STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL
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OFFICE OF THE SECRETARY

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Secretary's Order No.: 2024-A-0049

RE: Approval of Permit Application of Croda, Inc. ("Croda") for a federally enforceable 7 DE Admin. Code 1102 Construction Permit to install a Flare System at their facility located at 315 Cherry Lane, New Castle, Delaware

Date of Issuance: December 04, 2024

Effective Date: December 04, 2024

Under the authority vested in the Secretary of the Department of Natural Resources and Environmental Control ("Department" or "DNREC"), pursuant to 7 *Del.C.* §§6003, 6004, 6006, and all other relevant statutory authority, the Department issues this Order, approving the permit application of Croda, Inc. ("Croda" or "Applicant"), for a federally enforceable 7 DE Admin. Code 1102 Construction Permit concerning their facility at 315 Cherry Lane, New Castle, Delaware, to wit: (1) Proposed Permit APC-2023/0098-CONSTRUCTION (FE) for the installation of a Flare System consisting of a 20-inch diameter steam assisted natural gas flare with a 3-inch diameter steam assisted piggyback flare ("Application," "proposed project"). The Flare System would be permitted for operation in an idle state at all times, and for no more than 876 hours per year of activated use. Upon completion of construction, the Department's Division of Air Quality ("AQ") will conduct a Construction-to-Operation inspection. Following a successful Construction-to-Operation inspection, the updated terms of the Proposed Permit will be incorporated into the facility's existing Title V Permit (AQM-003/00058-Renewal[03]) via an Administrative Amendment.

The above Application was submitted by Croda in accordance with 7 DE Admin. Code 1102, and as provided for under 7 *Del.C.* Ch. 60.

Background, Procedural History and Findings of Fact

Croda's Atlas Point facility, located at 315 Cherry Lane, New Castle, Delaware, is considered a Major Source, as the facility has the potential to emit greater than the Major Source threshold for Nitrogen Oxides ("NOx"), as set forth by the U.S. Environmental Protection Agency ("EPA"). As such, the Applicant's facility is subject to Delaware's Title V Operating Permit Program. Additionally, the facility is considered a Synthetic Minor Source for both Volatile Organic Compounds ("VOCs") and Hazardous Air Pollutants ("HAPs"), meaning that the facility has the potential to emit greater than the EPA Major Source thresholds for these pollutants, but has federally enforceable operation limitations in their permits to maintain emissions below such thresholds.

The Applicant's proposed project would allow the installation of a Flare System consisting of a 20-inch diameter steam assisted natural gas flare with a 3-inch diameter steam assisted piggyback flare. The Flare System would be permitted for operation in an idle state at all times, and for no more than 876 hours per year of activated use. Pursuant to the Draft Proposed Permit prepared by AQ, emissions from the operation of the Flare System shall not exceed 2.6 TPY NOx, 0.02 TPY Sulfur Oxides ("SOx"), 2.2 TPY Carbon Monoxide ("CO"), 0.1 TPY VOC, and 0.2 TPY Particulate Matter ("PM"). Emissions from the flaring of waste gases sent to the Flare System shall be subject to existing permits and regulations.

The Applicant submitted the permit application regarding the proposed project to the Department on June 16, 2023. The Department requested additional information from the Applicant on November 7, 2023, and that information was received from Croda on November 20, 2023. On March 6, 2024, a Pre-Notification Draft Proposed Permit was provided to Croda for review and comment, and Croda's written response was received on March 15, 2024.

It should be noted that Croda preemptively requested a public hearing to be held by the Department regarding this proposed project. Accordingly, the Department published its public notice for both the proposed project and the Draft Proposed Permit in the *Delaware State News* and the *News Journal* on March 24, 2024. The public notice advised the public of the above-described proposed project, the Draft Proposed Permit prepared by the Department, and that a virtual public hearing would be held to consider comments on the proposed project on April 24, 2024. Notice of the public hearing was also posted on the State of Delaware Public Meeting Calendar at that time as well.

