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Nov 14, 2022

Dear Dr. Nance and EPA Region 6 Staff,

As scientists, we are deeply concerned about the growing evidence of violations of National Ambient Air Standards (NAAQS) in St. James Parish. This evidence includes PM₁₀ exceedances documented by Dr. DeCarlo's independent air *monitoring*, as well as exceedances of PM_{2.5} and NO_x predicted by Nucor Steel's and Formosa Plastics' air *modeling*. We appreciate Dr. Nance recognizing the importance of this information in the August 30, 2022 meeting with Inclusive Louisiana, which Dr. Terrell attended at the community's request.¹ In preparing this letter, we were alarmed to discover that many major source facilities in St. James Parish have **never** been required by LDEQ to demonstrate NAAQS compliance through air dispersion modeling. Of the facilities that have submitted dispersion modeling reports to LDEQ, nearly all have failed to demonstrate compliance with at all of the relevant NAAQS (i.e. for a pollutant the facility emits above the major source threshold). Only one St. James Parish facility has conducted modeling for all relevant NAAQS (the proposed Formosa Plastics complex), and the model *predicted exceedances* of PM_{2.5} and NO_x standards. As we describe in more detail below, the weight of evidence indicates that air quality in St. James Parish does not meet NAAQS for PM₁₀, PM_{2.5} or NO_x.

PM₁₀ Monitoring

We monitored ambient PM₁₀ concentrations in Romeville utilizing medium-cost PM sensors from Quant-AQ (<https://www.quant-aq.com>) that quantify PM₁, PM_{2.5}, and PM₁₀ using optical methods. These sensors are not FEM or FRM methods but include both nephelometry and optical particle counters (OPC) to span size distributions up to 10 microns. Additionally, these sensors employ a science-based humidity correction in the data processing algorithm. In a separate measurement project by the DeCarlo laboratory at Johns Hopkins, the coarse fraction of PM (PM₁₀-PM_{2.5}) was compared to 24-hour gravimetric PM over a similar size range collected by micro-orifice uniform deposit impactor. This direct comparison to gravimetric mass showed excellent agreement and the utility of including an OPC in addition to nephelometry to measure PM mass across a broader size range (manuscript in preparation). This comparison suggests that the values observed in our Louisiana measurements are a reasonable approximation of what an FEM or FRM measure of PM₁₀ concentration would be.

Our monitoring detected levels of PM₁₀ in Romeville, St. James Parish that exceeded a 24-hour concentration of 150 µg m⁻³ on 4 days in the first 6 months of 2022. Specifically, on March, 17, March

¹ The Tulane Environmental Law Clinic, where Dr. Terrell is employed, currently represents Inclusive Louisiana on several issues related to air quality concerns in St. James Parish, Louisiana.

27, May 4, and May 11, 2022 the 24-hour averaged Quant-AQ measured PM₁₀ concentrations were 164 µg m⁻³, 213 µg m⁻³, 167 µg m⁻³, and 325 µg m⁻³ respectively. Under the NAAQS, PM₁₀ concentrations of 150 µg m⁻³ are “not to be exceeded more than once per year on average over 3 years.” With 4 likely exceedances of 150 µg m⁻³ in the first 6 months of 2022, the data already suggest a violation of the PM₁₀ NAAQS. Clearly, PM₁₀ concentrations are a significant potential health issue for residents of St. James Parish and should be examined by regulatory agencies in more detail with daily, continuous FEM or FRM monitoring for the minimum duration necessary to reliably determine NAAQS compliance, given the frequency of exceedances observed with Quant-AQ sensors.

NAAQS Modeling

Relevance to Environmental Justice

Despite longstanding environmental justice concerns in this region, LDEQ has permitted over a dozen industrial facilities in and around St. James Parish in a discriminatory spatial pattern that protects majority-White neighborhoods at the expense of majority-Black neighborhoods (Fig. 1; Table 1). By all metrics, residents of these industrialized neighborhoods face exceptionally high risk of cancer and respiratory disease from air pollution.² Yet, there is no state or federal air monitoring station for any pollutant except ozone in St. James Parish, or within 10 miles of the parish boundary.³

