SOUTHERN ENVIRONMENTAL LAW CENTER

Telephone 919-967-1450 | 601 WEST ROSEMARY STREET, SUITE 220 CHAPEL HILL, NC 27516-2356 | Facsimile 919-929-9421

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Via Electronic Mail (daq.publiccomments@ncdenr.gov); (patrick.knowlson@ncdenr.gov)

Patrick Knowlson
N.C. Division of Air Quality
1641 Mail Service Center
Raleigh, N.C. 27699-1641

Re: Comments on Proposed Rule for Control of Emissions from Log Fumigation Operations & Amendment to the Toxic Air Pollutant Guidelines

Dear Mr. Knowlson,

The Southern Environmental Law Center, on behalf of itself, Clean Air Carolina, the N.C. Conservation Network, N.C. Environmental Justice Network, and N.C. Sierra Club, respectfully submit the following comments on the proposed rule for the control of emissions from log fumigation operations. The undersigned groups support the Division of Air Quality's ("the Division") recent efforts to regulate the use of methyl bromide, a highly toxic chemical, and support the proposed rule to regulate methyl bromide as a state toxic air pollutant (15A N.C. Admin. Code 02D .0546) and to set an accompanying Acceptable Ambient Level ("AAL") within the state's Toxic Air Pollutant Guidelines (15A N.C. Admin. Code 02D .1104), but are concerned with recent efforts by some members of the Environmental Management Commission ("EMC") to significantly increase the proposed AAL.

The undersigned urge the EMC to set the AAL at .005 mg/m^3 at a 24-hour averaging time,[1] which is the level recommended by the Secretaries' Science Advisory Board and the state's expert toxicologist to protect the general public. An AAL of any higher than .005 mg/m^3 is inconsistent with the professional judgment of the state's experts, the most recent and scientifically valid research on the health impacts of methyl bromide exposure, and the purpose and goal of the state's toxic air pollutant regulations and accompanying AALs.

[1] EMC's public notice includes the addition of 15A N.C. Admin. Code 02D .0546 and the amendment of 15A N.C. Admin. Code 02D .1104 to include methyl bromide as a state toxic air pollutant and set the acceptable ambient level. The EMC has requested comments on what level the AAL should be set at—between the proposed level of .005 mg/m^3 and a higher level of .078 mg/m^3. The EMC is not, however, taking comment on any changes to the proposed 24-hour averaging time, and in fact, the EMC explicitly rejected a motion at its May 2019 meeting to amend the 24-hour averaging time to an annual averaging. Furthermore, the proposed 24-hour averaging time is consistent with the state's Toxic Air Pollutant Guidelines, which apply a 24-hour averaging time for all non-carcinogen chronic toxicants. DAQ, *Risk Analysis & Acceptable Ambient Level (AAL) Recommendation for Methyl Bromide* at DAQ's Charge (Apr. 12, 2019) [hereinafter, "*AAL Report*"]; *see* 15A N.C. Admin. Code 02D .1104. A change in the averaging time will drastically affect the effect of the proposed regulation and would therefore require additional public comments before such a rule could be finalized. *See* N.C. Gen. Stat. § 150B-21.2(g) ("An agency shall not adopt a rule that differs substantially from the text of a proposed rule in the North Carolina Register unless the agency publishes the text of the proposed different rule in the North Carolina Register and accepts comments on the proposed different rule[.]").

FACTUAL BACKGROUND

"No job is worth this," said a citizen of Delco, North Carolina,[2] referencing the serious and "well documented" health impacts from methyl bromide exposure.[3] Over the past six years, the people of North Carolina have made their opinion clear—the health risks associated with methyl bromide exposure outweigh* any potential economic benefit to the community from the log fumigation industry. When given advance notice and the opportunity to weigh in,[4] the public has repeatedly come out in force against proposed methyl bromide log fumigation operations in their community.

