based ingredients in consumer products such as shaving cream and pharmaceuticals;

WHEREAS, the manufacture of these surfactants requires the use of ethylene oxide ("EO"), a colorless and highly flammable gas;

WHEREAS, Croda's operations are governed by multiple Divisions within the Department, including the Division of Air Quality, the Division of Water, and the Division of Waste and Hazardous Substances;

WHEREAS, on November 25, 2018, Croda experienced a release of ethylene oxide triggering the EO Plant Incident at its EO Plant that prompted an emergency response by the Department and other local emergency response agencies, and resulted in the closure of the Delaware Memorial Bridge for a period of 7 hours, beginning at 4:23 p.m. and ending at 11:23 p.m.;

Delaware Memorial Bridge for a period of 7 hours, beginning at 4:23 p.m. and ending at 11:23 p.m.;

WHEREAS, the subsequent investigation by Croda determined that the release was caused by a failed flange gasket on the water reboiler ("E-430") piping servicing the purification column ("T-430") in that the gasket installed on such flange was of a material not suitable for the operation that did not comply with the engineering specifications for the EO Plant;

WHEREAS, the release resulted in 2,688 lbs. of ethylene oxide escaping into the environment;

WHEREAS throughout the incident, a water deluge system was used by Croda to minimize the ambient air concentration of ethylene oxide and to minimize the risk of explosion or ignition of the released ethylene oxide;

WHEREAS, approximately 700,000 gallons of deluge water overflowed the spill sump during the emergency response and discharged onto the ground and into the wooded area behind the sump;

WHEREAS, Croda's operations require permits issued by the Division of Air Quality ("DAQ"), including permits issued pursuant to 7 DE Admin. Code 1102 ("Regulation 1102") and 7 DE Admin. Code 1130 ("Regulation 1130" or "Title V"), and the facility currently operates under the governance of Title V Permit: AQM-003/00058(Renewal 3) (Revision 4) dated February 15, 2015;

WHEREAS, Croda has recently expanded its facility by adding the EO Plant, a multi-step continuous process to produce ethylene oxide from ethanol, for use as a raw material in the manufacture of surfactants in the main plant, with equipment that includes an ethanol dehydration furnace, a catalytic oxidizer to control emissions from the carbonate regenerator, two

EO storage tanks controlled by a scrubber, an ethyl chloride chemical addition pot, storage tanks, a 464 HP, Tier 3, Cummins model 300DQDAC emergency generator, two 350 HP, Clarke model JW6H-UFADJO fire pumps, an existing 235 HP Peerless fire pump, and fugitive sources;

WHEREAS, DAQ issued a federally-enforceable Regulation 1102 construction permit for this expansion in June, 2016 that has been amended and extended and is currently governed by Permit: APC-2016/0068-Construction (Amendment 3) dated June 7, 2018;

WHEREAS, Croda began commissioning of the EO Plant in August of 2018 to ensure stable operation and to evaluate its performance in preparation for a construction-to-operation inspection, (“C to O inspection”), including the production of ethylene oxide, in September of 2018;

WHEREAS, upon completion of construction, Croda, in accordance with the regulations, requested on August 29, 2018 that DAQ perform the C to O inspection, in order for Croda to fully operate under APC-2016/0068-Construction (Amendment 3) and to allow time for DAQ to transfer the permit conditions from the construction permit to Croda’s Title V Permit AQM-003/00058(Renewal 3) (Revision 4);

WHEREAS, Croda agrees that it made an administrative error in the scheduling of the C to O inspection, resulting in Croda conducting conditional operation of the EO Plant without the approval of DNREC during the period of October 6, 2018 to October 22, 2018;

WHEREAS, the DAQ conducted the C to O inspection on October 22, 2018, and determined that Croda had satisfied the conditions in order for Croda to fully operate under APC-2016/0068-Construction (Amendment 3) and authorized Croda to submit the request to transfer the construction permit conditions to Croda’s Title V Permit. Croda promptly filed that request following the C to O inspection;

WHEREAS, on March 4, 2019, the Secretary of DNREC issued Order No. 2019-A-0014 (“the Order”), attached hereto as Exhibit A, finding Croda to be in violation of 7 *Del.C.* Chapter 60, 7 DE Admin. Code §1102, 7 DE Admin Code §7201, its Air Pollution Control Operating Permit, and its NPDES Permit, and imposing a penalty assessment and cost recovery;

WHEREAS, the Parties have agreed that settlement of the matters addressed by this Agreement is in the best interest of the Parties, and that entry of this Agreement is the most appropriate means of resolving the matters addressed herein.