In the absence of air monitoring, regulators must necessarily rely on air dispersion *modeling* to ensure NAAQS compliance. This modeling is particularly relevant to environmental justice because LDEQ equates NAAQS compliance with environmental justice.⁴ (Notably, EPA’s Office of Environmental Justice and External Civil Rights disagrees with this interpretation of environmental justice because it does not address disparate impacts.⁵)

² EPA Risk-Screening Environmental Indicators (RSEI) 2020 data. Available at <https://edap.epa.gov/public/extensions/EasyRSEI/EasyRSEI.html>; See also EPA 2017 Air Tox Screen. Available at <https://www.epa.gov/AirToxScreen/2017-airtoxscreen-assessment-results#nationwide>

³ LDEQ Air Monitoring Sites. Accessed Sep 16, 2022. <https://experience.arcgis.com/experience/1bc3c0ad43be455ab7224f0324aabaf2/>

⁴ LDEQ Response to Title VI Complaint (#04R-22-R6) regarding discriminatory air permitting. June 20, 2022. Pages 8-10.

⁵ EPA Office of Environmental Justice and External Civil Rights. Letter of Concern RE: EPA Complaint Nos. 01R-22-R6, 02R-22-R6, and 04R-22-R6. Oct 12, 2022.

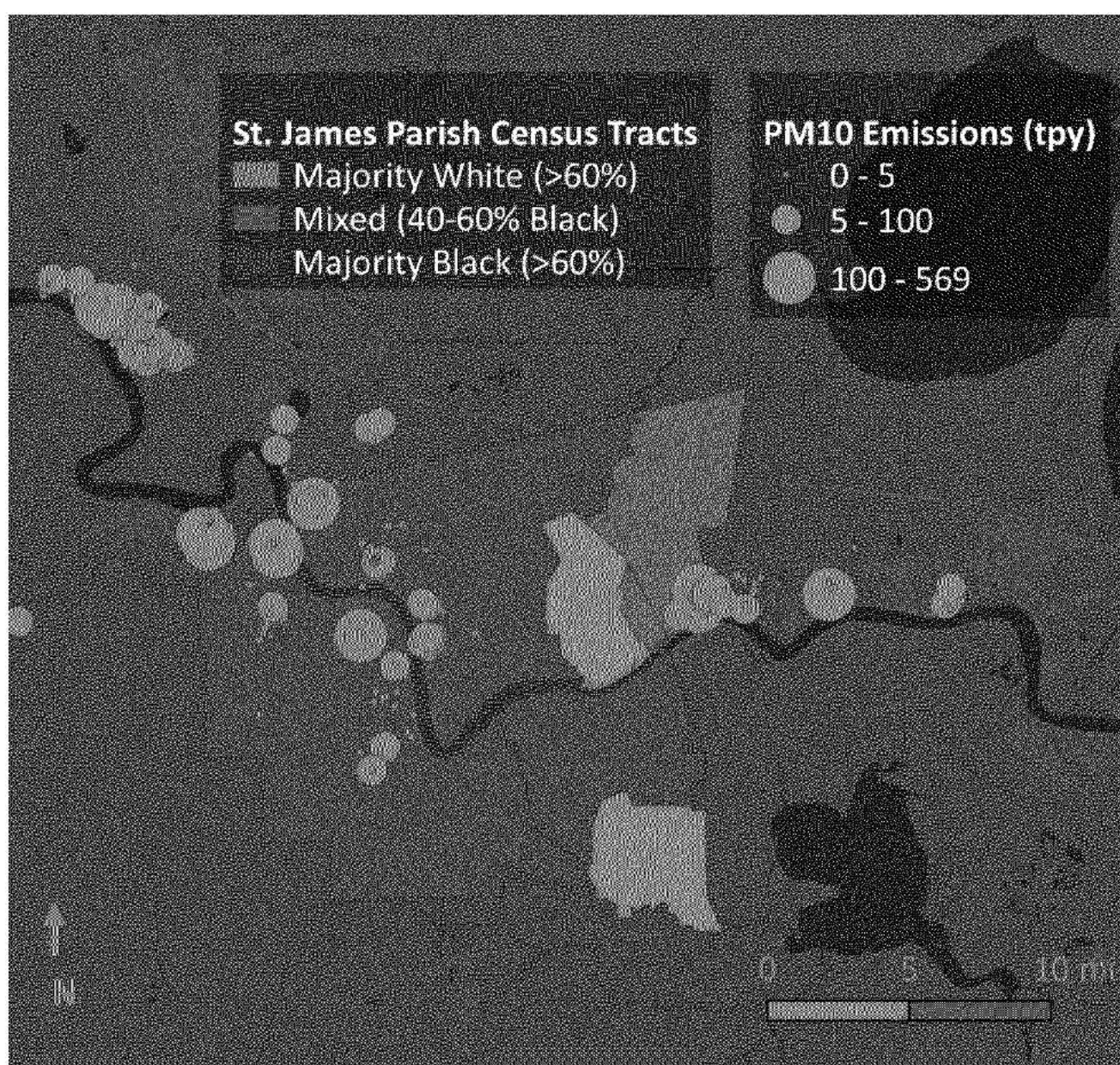


Figure 1. Permitted industrial PM₁₀ emissions (tons per year) within 10 miles of St. James Parish, relative to the racial composition of census tracts. Emissions are plotted as individual point sources, as represented in current Major Source air permits.

Major Gaps in NAAQS Modeling

Because LDEQ relies on NAAQS modeling to ensure environmental equity, one would expect LDEQ to require NAAQS modeling for all major sources of criteria pollutants. However, that is not the case. One would also expect that LDEQ would require facilities to submit updated NAAQS modeling when new, more protective NAAQS are enacted. This too is not the case.

In St. James Parish, half of the major source facilities (8/15) have **never** submitted NAAQS modeling to LDEQ (Table 2). Nearly all of the remaining facilities (6/7) have **never** evaluated compliance with at least one of the current NAAQS (Table 3). For example, the Mosaic Faustina plant in St. James Parish is currently permitted to emit over 400 tpy of PM_{2.5}, but, according to its pending application for Title V permit renewal, Mosaic Faustina has **never** submitted air dispersion modeling for PM_{2.5}.⁶ The result of LDEQ's approach is that communities do not have reliable and up-to-date information about ambient air quality across their region. In St. James Parish, 30%-100% of permitted emissions (depending on the