I. Health Effects of Methyl Bromide Exposure

Methyl bromide, also called Bromomethane, is a known "development, neurological, and respiratory toxin," with both "acute and chronic toxicity."[5] Exposure to methyl bromide occurs primarily through inhalation and dermal absorption (i.e., contact with skin).[6] Acute inhalation of methyl bromide can cause severe injury to the lungs, impairment of respiratory functions, and neurological symptoms, including headaches, dizziness, fainting, weakness, confusion, speech impairment, visual effects, numbness, twitching, seizures, and tremors.[7] Methyl bromide exposure can also irritate the eyes and skin, causing itching, redness, and blisters.[8] In cases of severe exposure, methyl bromide can cause paralysis, convulsions, kidney damage, and death from respiratory or cardiovascular failure.[9] More recent data has also demonstrated a link

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[2] Ben Smart, *Public Outcry at Methyl Bromide Hearing, Company Insists it Would be Safe*, WECT News (May 4, 2018), https://www.wect.com/story/38110788/public-outcry-at-methyl-bromide-hearing-company-insists-it-would-be-safe/.

[3] *AAL Report*, *supra* note 1, at 1 ("The acute and chronic health effects associated with methyl bromide inhalation exposure have been well documented.") (citing six studies from 1992 through 2018).

[4] Under North Carolina regulations, public participation—including notice and an opportunity for public comment—are generally not required for synthetic minor facilities. *See* 15A N.C. Admin. Code 02Q .0306 (permits requiring public comment).

[5] Lygia T. Budnik, et al., *Prostate Cancer and Toxicity from Critical Use Exemptions for Methyl Bromide: Environmental Protection Helps Protect Against Human Health Risks*, 11 Envtl. Health 5, at 3 (2012), https://ehjournal.biomedcentral.com/track/pdf/10.1186/1476-069X-11-5.

[6] *Id.* at 2.

[7] *See* EPA, *Methyl Bromide (Bromomethane)* 1-2 (Apr. 1992, updated Jan. 2000), https://www.epa.gov/sites/production/files/2016-09/documents/methyl-bromide.pdf; Robert B. Gunier, et al. *Residential Proximity to Agricultural Fumigant Use and IQ, Attention and Hyperactivity in 7-Year Old Children*, 158 Envtl. Res. 358, 358 (2017), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5557382/pdf/nihms890764.pdf; Nat'l Res. Council, *Methyl Bromide Risk Characterization in California* 2, 8, 12-32 (2000) ("Methyl bromide also appears to be a developmental and possibly a reproductive toxicant."), https://www.ncbi.nlm.nih.gov/books/NBK225624/; Budnik, *supra* note 5, at 4 (Table 1: Toxic effects of methyl bromide (data 1990-2011)).

[8] EPA, *Methyl Bromide (Bromomethane)*, *supra* note 7, at 2; Budnik, *supra* note 5, at 3.

[9] EPA, *Methyl Bromide (Bromomethane)*, *supra* note 7, at 2; Budnik, *supra* note 5, at 3 ("Throat irritation, chest pain and shortness of breath are the most likely first respiratory symptoms with inflammation of the bronchi or lung edema after severe acute exposure. Death may result from respiratory or cardiovascular failure."); U.S. GAO, *Pesticides: The Phaseout of Methyl Bromide in the United States* 5 (Dec. 1995) ("In severe cases [exposure to methyl bromide] can cause central nervous system and respiratory systems to fail. Gross permanent disabilities or death may result."), https://www.gao.gov/assets/230/222046.pdf.

between methyl bromide exposure, both on- and off-site of the fumigation activity, and developmental and reproductive issues and risk of prostate cancer.[10]

Numerous studies also demonstrate public health concerns from chronic, low-level exposure to methyl bromide that has drifted from the fumigation site.[11] "Since [methyl bromide] is three times heavier than air, it diffuses outward and downward readily,"[12] causing potential exposure problems for the surrounding community. Specifically, Gunier (2017) found a "direct relationship between nearby agricultural use [of methyl bromide] and potential community exposure" within a five-mile radius of the fumigation site.[13]