NOW THEREFORE, it is hereby stipulated and agreed as follows:

I. APPLICATION AND SCOPE

1. It is the intent of the parties that this Agreement resolve all violations arising out of operation of the EO Plant prior to and including the EO Plant Incident, and further define the obligations of Croda going forward. Restart of the EO Plant is contingent on written prior approval by DNREC based on the provisions herein.

II. ADMINISTRATIVE PENALTY

2. In full and final resolution of all claims available to DNREC or the State of Delaware concerning the matters addressed in the Order, Croda agrees to pay \$230,250 in penalty assessment and \$16,489.23 for DNREC cost recovery. Croda shall submit to DNREC payment of the penalty and costs in full within sixty (60) days of the Effective Date of this Agreement.

3. The payment by Croda to DNREC pursuant to Paragraph 2 of this Agreement shall be made to DNREC by corporate check, payable to the State of Delaware, and mailed to the following address:

Ralph K. Durstein III
Deputy Attorney General
Department of Justice
State of Delaware
Environmental Unit - Third Floor

102 W. Water Street
Dover, Delaware 19904

4. The Department anticipates that additional costs may be incurred in the future in monitoring, testing, compliance, and remediation, and the Department reserves the right to recover any such additional costs.

III. SAMPLING PLAN

5. The EO Plant Incident resulted in the release of contaminated deluge water that overflowed the EO Plant emergency containment sump that the DNREC Division of Waste and Hazardous Substances (“DWHS”) Site Investigation and Restoration Section (“SIRS”) suspects was unable to handle the rate of water flow. As a result, Croda has completed the required sampling activity outlined below in Paragraphs 6-14, in accordance with DNREC’s requirements and has reported the results to DNREC.

6. SIRS is requiring Croda to undertake soil and groundwater sampling to determine if there was a release of ethylene oxide and/or 1,4-dioxane (an impurity in the EO manufacturing process) to the soil and groundwater. If the levels exceed the acceptable SIRS screening values set forth below, Croda will be required to conduct further delineation and risk assessment.

7. The sampling plan includes the installation of five soil borings and one temporary well. The sampling is focused in the low-lying area which is approximately 100 feet long and 50 feet wide, located outside the super silt fence and extending to the fence line adjacent to the marsh. The soil borings will be installed in the approximated direct pathway of surface water discharge during the EO incident response, as determined based on field observations of the super silt fence, which appears to have been damaged during the event, as well as approximate flow paths estimated from reviewing the surveyed topographic contours.

8. The samples will include [a] installation of four shallow soil borings along the fence line for collection of four shallow soil (0-2 feet) samples; [b] one deeper soil boring/temporary well for collection of an estimated total of six deep soil samples (continuous samples will be collected starting at 0-2 feet below grade and extending to just above the shallow water table, estimated at 12 feet below grade). Soil samples will be collected continuously in 2' intervals, starting from ground surface as follows: 0-2', 2-4', 4-6', 6-8', 8-10', 10-12', until the Geoprobe reaches the capillary fringe zone approximated by Arcadis driller and field personnel.

9. After the soil samples are collected, the tooling will be advanced ten feet below the estimated water table surface and a 10' pre-packed well screen will be set. The temporary well will be purged and allowed to set for a minimum of 24 hours prior to collecting a ground water sample.

10. Air monitoring of the breathing zone will be conducted using EO sensors provided by Croda Atlas Point, as well as a photoionization detector (PID) rented by Arcadis and calibrated for EO, given its volatility and toxicity. Weather conditions and primary wind direction will be assessed prior to starting work and monitored to establish and maintain a safe working area. Action levels will be established based on field screening levels in excess of 1 ppb EO sustained for five minutes. If concentrations measured from field instruments exceed the action level for 5 minutes, work will be stopped to allow fresh air to dissipate potential vapors, and work will be resumed after levels are established below the action level for five minutes.

11. Samples will be screened and assessed for visual and olfactory evidence of potential contamination, soil lithological types will be logged, and samples will be biased to zones of potential impacts for the potential constituents of concern.

12. Quality control samples, including field duplicates, field equipment rinsate blanks, trip blank, and matrix spike/matrix spike duplicate samples will be collected in accordance with the Department's HSCA SOPCAP.

13. Arcadis will submit samples to Eurofins Lancaster Laboratories under chain of custody protocol for EO and 1,4-dioxane analysis pursuant to EPA SW-846 methods, including select ion method (SIM) isotope dilution for 1,4-dioxane. The Department's lab director has approved Eurofins' achievable detection limits to establish data quality objectives above the SIRS screening levels. As such, the screening levels for the soil and groundwater sample results will be Eurofins' Limit of Quantification (LOQ), which for EO in groundwater and soil are 25 ug/L and 0.025 mg/kg, respectfully, and for 1,4-Dioxane in groundwater and soil are 0.3 ug/L and 0.333 mg/kg, respectfully.