⁶ Mosaic Faustina Title V Air Permit Application. Jan 31, 2022. Page 21 of 303
<https://edms.deq.louisiana.gov/app/doc/view?doc=13116024>

pollutant) from major source facilities have **never** been modeled for their potential to cause or contribute to an exceedance of the current NAAQS (Tables 4 & 5).

LDEQ's Narrow Focus on "Projects"

Many of the gaps in NAAQS modeling appear to be the result of LDEQ's narrow focus on project-related emissions. From a review of current air permits for major sources in St. James Parish, it appears that LDEQ only requires NAAQS modeling when a facility is proposing to significantly increase its emissions. And even then, LDEQ seems to focus on whether the *project* would cause a NAAQS exceedance, as opposed to the overall facility operations.

As a result of this narrow focus, LDEQ has allowed major source facilities to rely on extremely outdated air dispersion modeling (Table 4). Reliance on outdated modeling is problematic for multiple reasons, including that it fails to account for revisions to the NAAQS. These revisions have created new or more protective standards for NO₂ (enacted in 2010), SO₂ (2010), and PM_{2.5} (2012).

In 2005, LDEQ granted a Title V permit renewal for Compressor Station 63 in Convent (St. James Parish) to the Transcontinental Gas Pipe Line Corp that included a massive 3,028 tpy of NO_x emissions.⁷ At that time, an hourly NO₂ standard did not exist.⁸ The facility has modified its air permit twice since the hourly NO₂ standard was implemented in 2010, but in both cases, LDEQ did not require the applicant to conduct air dispersion modeling "based on the magnitude of emissions changes."⁹ Thus, the largest source of NO_x emissions in St. James Parish has **never** modeled hourly NO₂ concentrations around its facility, despite evidence of hourly NO₂ exceedances in the area revealed by Nucor and Formosa Plastics' modeling (described below). Similarly, earlier this year, LDEQ approved a modification of Americas Styrenics PSD permit that relied on air dispersion modeling conducted 25 years ago.¹⁰ As a result, the facility has **never** been required to evaluate NAAQS compliance for current PM_{2.5} and NO₂ standards, despite being permitted to emit 112 tpy and 938 tpy of these pollutants, respectively.¹¹