The health impacts of methyl bromide exposure are particularly problematic for sensitive subpopulations, including infants, children, the elderly, those with pre-existing health issues, and people with a genetic predisposition. In particular, methyl bromide use has been known to impact prenatal, postnatal, and childhood development for pregnant women and children living within five miles of fumigation sites.[14] Additionally, research shows that a significant portion of the population—60 to 70 percent—has a genetic variation that makes them particularly sensitive to the neurotoxic effects of methyl bromide exposure.[15]

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[10] Nat'l Res. Council, *supra* note 7, at 1 ("Methyl bromide also appears to be a developmental and possibly a reproductive toxicant."); Budnik, *supra* note 5, at 1 ("Both the epidemiological evidence and toxicology data suggest a possible link between methyl bromide exposure and serious health problems, including prostate cancer risk from occupational and community exposure."); *see* Julia R. Barret, *Getting the Drift: Methyl Bromide Application and Adverse Birth Outcomes in an Agricultural Area*, 121 Envtl. Health Perspectives A198 (2013), https://www.semanticscholar.org/paper/Getting-the-Drift-Methyl-Bromide-Application-and-in-Barrett/17b3f9a19366f2c55228b57f11132eb1f180beb2.

[11] Budnik, *supra* note 5, at 9 ("The exposure assessment data and epidemiological analysis indicate a health risk concern for both workers and the general public."); Nat'l Res. Council, *supra* note 7, at 8 (noting that "inhalation exposure to agricultural workers and the general public" of methyl bromide "is of considerable concern"); Gunier, *supra* note 7, at 1 ("Fumigants are more likely than other pesticides to drift from application sites dues to their high vapor pressure.").

[12] USDA APHIS, *Treatment Manual* 2-3-2 (2013), https://www.aphis.usda.gov/import_export/plants/manuals/ports/downloads/treatment.pdf.

[13] Gunier, *supra* note 7, at 1-2. Although this report focused on the use of methyl bromide in agricultural fumigation, the results are also applicable to its use for log fumigation as both processes involve the eventual release of methyl bromide emissions into the air. If anything, log fumigation operations have an increased potential for human exposure because, as the Division has stated, they are more like an industrial point source of pollution than agricultural uses of the fumigant.

[14] *See generally id.* (examining the relationship between residential proximity to agricultural fumigation, including methyl bromide, and neurodevelopment in 7-year old children); Alison Gemmill, et al., *Residential Proximity to Methyl Bromide Use and Birth Outcomes in an Agricultural Population in California*, 121 Envtl. Health Perspectives 737 (2013) (concluding that "[r]esidential proximity to methyl bromide use during the second trimester was associated with markers of restricted fetal growth"), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3672911/. Specifically, prenatal exposure has also been associated with decreased birth weight and postnatal and childhood exposure has been linked to decreased IQ. Gunier, *supra* note 5, at 2 ("We previously found that living within 5 km of methyl bromide use in the second trimester of pregnancy was associated with decreased birth weight, length, and head circumference."), 364 ("We observed decreases in Full-Scale intelligence quotient with increased methyl bromide . . . use within 8 km of residences during the child's lifetime.").

[15] *AAL Report*, *supra* note 1, at 5-6. This genetic variation is not present in rodent populations and is therefore not accounted for in rodent-based methyl bromide exposure studies. This genetic variation is also one of the reasons that the Division chose to set the methyl bromide AAL at a 24-hour averaging time, along with the fact that methyl bromide is colorless and odorless, can produced a delayed onset of symptoms, is rapidly absorbed and distributed throughout the body, and has a steep exposure-effect curve. *Id.* at DAQ's Charge.