14. A draft soil and groundwater evaluation report has been received by SIRS with a final draft to be received within 15 days of the execution of this agreement. Based on the report, interim actions or remedial actions may be needed. If maximum concentrations of EO and 1,4-dioxane are above concentrations which would pose a 1/10th of an unacceptable risk in a commercial setting, further delineation and risk assessment would be required and Croda would be required to submit a draft supplemental plan to SIRS by May 31, 2019. However, if maximum concentrations are below SIRS screening values, no such plan would be required and SIRS will not request any further information.

IV. ACCIDENTAL RELEASE PREVENTION PROGRAM

15. Croda is subject to the Department's Accidental Release Prevention Program ("ARP") administered pursuant to the Delaware Extremely Hazardous Substances Risk Management Act, 7 *Del.C.* Ch. 77, and the Accidental Release Prevention Regulation, 7 DE

Admin. Code 1201, because of the presence of ethylene oxide, a colorless and flammable gas, at its facility in an amount that is above the threshold for regulatory applicability.

16. Croda has a general duty under 7 *Del.C.* §7704(a) to operate a safe facility. Based on the requirements in 7 *Del.C.* §7704(a) and Section 3.0 of 7 DE Admin. Code 1201, Croda is required to operate a safe facility. Accordingly, the ARP is requiring that all of the following actions be completed by Croda, and submitted to the ARP, or evidence of completion as applicable, prior to obtaining approval to restart the EO Plant:

- (a) completion of the final Incident Investigation Report for the November 25, 2018 EO Plant Incident within 15 days of the execution of this agreement;
- (b) completion of the focused Process Hazard Analysis of all EO release point;
- (c) completion of Pre-Startup Safety Review;
- (d) completion of fire water system hazard analysis;
- (e) completion of the fire water system procedures;
- (f) completion of employee training of the EO Plant Operating and Emergency Procedures; and
- (g) completion of fire department manifold connection to fire water system supply tank.

V. EFFECT OF SETTLEMENT

17. Croda's satisfaction of the payment obligations under Paragraphs 2 and 3 and completion of all actions detailed in Sections III and IV, shall resolve all civil, administrative and/or criminal liability of Croda to DNREC or the State of Delaware for the matters addressed herein, including without limitation the alleged factual findings or violations identified, claims asserted and relief sought in or through the Order.

VI. GENERAL PROVISIONS

18. Croda agrees to the resolution of the claims without any admission as to any matter of fact or law.

19. This Agreement shall be governed by, and interpreted under, the laws of the State of Delaware.

20. Nothing in this Agreement shall relieve Croda of its obligation to comply with all applicable federal, state, and local laws and regulations. Other than as expressly provided for in Section V, nothing contained in this Agreement shall be construed to prevent, alter, or limit DNREC's ability to seek or obtain other remedies or sanctions available under federal, state, or local statutes or regulations, in response to any violation by Croda of applicable statutes and regulations, nor to limit any claims, rights or defenses otherwise available to Croda, including with respect to any such alleged violations.

21. In consideration of the Parties' voluntary resolution through this Agreement of the issues governed by the Order, Croda shall withdraw any request of a public hearing or appeal to the Environmental Appeals Board and shall submit the required payment for penalties and costs in full within sixty (60) days of the Effective Date of this Agreement.

22. This Agreement does not limit or affect the rights of Croda, the State of Delaware, or DNREC against any person or entity not party to this Agreement.

23. This Agreement shall not be considered to create rights in, or grant any cause of action to, any third party not a party to this Agreement, nor does it limit the rights of any person or entity not party to this Agreement against Croda, except as otherwise provided by law.

24. This Agreement shall be binding upon the Parties to this action, and their successors and assigns. The undersigned representative of each Party to this Agreement is authorized by the

Party whom he or she represents to enter into the terms of this Agreement and bind that Party to them.

25. This Agreement shall be effective when duly and fully executed on behalf of the Parties to this Agreement.

26. This Agreement may be modified only by the written consent of the Parties.

27. This Agreement is entered into notwithstanding any other agreement between the Parties and constitutes the entire Agreement and settlement between the Parties. This Agreement supersedes any prior provisions or agreements, to the extent there is an irreconcilable conflict.

28. To the extent of any irreconcilable conflict between this Agreement and the requirements of federal and state law, the latter controls.