Department staff, representatives of the Applicant, and members of the public attended the public hearing held on April 24, 2024. The public hearing was held virtually on the Zoom platform, as noted above, enabling the virtual attendees at this event to use automated closed captioning in their choice of numerous languages (other than English) to further enhance their understanding of the proposed project. Comments were received from the public concerning this matter, both at the time of the public hearing and subsequent to the hearing, as the hearing record remained open for public comment through May 10, 2024. All comments were posted on the DNREC public hearing web page dedicated to this matter upon receipt. Proper notice of the hearing was provided as required by law.

Following the close of the public comment period as noted above, the Applicant provided the Department with their responses to the public comments and questions received in this matter on May 24, 2024. The Department requested additional information from Croda on June 18, 2024, and the Applicant's response to that request was received by the Department on July 15, 2024. Thereafter, a Technical Response Memorandum ("TRM"), dated August 26, 2024, was provided by AQ to Hearing Officer Lisa A. Vest to (1) specifically address the concerns associated with the Application, as set forth in the public comments received by the Department; and (2) offer conclusions and recommendations regarding this pending permitting matter for the benefit of the Record.

Subsequent to the receipt of the Department's TRM, Hearing Officer Vest prepared her Hearing Officer's Report ("Report"), dated November 1, 2024. Ms. Vest's Report set forth the procedural history, summarized and established the record of information ("Record") relied on in the Report, and provided findings of fact, reasons, and conclusions that recommend approval of the requisite permit for the Applicant's proposed project, subject to the conditions set forth in the Draft Proposed Permit. The Report, including the Department's TRM (with appendices) and the Draft Proposed Permit, attached thereto as Appendices "A" and "B," respectively, is incorporated herein by reference. The Report also addressed the public comments received in this matter and concluded that the same did not warrant the Department's denial of the pending Applications, nor the delay of the decision regarding the same to receive any additional information.

Reasons and Conclusions

Currently pending before the Department is the Application submitted by Croda for the proposed project. I find that the Applicant is required to obtain the requisite permit, for the reasons noted above. I further find that above-described Application is subject to various state and federal regulatory requirements, including, but not limited to, the requirements of 7 DE Admin. Code 1102, and as provided for under 7 *Del.C.* Ch. 60.

The Department's TRM provided a thorough review of the concerns voiced in the public comments received in this matter. The following section of this Order summarizes the main areas of concern raised in the public comments and the Department's responses to the same. It should be noted that, where comments received were similar in nature, the Department combined those comments together and paraphrased for the purposes of brevity and clarity.

1. Air Monitoring

Concerns related to air monitoring, including monitoring currently performed by Croda, fenceline monitoring, and public access to monitoring data, were voiced by the public in this matter. In response, the TRM notes that the air monitoring conducted by Croda at its Atlas Point facility is performed to ensure area safety and worker safety, and AQ provides technical details therein as to how the Applicant currently accomplishes both area monitoring and personnel monitoring. While the Department appreciates the public's concern and desire for fenceline monitoring for Ethylene Oxide ("EtO"), the Department does not possess either the statutory or regulatory authority to impose such monitoring on the Applicant's facility at this time. The Department's AQ continues to engage with EPA regarding fenceline monitoring capabilities. The safety monitoring performed by Croda is not only helpful for worker safety but also in helping to minimize or quickly address releases.

2. Flare System

The Record developed in this matter reflects numerous concerns voiced by the public concerning the Flare System as proposed by Croda, specifically, as follows:

- The location of the Flare System in relation to the EtO plant and the Delaware River and Bay Authority ("DRBA") bridge infrastructure;
- The modeled Maximum Downwind Concentration ("MDC");
- The potential for smoke and steam from the Flare System;
- The visibility of an open flame from the Flare System; and
- The permitting of the Flare System for 876 hours per year.

In response to the above concerns, Croda provided the Department information showing that several factors were considered in the placement of the Flare System. Notable considerations included the design elevation, the proximity to the fenceline, fire code regulations, and space limitations created by existing on-site infrastructure.

The Flare System location is outside of the regulated area of the National Fire Protection Association ("NFPA"), away from the production unit it serves, and is as far from the Delaware Memorial Bridge ("DMB") and the DRBA bridge infrastructure as is practical. As stated in the TRM, the modeling performed (as it relates to the MDC noted above) revealed that normal operation of the Flare System, at the MDC distance of 174 meters, was protective of public health, safety and welfare, based on Department criteria.