II. Public Opposition to Methyl Bromide Log Fumigation

In 2013, a proposed methyl bromide log fumigation operation in Morehead City was abandoned due to "significant public concern" over the health impacts of the facility.[16] Five years later, the Division received applications for two large methyl bromide log fumigation operations. The first was a request from Tima Capital to drastically increase the amount of methyl bromide being used and emitted at an existing fumigation operation in Wilmington.[17] The Division received over 2,000 public comments for this proposed expansion, with the majority being opposed, and in response Time Capital withdrew its application for the expansion and announced that it would completely cease fumigation activities at the Wilmington site.[18] The second application came from Malec Brothers Transport, which sought permission for a new facility in Delco, North Carolina, that would use up to 140 tons per year of methyl bromide for log fumigation.[19] The people of Delco strongly opposed this new facility: Two public hearings attracted over 300 people each and over 1,000 public comments were submitted to the Division.[20] In the face of overwhelming public opposition and the Department of Environmental Quality's announcement of plans to regulate methyl bromide as a state toxic air pollutant, Malec Brothers withdrew their air permit.[21] Despite previously claiming that "there's no alternative [to methyl bromide] that's effective and efficient,"[22] Malec Brothers is now utilizing a debarking technique that allows the company to export logs without any fumigation.[23]

LEGAL BACKGROUND

I. North Carolina's Air Pollution Control Act

In North Carolina, "the water and air resources of the State belong to the people." N.C. Gen. Stat. §143-211(a); *see also* N.C. Const. art. XIV, § 5 ("It shall be the policy of this State . . .

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[16] Mark Hibbs, *Company Drops Fumigation Plan*, Coastal Review Online (Sept. 18, 2013), https://www.coastalreview.org/2013/09/company-drops-fumigation-plan/; *see* Royal Pest Solutions, Application for Air Permit for Fumigation Operations Port of Morehead City, North Carolina (June 28, 2013), http://www.nccoast.org/uploads/documents/CRO/Monthly/2013/Royal%20Fumigation%20Permit%20Application.pdf.

[17] *Companies to Halt Fumigation Operations*, Coastal Review Online (Mar. 29, 2018), https://www.coastalreview.org/2018/03/companies-to-halt-fumigation-operations/; *Company to Stop Fumigation Operations at Wilmington Site*, WWAY News (Mar. 29, 2018), https://www.wwaytv3.com/2018/03/29/company-to-stop-fumigation-operations-at-wilmington-site/.

[18] DEQ PowerPoint Presentation, *Rulemaking for Control of Hazardous Air Pollutants from Log Fumigation Operations*, at slide 7 (July 24, 2019) (Attachment 1).

[19] Lisa Sorg, *Foreign Company Proposes to Emit 140 Tons of "Super Pollutant" Each Year in Southeastern NC*, NC Policy Watch (May 2, 2018), http://www.ncpolicywatch.com/2018/05/02/pw-exclusive-foreign-company-proposes-to-emit-140-tons-of-super-pollutant-each-year-in-southeastern-nc/.

[20] DEQ Power Point (July 24, 2019), *supra* note 18, at slide 8.

[21] Lisa Sorg, *Malec Brothers Withdraws Air Permit Application to Use Methyl Bromide*, NC Policy Watch (Jan. 30, 2019), http://pulse.ncpolicywatch.org/2019/01/30/breaking-malec-brothers-withdraws-air-permit-application-to-use-methyl-bromide/; N.C. DEQ, *Division of Air Quality to Take Action on Methyl Bromide Log Fumigation* (July 26, 2018), https://deq.nc.gov/news/press-releases/2018/07/26/division-air-quality-take-action-methyl-bromide-log-fumigation; Lisa Sorg, *NC Proposes First-Ever Regulation of Methyl Bromide Air Pollution*, NC Policy Watch (Oct. 23, 2018), http://www.ncpolicywatch.com/2018/10/23/nc-proposes-first-ever-regulation-of-methyl-bromide-air-pollution/.

[22] Smart, *supra* note 2.