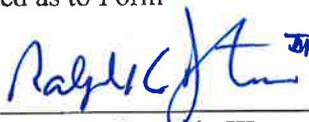
29. To the extent that any portion of this Agreement is rendered unenforceable by operation of law, the balance of the Agreement is severable and remains enforceable.

FOR THE STATE OF DELAWARE

By: 
Shawn M. Garvin, Secretary
Department of Natural Resources
and Environmental Control

Date: 3/28/19

Approved as to Form

By: 
Ralph K. Durstein III
Deputy Attorney General
State of Delaware
Office of the Attorney General

Date: 3/28/19

FOR CRODA, INC.

Date: March 25, 2019

By: Christina Manuelli
Christina Manuelli
North American Corporate Counsel and
Corporate Secretary-North America

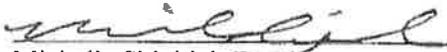
By: _____
Michelle Skjoldal, Esquire
Attorney for Croda, Inc.

Date: _____

FOR CRODA, INC.

Date: _____

By: _____
Christina Manuelli
North American Corporate Counsel and
Corporate Secretary-North America

By: 
Michelle Skjoldal, Esquire
Attorney for Croda, Inc.

Date: 3-25-2019



STATE OF DELAWARE
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**NOTICE OF ADMINISTRATIVE PENALTY ASSESSMENT AND
SECRETARY'S ORDER**

Pursuant to 7 *Del.C.* §6005

Order No. 2019-A-0014

***PERSONALLY SERVED BY
AN ENVIRONMENTAL CRIMES
UNIT OFFICER***

Issued To:

Croda, Inc.
Attn: Robert Stewart
Managing Director of Operations-North America
315 Cherry Lane
New Castle, DE 19720

Registered Agent:

The Corporation Trust Company
Corporation Trust Center
1209 Orange Street
Wilmington, DE 19801

This is to notify Croda, Inc. ("Respondent") that the Secretary of the Department of Natural Resources and Environmental Control ("Department") has found that Respondent has violated 7 *Del.C.* Chapter 60; 7 DE Admin. Code 1102; 7 DE Admin. Code 7201 and its Air Pollution Control Operating Permit and NPDES Permit, at its facility in New Castle, Delaware. Accordingly, the Department is issuing this Notice of Administrative Penalty Assessment and Secretary's Order pursuant to 7 *Del.C.* §6005(b)(3).

GENERAL BACKGROUND

Respondent owns and operates a facility located at 315 Cherry Lane in New Castle, Delaware where it manufactures surfactants that promote the mixing of oil and water-based ingredients in consumer products such as shaving cream and pharmaceuticals. The manufacture of these surfactants requires the use of ethylene oxide ("EO"), a colorless and flammable gas. Respondent's operations are governed by multiple Divisions within the Department, including Division of Air Quality, Division of Water, and Division of Waste and Hazardous Substances.

On November 25, 2018, Respondent experienced a release ("release" or "EO Plant Incident") at its new Ethylene Oxide Plant ("EO Plant"). The release prompted an emergency response by the Department and other local emergency response agencies, and resulted in the closure of the Delaware Memorial Bridge for a period of 7 hours, beginning at 4:23 p.m. and ending at 11:23 p.m.

A subsequent investigation by Respondent determined that the release was caused by a failed flange gasket on the water reboiler ("E-430") piping servicing the purification column ("T-430"). The gasket used was of a material not suitable for the operation. The release resulted in 2,688 lbs. of ethylene oxide escaping into the air. Throughout the incident, a water deluge system was used to minimize the ambient air concentration of ethylene oxide and to minimize the risk of explosion or ignition of the released ethylene oxide. The investigation of the release by the Department confirms these findings. Specific background and violations are provided below.

BACKGROUND – DIVISION OF AIR QUALITY

Respondent's operations require permits issued by the Division of Air Quality ("DAQ"). These include permits issued pursuant to 7 DE Admin. Code 1102 ("Regulation 1102") and 7 DE Admin. Code 1130 ("Regulation 1130" or "Title V"). The facility currently operates under the governance of Title V Permit: **AQM-003/00058(Renewal 3)(Revision 4)** dated February 15, 2015.