Predicted PM_{2.5} and NO₂ Exceedances

The only two facilities in St. James Parish to conduct NAAQS modeling in the last decade have predicted NAAQS violations (Table 4).¹² Formosa Plastics submitted modeling to LDEQ in July 2018 that predicted 24-hr average PM_{2.5} concentrations up to 37 µg/m³ (versus the limit of 35 µg/m³) and 1-hr average NO₂

⁷ See Compressor Station 63 air permit (2560-00037-V2) page 2. Oct 3, 2005.

<https://edms.deq.louisiana.gov/app/doc/view?doc=5095822>

⁸ <https://www.epa.gov/no2-pollution/timeline-nitrogen-dioxide-no2-national-ambient-air-quality-standards-naaqs#footnote%203>

⁹ Compressor Station 63 air permit (2560-00037-V5) page 4. Mar 24, 2020.

<https://edms.deq.louisiana.gov/app/doc/view?doc=12115801> See also Compressor Station 63 air permit (2560-00037-V4) page 4. June 2, 2014. <https://edms.deq.louisiana.gov/app/doc/view?doc=9347523>

¹⁰ Americas Styrenics PSD Air Permit (PSD-LA-551 M-14). Feb 2022. Doc # 13154407. Page 17.

<https://edms.deq.louisiana.gov/app/doc/view?doc=13154407>

¹¹ America's Styrenics Title V Permit #2560-00007-V17. Oct 2021. Page 2. Doc # 12943769.

<https://edms.deq.louisiana.gov/app/doc/view?doc=12943769>

¹² Based on a Sep 14, 2022 review of current permits and corresponding applications.

concentrations up to 422 $\mu\text{g}/\text{m}^3$ (versus the limit of 188 $\mu\text{g}/\text{m}^3$).¹³ Although LDEQ granted the permit, a Louisiana District Court judge vacated the permit in Sep 2022, concluding:

*“Simply put, LDEQ failed to address the core problem posed by FG LA’s model, the only record evidence on point: people working, living, traveling, or recreating in St. James Parish could suffer serious health consequences from breathing this air, even from short-run exposure.”*¹⁴

Analogous NAAQS violations were predicted by Nucor Steel’s air modeling in April 2019. Specifically, Nucor predicted 24-hr average $\text{PM}_{2.5}$ concentrations up to 59 $\mu\text{g}/\text{m}^3$ and 1-hr average NO_2 concentrations up to 1,263 $\mu\text{g}/\text{m}^3$ (Fig. 2).¹⁵ Yet LDEQ granted Nucor its current permit despite these predicted exceedances.¹⁶ While LDEQ’s justification was that Nucor did not cause or contribute to the exceedance, this same justification was found to be “arbitrary and capricious” by the September 2022 District Court ruling in the context of the Formosa air permitting.¹⁷

Importantly, LDEQ has made no apparent attempt to identify the cause of the modeled exceedances and has not established any monitoring sites for permitted pollutants in St. James Parish. Because LDEQ relies on NAAQS compliance to ensure environmental equity, one would expect LDEQ to diligently investigate predicted exceedances. A diligent investigation would require at least three years of air *monitoring* (based on the form of the NAAQS) at the sites of the highest predicted $\text{PM}_{2.5}$ and NO_2 concentrations.

¹³ FGLA Air Dispersion Modeling Report. July 2018. Doc # 11246153.

¹⁴ 19th Judicial District Court of LA. Judge Trudy White. Written Reasons for Judgement. Sep 14, 2022. Pages 15-16. Docket 694,029.

¹⁵ Nucor Steel Title V Air Permit 3086-V9. June 2020. Doc # 12252342. See also corresponding May 2020 permit application Doc # 12175457. Page 36 of 107.

¹⁶ Nucor Steel Title V Air Permit 3086-V9. June 2020. Doc # 12252342.

¹⁷ 19th Judicial District Court of LA. Judge Trudy White. Written Reasons for Judgement. Sep 14, 2022. Page 14. Docket 694,029.

