



June 2, 2020

Ms. Heather Brown  
Chemical Unit Manager  
Air Protection Branch  
4244 International Parkway  
Suite 120  
Atlanta, GA 30354

**Re: Air Permit Application for Ethylene Oxide Emissions – Response to Information Request  
Stepan Company (Winder Facility, GA)  
Permit Nos. 2843-013-0001-S-02-0, S-02-1, and S-02-2**

Dear Ms. Brown:

Please find attached the June 2020 synthetic minor air permit application update for the Winder facility. The application was originally submitted in April 2020 with the preliminary stack test numbers as the final stack test report was not available at that time. The application has now been updated with the final stack test report numbers in this June 2020 Update. The response to the information requested has been included below.<sup>1</sup>

**EPD Comment #1:** *Please email the excel files for the tables included in the application.*

**Stepan Response:** Please find excel files attached.

**EPD Comment #2:** *I've attached a copy of the test report summary prepared by our source monitoring unit. The data appears to match the final test report that was provided to us via google drive link on April 15, 2020. However, the ppm data and DRE values in Table C-2 of the application do not match the final test report. Is there a reason for the difference? If the data needs to be updated to match the final report, please provide us with updated tables for the emission calculations and the model. This would also include updates to flow rates that may have been recorded during the performance testing.*

**Stepan Response:** The stack test was conducted on March 23, 2020. The data used in the application was data obtained on the day of the stack test as the final stack test report was not yet available. FTIR concentrations and calibrations were correct on site. Although the concentration that the FTIR reported remained unchanged on site and in the final report, the dilution system's dilution factors changed. On site dilution values were obtained using the dilution orifice values given in the manual but were changed due to the post test dilution system validation using calibration gas. The dilution factor is simply a multiplier, hence the change in total concentration value. The flowrate did not change. The air dispersion model was updated to reflect the updated emission rates from the final stack test report. The entire application was also updated, and has been included as part of this response.

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<sup>1</sup> Brown, Heather "Re: Stepan EO Application - Information Request." Message to Laurence Coyle. 12 May 2020. E-mail.

**Table 1. Preliminary FTIR Data vs. Final Data**

Emission Unit	Run No.	Preliminary Data			Final Data		
		Outlet Concentration (ppm)	Inlet Concentration (ppm)	Stack Test DRE	Outlet Concentration (ppm)	Inlet Concentration (ppm)	Stack Test DRE
T-3400/ Unload	1	15.72	32,121.30	99.95%	15.74	23,495.00	99.93%
	2	22.46	54,613.00	99.96%	22.47	39,937.00	99.94%
	3	16.78	50,081.70	99.97%	16.79	36,623.00	99.95%
R-01	1	0.51	3,331.30	99.98%	0.54	2,672.00	99.98%

**EPD Comment #3:** The DMU found that the following stack velocities are used in the model. The DMU would like to confirm the highlighted values are truly in "m/s", because the values in Table 4 of Appendix D indicate that these are actually the "ft/s" values.

ID	(m/s)
2SCR_EO	0.33
ALK_F51	9.71
ALK_F50	10.09
ALK_F49	20.8
ALK_F48	20.11
ALK_FX	9.71

**Stepan Response:** The model has the correct velocities for these emission units which are those velocities shown in m/s in the table above. The values in Table 4 of Appendix D have been updated to provide the correct velocities.

**EPD Comment #4:** Footnote 7 of Table 4 in Appendix D states "lowest flowrate (reactor) used for conservative estimates". Did Stepan mean to use 0.32517 (or 0.33) m/s for all stacks (including fans) listed in Table 4? Is this level of conservatism necessary? I believe the DMU would like to use the data that is most representative of actual conditions.

**Stepan Response:** Stepan intentionally used the lowest flowrate from the scrubber stack test for the scrubber to provide the most conservative representation of operations. For fans ALKOXY\_F51, ALKOXY\_F50, ALKOXY\_F49, ALKOXY\_F48, and ALKOXY\_FX, Stepan used the actual fan flowrates (those indicated in the table above). During the stack test, the reactor had an average flowrate of 22.3 ACFM; the storage tank had average flowrates of 49.6, 34.3, and 32.5 ACFM. For Calendar Year 2019, the reactor had 387 events per year. Tank degassing had 54 events per year. However, Stepan also executed the air dispersion model using the largest flowrate of 49.6 ACFM for reference and the model results only

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changed slightly for the 15-min and 24-hour averages (less than 0.02  $\mu\text{g}/\text{m}^3$ ). The annual results did not change for the maximum ground level concentration or the maximum ground level concentration on nearby residential areas.

***EPD Comment #5:** For modeled facility-wide emissions, the DMU found that Stepan used 17.27 lbs/year for annual, 28.94 lbs/year for 24-hour, 69.74 lbs/year for 1-hour modeling cases. In Table 1 of Appendix D, the DMU found that projected actual emission is 21.13 lbs/year. Please confirm the modeled emission rates are correct. The response to this comment may be impacted by the updates discussed in comment 2 of this email. Please provide us with the necessary updates.*

**Stepan Response:** Projected Actual emissions were updated to include the final stack test results, where the March 2020 Projected Actual Emissions Post-Control from Table 1 of Appendix D were modeled. Emissions were estimated based on 2019 data and projected reductions from the emissions reduction plan. A detailed description of how these emissions were estimated is included in Appendix D of the attached application.

If you have any questions, please feel free to contact me at (847) 501-2339 or via email at [chardaway@stepan.com](mailto:chardaway@stepan.com). The contact persons for additional information about this permit application submittal are Ms. Tracey Crawford of Stepan Company (770-867-8669, [tcrawford@stepan.com](mailto:tcrawford@stepan.com)), Mr. Marc Taylor of Stepan Company (224-330-4214, [mtaylor@stepan.com](mailto:mtaylor@stepan.com)), and Ms. Pilar Johansson of EPS (678-336-8562, [pjohansson@montrose-env.com](mailto:pjohansson@montrose-env.com)).

Sincerely,



Cliff Hardaway  
Director, NA Plant Operations  
Stepan Company

Attachment – Synthetic Minor Air Permit Application Updated June 2020