Respondent has recently expanded its facility by adding the EO Plant. The EO Plant is a multi-step continuous process to produce ethylene oxide from ethanol. Ethylene oxide is a raw material in the manufacture of surfactants in the main plant. Equipment includes an ethanol dehydration furnace (EDF, 12.47 MMBTU/hr), a catalytic oxidizer (<1 MMBTU/hr) to control emissions from the carbonate regenerator, two EO storage tanks controlled by a scrubber, an ethyl chloride chemical addition pot, start-up/shutdown activities, storage tanks, a 464 HP, Tier 3, Cummins model 300DQDAC emergency generator, two (2) 350 HP, Clarke model JW6H-UFADJ0 fire pumps, an existing 235 HP Peerless fire pump, and fugitive sources. The DAQ issued a Federally Enforceable Regulation 1102 construction permit for this expansion, Permit: **APC-2016/0068-Construction** in June, 2016. It has been amended and extended and is currently governed by Permit: **APC-2016/0068-Construction(Amendment 3)** dated June 7, 2018. Upon completion of construction, Respondent is required to request that DAQ perform a construction-to-operation inspection ("C to O inspection") in order to receive an operating permit for the EO Plant.

Following an investigation of the release that occurred on November 25, 2018, it was further determined that Respondent had begun operation of the EO Plant prior to receiving approval to operate. The DAQ conducted the C to O inspection on October 22, 2018. Information provided by Respondent during the release investigation revealed that operation of the EO Plant had begun on September 5, 2018.

STATUTORY AND PERMIT REQUIREMENTS - DIVISION OF AIR QUALITY

1. *7 Del.C. §6003(a)(1)* states:

"No person shall, without first having obtained a permit from the Secretary, undertake any activity in a way which may cause or contribute to the discharge of an air contaminant."

2. *7 Del.C. §6003(b)(1)* states:

"No person shall, without first having obtained a permit from the Secretary, construct, install, replace, modify or use any equipment or device or other article which may cause or contribute to the discharge of an air contaminant."

3. Section 2.1 of 7 DE Admin. Code 1102 states:

“Except as exempted in 2.2 of this regulation, no person shall initiate construction, install, alter or initiate operation of any equipment or facility or air contaminant control device which will emit or prevent the emission of an air contaminant prior to receiving approval of his application from the Department or, if eligible, prior to submitting to the Department a completed registration form.”

4. Section 11.3 of 7 DE Admin. Code 1102 states:

“In situations in which construction, installation, or alteration is proposed, and operation of the equipment, facility, or air contaminant control device is to follow, such operation shall not commence until written approval is obtained by the applicant from the Department in accordance with 11.4 and 11.5 of this regulation, as applicable. The Department may condition approval to operate on a demonstration by the applicant of satisfactory performance of the equipment, facility, or air contaminant control device. In the event the applicant fails to demonstrate satisfactory performance, the Department may require the applicant to cease emissions from the source.”

5. Condition 3.38 of Permit: **APC-2016/0068-Construction(Amendment 3)** states:

“At all times, including periods of startup, shutdown, and malfunction, the owner or operator shall, to the extent practicable, maintain and operate the facility, including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determinations of whether acceptable operating procedures are being used will be based on information available to the Department, which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.”

CONCLUSIONS – DIVISION OF AIR QUALITY

Based on the foregoing facts, the Department has determined that Respondent has violated 7 *Del.C.* Chapter 60, 7 DE Admin. Code 1102 and Permit **APC-2016/0068-Construction(Amendment 3)** as follows:

1. Respondent violated 7 *Del.C.* §6003(a)(1) through the unpermitted release of ethylene oxide from a failed gasket at the EO Plant on November 25, 2018.
2. Respondent violated 7 *Del.C.* §6003(b)(1) and Section 2.1 of 7 DE Admin. Code 1102 for operating the EO Plant from September 5, 2018 to October 22, 2018, prior to receiving an operating permit.

3. Respondent violated Condition 3.38 of Permit: **APC-2016/0068-Construction(Amendment 3)** by not maintaining and operating its facility in a manner consistent with good air pollution control practice for minimizing emissions, when it used the incorrect gasket that ultimately failed and resulted in the release of ethylene oxide emissions on November 25, 2018.

BACKGROUND – DIVISION OF WATER

Respondent currently has a NPDES Permit, **NPDES DE0000621**, through the Surface Water Discharges Section ("SWDS"). The permit was issued on February 1, 2018 and expires on January 31, 2023. The facility is permitted to discharge through identified outfalls on the site. Outfalls 001A, 001B, and 003 are all permitted for discharge of non-contact cooling water and storm water from specified areas of the facility. There are an additional 23 Storm Water Only outfalls around the perimeter of the facility that are either natural runoff areas or discrete conveyances of paved or gravel areas of the site. These outfalls are not permitted for discharge of any type of process water or wastewater. All process water and stormwater that falls in the designated process area is required to be captured and sent to the New Castle County sewer conveyance system.