VII. Effects on Ambient Air

Emissions were reviewed by the LDEQ to ensure compliance with the National Ambient Air Quality Standards (NAAQS) and Louisiana Ambient Air Standards (AAS). Emissions from the facility do not cause or contribute to any NAAQS or AAS exceedances.

Model used: AERMOD (2018)

Pollutant	Averaging Period	Calculated Maximum Ground Level Concentration ($\mu\text{g}/\text{m}^3$)	NAAQS or AAS ($\mu\text{g}/\text{m}^3$)
PM ₁₀	24-hour	125.76	150
PM _{2.5}	24-hour	59.13 (a)	35
	Annual	11.87	12
NO ₂	1-hour	1,263.7 (b)	188.6
CO	1-hour	31,019.02	40,000
	8-hour	3,384.96	10,000

(a) The project's contribution at the maximum modeled concentration is 0.045 or 0.145 with secondary concentrations. The greatest contribution of this project at any modeled exceedance is 0.4822 or 0.5822 with secondary concentrations.

(b) The project's contribution at this maximum modeled concentration is 0.012. The greatest contribution of this project at any modeled exceedance is 2.33.

Figure 2. Nucor Steel's current air permit (3086-V9). June 2020. Page 7 of 59. Doc # 12252342.

Lack of Transparency

A review of major source permits in St. James Parish revealed that many permits contain the statement, "Emissions associated with the proposed renewal/modification were reviewed by LDEQ to ensure compliance with the NAAQS and AAS. LDEQ did not require the applicant to model emissions."¹⁸ From these documents, it is not clear what method LDEQ used to make this determination, and whether the method has been approved by EPA. Regardless, LDEQ's failure to provide any supporting detail or methodology for these assessments prevents public oversight and independent expert review.

Importantly, LDEQ does not provide maps of predicted ambient air concentrations in the material sent out for public comment of draft air permits. Without this fundamental information, residents cannot evaluate the extent to which they are impacted by the proposed project or by cumulative emissions. This lack of knowledge prevents effective public participation in the decision-making process.

¹⁸ For example, see page 16 of Mosaic Faustina's 2016 air permit (#2560-00021-V6), which included a 451 tpy increase in PM_{2.5} emissions.

Call to Action

Collectively, the evidence presented here strongly indicates that St. James Parish residents are exposed to unsafe levels of air pollution, potentially in violation of the NAAQS. This evidence includes frequent PM₁₀ spikes above 150 µg/m³, and modeled PM_{2.5} and NO₂ concentrations that are 2 to 6-fold higher than the corresponding NAAQS. It is imperative that EPA intervene in this situation, because LDEQ has demonstrated strong scientific bias in its approaches to air modeling and air monitoring. This bias is evident from 1) the major gaps in NAAQS modeling for major source facilities in St. James Parish, 2) LDEQ's inadequate July 2022 air sampling effort in Romeville (St. James Parish), and 3) a recent letter detailing concerns with LDEQ's "flawed" approach to environmental justice analysis from EPA's Office of Environmental Justice and External Civil Rights Compliance.¹⁹ With respect to LDEQ's Romeville monitoring, after this extremely limited, 5-day sampling effort, LDEQ informed residents that there was no evidence of a NAAQS violation in Romeville. Yet, as LDEQ is aware, it is virtually impossible to generate evidence of a NAAQS violation from 5 days' of air monitoring. Further, several pollutants of concern were conspicuously omitted from the Romeville sampling, including PM₁₀, NO₂, and ammonia. Not only is LDEQ's mobile laboratory equipped to measure these pollutants, LDEQ told the community (in writing) that these pollutants would be included in the sampling.²⁰ As scientists, we call on EPA to educate St. James Parish residents about the evidence for existing NAAQS violations and take immediate action to install NAAQS-comparable monitors in all areas of St. James Parish where NAAQS exceedances are predicted.



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¹⁹EPA Office of Environmental Justice and External Civil Rights. Letter of Concern RE: EPA Complaint Nos. 01R-22-R6, 02R-22-R6, and 04R-22-R6. Oct 12, 2022.

²⁰ July 13, 2022 email from Denise Bennett, LDEQ Deputy Secretary, to St. James Parish residents Myrtle Felton and Gail LeBeouf.