The TRM notes that comments concerning the potential for black smoke and steam from the Flare System are addressed by the Draft Proposed Permit with the permit condition limiting visible emissions to no greater than 20% opacity for more than an aggregate of three (3) minutes per hour, or 15 minutes per 24-hour period, in accordance with 7 DE Admin. Code 1114, Section 2.0. Smoke measured at 20% opacity does not block visibility to a degree that would cause a safety hazard. The TRM further notes that uncombined steam emissions are not considered visible emissions, and steam emissions from other emission units are not pertinent to the discussion of the Flare System.

Additional comments regarding aesthetic and driver safety concerns were raised by the public, specifically, with regard to the visibility of an open flame. It should be noted that such aesthetic and driver safety concerns are outside the scope of a DNREC air emissions permit. The TRM does note, however, that during standby or idle conditions, the pilots used by the Flare System are unlikely to be visible at either ground level or on the DMB. Furthermore, when fully activated, the presence of a flame is likely; however, it would be difficult to shroud this flame completely, given the relative differences in elevation of the DMB and the Flare System (the DMB has an approximate clearance of 174 feet and the proposed elevation of the Flare System is 65 feet).

With regard to the concerns raised about the 876 hours per year of allowed activated use of the Flare System, the TRM states that the Applicant may request for an emission source to be used at all times, or alternatively, may ask for operational limitations. In the case of the proposed Flare System, Croda has requested that the system operate in idle state at all times (8760 hours per year) and then at an activated state for no more than 876 hours per year.

The Department's AQ notes the Applicant's request to operate the proposed Flare System at an activated state for no more than 876 hours per year is a highly conservative estimate of the amount of time it will be operated in an activated state. All instances of operation in an activated state will be reviewed by the Department to evaluate the root cause of the activation and develop corrective action. The flare will reduce emissions from unpredicted process upsets that result in excess emissions by at least 98%.

3. Explosion Risk

In response to the public comments related to the explosion risk posed by the Flare System and the pilots used, the TRM notes that Croda provided information showing that the Flare System was designed by a manufacturer with experience with EtO. The proposed Flare System has been designed by and procured from John Zinc Hamworthy Combustion, a manufacturer that has installed twenty-one (21) flares in EtO service worldwide, with most of these flares located in the United States. Furthermore, the Applicant's proposed Flare System has been designed to the latest American Petroleum Institute ("API"), American Society of Mechanical Engineers ("ASME"), and NFPA guidance.

4. Additional Emissions

The Department's TRM notes public concerns associated with additional emissions from the proposed Flare System, to include Greenhouse Gas Emissions such as Carbon Dioxide ("CO_2") and VOCs.

In response, while the Department agrees that prevention should always be the primary focus for reducing emissions from the EtO plant, there are certain unpredictable situations (such as a sudden loss of power or steam) that may create upsets in the process and lead to excess emissions. The TRM further notes that, when such types of unpredictable excess emissions occur, the use of an emergency flare (i.e., the proposed Flare System) can help reduce the excess emissions by at least 98%.

Emissions occurring from the operation of the Flare System can be broken down into two categories: (1) those occurring from the Flare System at an idle state; and (2) those occurring from the Flare System at an activated state. The emissions presented in the public notice for this matter are a combination of the idle state emissions for a full year and the activated state emissions for 876 hours per year. The emissions at the idle state for a full year are approximately one-fifth to one-eighth of those listed in the public notice.

5. <u>Visual Monitoring of Plant Equipment, Open Control Systems, and the Prevention of EtO or VOC releases</u>

Lastly, concerns were raised by the public relating to visual monitoring of plant equipment, the use of open control systems, and the prevention of EtO or VOC releases (as opposed to the installation of the proposed Flare System). With regard to the visual monitoring concerns, the TRM notes that the same is currently performed at Croda's EtO plant and is monitored within the control room. Additionally, a gas cloud imaging system is in use for the EtO plant. Croda has advised the Department that visual monitoring of the Flare System will be performed.