During the emergency response to the release, approximately one million gallons of water were used to contain the release using the water deluge system. Approximately 700,000 gallons of deluge water overflowed the spill sump and spilled out onto the ground and wooded area behind the sump. The remaining deluge water was captured by the spill sump or the facility's wastewater treatment plant. Respondent reported that the discharge occurred over a period of approximately 17 hours. Respondent did call and notify the Surface Water Discharges Section within the required 24 hours; however a notification of non-compliance letter was not received within the required five days, which is a violation of the NPDES Permit. This letter was due to the SWDS no later than November 30, 2018, and was not received until December 5, 2018, after multiple requests were made.

STATUTORY AND PERMIT REQUIREMENTS-DIVISION OF WATER

1. *7 Del.C. §6003(a)(2)* states:

“No person shall, without first having obtained a permit from the Secretary, undertake any activity in a way which may cause or contribute to discharge of a pollutant into any surface or ground water.”

2. Section 3.2.1 of 7 DE Admin. Code 7201 states in part:

“No person shall undertake any activity that causes or contributes to the discharge of a pollutant to any surface water or groundwater...”

3. Section 3.2.3 of 7 DE Admin. Code 7201 states:

“No person shall discharge any pollutant from a point source into surface or ground water, directly or indirectly, except as authorized pursuant to a permit granted under these regulations, unless such discharge is specifically exempted from such permit regulations.”

4. Part II.A.2.b.5 of Permit: **NPDES DE0000621** states:

“Notification of Noncompliance: [t]he permittee shall report all instances of noncompliance with this permit to the Department as outlined herein: In the case of any other discharges which could constitute a threat to human health, welfare, or the environment, the information required above in paragraph b.1) shall be provided as quickly as possible upon discovery and after activating the appropriate emergency site plan, unless circumstances exist which make such a notification impossible. A delay in notification shall not be considered a violation of this permit when the act of reporting may delay the mitigation of the discharge and/or the protection of public health and the environment. A written submission covering these points must be provided within five days of the time the permittee becomes aware of the circumstances covered by this paragraph.”

CONCLUSIONS – DIVISION OF WATER

Based on the foregoing facts, the Department has determined that Respondent has violated *7 Del.C. Chapter 60, 7 DE Admin. Code 7201* and permit **NPDES DE0000621** as follows:

1. Respondent violated *7 Del.C. §6003(a)(2)* and Sections 3.2.1 and 3.2.3 of 7 DE Admin. Code 7201, for the unpermitted release of deluge water, used to contain the release of ethylene oxide in the air that occurred from a failed gasket at the EO Plant on November 25, 2018, to the ground.

2. Respondent violated Part II.A.2.b of Permit **NPDES DE0000621** when the notification of non-compliance for the November 25, 2018 ethylene oxide release at the EO Plant that was due November 30, 2018 was not submitted to SWDS until December 5, 2018.

BACKGROUND - DIVISION OF WASTE AND HAZARDOUS SUBSTANCES SITE INVESTIGATION AND RESTORATION SECTION ("SIRS")

Respondent's facility enrolled in the Department's Voluntary Cleanup Program ("VCP") administered pursuant to the Hazardous Substance Cleanup Act ("HSCA"), 7 *Del.C.* Ch. 91. The November 25, 2018 incident resulted in the release of contaminated water that overflowed a catch basin and flowed into a sump that SIRS suspects was unable to handle the rate of water. As a result, SIRS is requiring Respondent to undertake soil and groundwater sampling to determine if there was a release of ethylene oxide and/or 1,4-dioxane (an impurity in the EO manufacturing process) to the soil and groundwater. If the levels exceed the acceptable SIRS screening values set forth below, Respondent will be required to conduct further delineation and risk assessment.

Sampling Plan

The sampling plan includes the installation of 5 soil borings and 1 temporary well. The sampling is focused in the low-lying area which is approximately 100 feet long and 50 feet wide, located outside the super silt fence and extending to the fence line adjacent to the marsh. The soil borings will be installed in the approximated direct pathway of surface water discharge during the EO incident response, as determined based on field observations of the super silt fence, which appears to have been damaged during the event, as well as approximate flow paths estimated from reviewing the surveyed topographic contours. The samples will include:

1. Installation of four (4) shallow soil borings along the fence line for collection of 4 shallow soil (0-2 feet) samples.

2. One deeper soil boring/temporary well for collection of an estimated total of 6 deep soil samples (continuous samples will be collected starting at 0-2 feet below grade and extending to just above the shallow water table, estimated at 12 feet below grade). Soil samples will be collected continuously in 2' intervals, starting from ground surface as follows: 0-2', 2-4', 4-6', 6-8', 8-10', 10-12', until the Geoprobe reaches the capillary fringe zone approximated by Arcadis driller and field personnel. After the soil samples are collected, the tooling will be advanced ten feet below the estimated water table surface and a 10' pre-packed well screen will be set. The temporary well will be purged and allowed to set for a minimum of 24 hours prior to collecting a groundwater sample.
3. Air monitoring of the breathing zone will be conducted using EO sensors provided by Croda Atlas Point, as well as a photoionization detector (PID) rented by Arcadis and calibrated for EO, given its volatility and toxicity. Weather conditions and primary wind direction will be assessed prior to starting work and monitored to establish and maintain a safe working area. Action levels will be established based on field screening levels in excess of 1 ppb EO sustained for 5 minutes. If concentrations measured from field instruments exceed the action level for 5 minutes, work will be stopped to allow fresh air to dissipate potential vapors, and work will be resumed after levels are established below the action level for 5 minutes.
4. Samples will be screened and assessed for visual and olfactory evidence of potential contamination, soil lithologic types will be logged, and samples will be biased to zones of potential impacts for the potential constituents of concern.
5. Quality control samples, including field duplicates, field equipment rinsate blanks, trip blank, and matrix spike/matrix spike duplicate samples will be collected in accordance with the Department's HSCA SOPCAP.

Sample Analysis Plan

Arcadis will submit samples to Eurofins Lancaster Laboratories under chain of custody protocol for EO and 1,4-dioxane analysis pursuant to EPA SW-846 methods, including select ion method (SIM) isotope dilution for 1,4-dioxane. The Department's lab director has approved Eurofins' achievable detection limits to establish data quality objectives above the SIRS screening levels. As such, the screening levels for the soil and groundwater sample results will be Eurofins' Limit of Quantification (LoQ), which for EO in groundwater and soil are 25 ug/L and 0.025 mg/kg, respectfully, and for 1,4-Dioxane in groundwater and soil are 0.3 ug/L and 0.333 mg/kg, respectfully.

Analysis Results and Subsequent Actions

A draft soil and groundwater evaluation report is due to SIRS by March 1, 2019. Though the sampling results will be set forth in this report, SIRS expects to receive those results prior to the report due date of March 1, 2019. Based on the report, interim actions or remedial actions may be needed. If maximum concentrations of EO and 1,4-dioxane are above concentrations which would pose a 1/10th of an unacceptable risk in a commercial setting, further delineation and risk assessment would be required and Respondent would be required to submit a draft supplemental plan to SIRS by May 31, 2019. However, if maximum concentrations are below SIRS screening values, no such plan would be required and SIRS will not request any further information.

BACKGROUND - DIVISION OF WASTE AND HAZARDOUS SUBSTANCES ACCIDENTAL RELEASE PREVENTION PROGRAM ("ARP")

Respondent is subject to the Department's Accidental Release Prevention Program ("ARP") administered pursuant to the Delaware Extremely Hazardous Substances Risk Management Act, 7 *Del.C.* Ch. 77 and the Accidental Release Prevention Regulation, 7 DE Admin. Code 1201, because of the presence of ethylene oxide, a colorless and flammable gas, at its facility in an amount that is above the threshold for regulatory applicability.

Respondent has a general duty under 7 *Del.C.* §7704(a) to operate a safe facility. Based on the requirements in 7 *Del.C.* §7704(a) and Section 3.0 of 7 DE Admin. Code 1201,

Respondent has failed to operate a safe facility, as evidenced by the November 25, 2018 incident that resulted in the release of ethylene oxide into the air, as well as contaminated water to the ground, from the use of a water deluge system to mitigate the air release. Accordingly, the ARP is requiring that all of the following actions be completed by Respondent, and submitted to the ARP, or evidence of completion as applicable, prior to obtaining approval to restart the EO Plant.

1. Completion of the Incident Investigation Report for the November 25, 2018, EO Plant Incident by February 15, 2019.
2. Completion of the focused Process Hazard Analysis of all EO release point.
3. Completion of Pre-Startup Safety Review.
4. Completion of fire water system hazard analysis.
5. Completion of the fire water system procedures.
6. Completion of employee training of the EO Plant Operating and Emergency Procedures.
7. Completion of fire department manifold connection to fire water system supply tank.

ASSESSMENT OF PENALTY AND COSTS

Pursuant to the provisions of 7 *Del.C.* §6005(b)(3), this is written notice to Respondent that on the basis of its findings, the Department is assessing Respondent an administrative penalty of \$230,250 for the violations identified in this Notice and Order.

In addition to the penalty assessment, Respondent is hereby assessed costs in the amount of \$16,489.23¹, pursuant to 7 *Del.C.* §6005(c), which were incurred by the Department in the investigation and abatement of the noted violations. The Department anticipates that additional costs will be incurred in the future in monitoring testing, compliance, and remediation, and the Department reserves the right to recover any such additional costs.