In response to questions concerning the use of open control systems, the TRM notes that multiple options for the control of VOCs were evaluated by Croda, but only combustion-based controls were found to be effective for the destruction of all process VOCs, including, but not limited to, ethanol, ethylene and ethylene oxide.

Furthermore, information provided by Croda demonstrates that the choice of an elevated flare system balances selection factors such as safety risks (lower with elevated flare systems), VOC destruction efficiency (higher with elevated flare systems), and natural gas use/emissions during idle/standby modes (lower with elevated flare systems). While the Department agrees that prevention should always be the primary focus for reducing emissions from the EtO plant, the TRM notes that there are certain unpredictable situations (such as a sudden loss of power or steam) that may create upsets in the process and lead to excess emissions. As noted previously, when such types of unpredictable excess emissions occur, the use of an emergency flare (i.e., the proposed Flare System) can help reduce the excess emissions by at least 98%.

The mission of DNREC is to engage stakeholders to ensure the wise management, conservation, and enhancement of the State's natural resources; protect public health and the environment; provide quality outdoor recreation; improve quality of life; lead energy policy and climate preparedness; and educate the public on historic, cultural, and natural resource use, requirements, and issues. Furthermore, it is the policy of DNREC that no person shall, on the grounds of race, color, national origin, sex, age, or disability, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance, as provided by Title VI of the *Civil Rights Act of 1964*, the *Rehabilitation Act of 1973*, the *Civil Rights Restoration Act of 1987*, and all other related nondiscrimination laws and requirements. In the present matter, the Department has determined that the Draft Proposed Permit is consistent with the Department's Environmental Justice policy.

In reviewing the applicable statutes and regulations, as well as weighing public benefits of this project against potential detriments, the Department's experts in AQ have concluded that the pending Application complies with all applicable federal and state laws and regulations. Further, AQ has concluded that the finalized Proposed Permit to be sent to the EPA by the Department is reflective of the Application submitted in this matter and is appropriately conditioned to ensure continued protection of public health and the environment. I find and conclude that the Record supports the submission of the final Proposed Permit to the EPA, pursuant to the Application submitted by Croda to the Department in this matter.

Pending EPA approval, the final Permit to be issued to Croda by the Department will be consistent with the Draft Proposed Permit authorization prepared by the Department's experts in AQ, with appropriate conditions, to ensure continued protection of public health and the environment, and reflective of the Record developed in this matter.

Accordingly, this Order authorizes the submission of the final Proposed Permit to the EPA for the Applicant's proposed project, as set forth above, consistent with the Record developed in this matter.

Further, the Department concludes and specifically directs the following:

1. The Department has jurisdiction, as provided for under 7 DE Admin. Code 1102 and 7 *Del.C.* Ch. 60, and all other relevant statutory authority, to make a final determination on the aforementioned pending Application after holding a public hearing, considering the public comments, and all information contained in the Record generated in this matter;

2. The Department provided proper public notice of the Application submitted by Croda, and of the public hearing held on April 24, 2024, and held the hearing to consider any public comments that may be offered on the Application, in a manner required by the law and regulations;

3. The Department considered all timely and relevant public comments in the Record, and all of the associated relevant documents included therein;

4. The Department has carefully considered the factors required to be weighed in issuing the permit necessitated by the Application, and finds that the Record supports approval of the same;

5. Upon EPA approval of the Proposed Permit, the Department shall issue the following authorization to the Applicant in this matter: (1) Permit APC-2023/0098-CONSTRUCTION (FE), for the installation of the above-described Flare System, as set forth above, thereby authorizing Croda's proposed project, with the appropriate conditions as set forth herein, consistent with the Draft Proposed Permit prepared by the Department's AQ, and consistent with the Record developed in this matter, to ensure that Delaware's environment and public health will be protected from harm;

6. The Department adopts the Report and all Appendices as further support for this decision;

7. The Department has an adequate Record for its decision, and no further public hearing is appropriate or necessary; and

8. The Department shall serve and publish its Order on its internet site.

Shawn M. Garvin
Secretary