Respondent shall submit one check to the Department in the amount of \$230,250 to pay the penalty, and one check in the amount of \$16,489.23¹ to pay the Department's costs, both checks to be tendered within 30 days from the receipt of this Notice and Order. The check(s) shall be made payable to the "State of Delaware" and shall be directed to Ralph K. Durstein III, Deputy Attorney General, c/o Emily Gabriellini, Department of Justice, Environmental Unit, 102 W. Water Street, Dover, Delaware 19904.

The Department reserves the right to take additional enforcement actions regarding these and other violations by Respondent, including but not limited to one or more of the following: an action under the authority vested in the Secretary by 7 *Del.C.* Chapter 60 and 7 DE Admin. Code 1100 to revoke Respondent's air quality and water permit(s) for the State of Delaware; an action under 7 *Del.C.* §6005(b)(1) seeking penalties for past violations; an action under 7 *Del.C.* §6005(b)(2) seeking penalties for continuing violations; an action in the Court of Chancery pursuant to 7 *Del.C.* §6005(b)(2) seeking a temporary restraining order or an injunction; and, the imposition of civil penalties and recovery of the Department's costs and attorney's fees pursuant to 7 *Del.C.* §§6005(b)(3) & (c)(1).

¹ Cost Recovery amount includes \$9,644.12 for Emergency Response and Prevention Section & Accidental Release Prevention Program costs associated with the November 25, 2018 ethylene oxide release at the Ethylene Oxide Plant; \$1,960.95 for the Division of Water; \$2,738.16 for the Division of Air Quality and \$2,146.00 for the Site Investigation and Restoration Section.

PUBLIC HEARING AND APPEAL RIGHTS

This Assessment and Order is effective and final upon receipt by Respondent. Pursuant to 7 *Del.C.* §6008, any person whose interest is substantially affected by this action of the Secretary may appeal to the Environmental Appeals Board within 20 days of the receipt of the Assessment and Order. In the alternative, Respondent may, pursuant to 7 *Del.C.* §6005(b)(3), request a public hearing on the penalty assessment and Order, within 30 days of receipt of the Assessment and Order. A hearing would be conducted pursuant to 7 *Del.C.* §6006, and the Secretary's Order following the hearing would be subject to appeal, pursuant to 7 *Del.C.* §6008, by any person substantially affected.

To submit an appeal to the Environmental Appeals Board, there is a \$50.00 filing fee, with a check made payable to the: "Environmental Appeals Board" and sent to:

Department of Natural Resources and Environmental Control
Office of the Secretary
Attn: Assistant to the Environmental Appeals Board
89 Kings Highway
Dover, DE 19901
Phone: (302) 739-9000

If you want a hearing and opportunity to contest this Assessment and Order, you must submit your request, in writing, within 30 days of receipt of this Assessment and Order to:

Department of Natural Resources and Environmental Control
Office of the Secretary
89 Kings Highway
Dover, DE 19901
Phone: (302) 739-9000

Respondent may waive its right to request a hearing or to file an appeal by signing the waiver attached herein and prepaying the penalty. If no hearing is requested or appeal filed as described above and the administrative penalty of \$230,250 and costs in the amount of \$16,489.23¹ are not paid within the time frame above, DNREC may immediately take action to collect the above amounts.

Date

3/4/19



Shawn M. Garvin, Secretary
Department of Natural Resources and
Environmental Control

WAIVER OF STATUTORY RIGHT TO A HEARING

Croda, Inc. hereby waives its right to a hearing and its opportunity to appeal or contest this Assessment and Order and agrees to the following:

1. **Croda, Inc.** will pay the administrative penalty in the amount of \$230,250 by sending a check payable to the "State of Delaware" within 30 days of receipt of this Assessment and Order. The check shall be directed to Ralph K. Durstein III, Deputy Attorney General, c/o Emily Gabriellini, Department of Justice, 102 W. Water Street, Dover, DE 19904; and
2. **Croda, Inc.** will reimburse the Department in the amount of \$16,489.23¹ which represents the Department's costs. The reimbursement shall be paid within 30 days of receipt of this Assessment and Order. The check shall be made payable to the "State of Delaware" and be directed to Ralph K. Durstein III, Deputy Attorney General, c/o Emily Gabriellini, Department of Justice, 102 W. Water Street, Dover, DE 19904.
3. **Croda, Inc.** further agrees to abide by all of the terms and conditions set out in this Assessment and Order and that a restart of the EO Plant is contingent upon the completion of some of the action items, as set forth herein, and Department approval.

Croda, Inc.

Date: _____

By: _____

Title: _____