[23] DAQ, *Fiscal Note for Control of Emissions from Log Fumigation Operations* 17 (May 6, 2019) [hereinafter, "*Fiscal Note*"].

to control and limit pollution of our air and water . . . ."). The North Carolina Air Pollution Control Act was enacted "to achieve and maintain for the citizens of the State a total environment of superior quality" and to ensure that standards and programs are

> *designed to protect human health*, to prevent injury to plant and animal life, to prevent damage to public and private property, to insure the continued enjoyment of the natural attractions of the State, to encourage the expansion of employment opportunities, to provide a permanent foundation for healthy industrial development and to secure for the people of North Carolina, now and in the future, the beneficial uses of these great natural resources.

N.C. Gen. Stat. § 143-211 (emphasis added); *id.* § 143-215.105 (explaining that the declaration of public policy set forth in N.C. Gen. Stat. § 143-211 applies to the Air Pollution Control Act provisions).

Through the Air Pollution Control Act and its regulations, the Department of Environmental Quality, Division of Air Quality administers the state's air quality program, including its state air toxics program. N.C. Gen. Stat. § 143-215.106; *id.* § 143-215.107. In order to "protect human health," North Carolina regulates certain enumerated pollutants as state toxic air pollutants ("TAPs"). 15A N.C. Admin. Code 02D .1101. Each TAP has an accompanying acceptable ambient level ("AAL") meant to ensure that a facility does not emit the listed pollutant "in such quantities that may cause or contribute beyond the facility's premises to any significant ambient air concentration that may adversely affect human health[.]" *Id.*

II. EMC's Rulemaking Authority

The Environmental Management Commission ("EMC")—the rulemaking body for the Department of Environmental Quality—is authorized by statute to promulgate rules for the "protection, preservation, and enhancement of the water and air resources of the State." N.C. Gen. Stat. § 143B-282(a). North Carolina's Administrative Procedure Act ("APA") sets forth the appropriate rules and procedures for an agency engaged in administrative rulemaking. N.C. Gen. Stat. § 150B-18. Under the APA, there are six principles that an agency must follow when developing and drafting new rules:

> (1) An agency may adopt only rules that are expressly authorized by federal or State law and that are necessary to serve the public interest.
>
> (2) An agency shall seek to reduce the burden upon those persons or entities who must comply with the rule.
>
> (3) Rules shall be written in a clear and unambiguous manner and must be reasonably necessary to implement or interpret federal or State law.
>
> (4) An agency shall consider the cumulative effect of all rules adopted by the agency related to the specific purpose for which the rule is proposed. The agency shall not adopt a rule that is unnecessary or redundant.

(5) When appropriate, rules shall be based on sound, reasonably available scientific, technical, economic, and other relevant information. Agencies shall include a reference to this information in the notice of text required by G.S. 150B-21.2(c).

(6) Rules shall be designed to achieve the regulatory objective in a cost-effective and timely manner.

N.C. Gen. Stat. § 150B-19.1(a). An agency must also "quantify the costs and benefits to all parties of a proposed rule to the greatest extent possible," which an agency will generally do through the issuance of a fiscal note. *Id.* § 150B-19.1(e).

III. Regulatory Oversight of Methyl Bromide

Methyl bromide is a Class I ozone-depleting substance regulated by the Montreal Protocol and the federal Clean Air Act. The Montreal Protocol provided for the complete phase out of methyl bromide by 2005 except in certain circumstances, including what is referred to as "quarantine and pre-shipment uses" ("QPS").[24] Accordingly, EPA only allows methyl bromide use in limited circumstances, including QPS uses such as the fumigation of logs for export.[25] Although methyl bromide is permitted for QPS uses, that does not change the fumigants "remarkable potency as a depletory of atmospheric ozone."[26] Moreover, as has been well established already in the record,[27] methyl bromide is a known "development, neurological, and respiratory toxin," with both "acute and chronic toxicity."[28] Because of the dangers it poses to people and the environment, methyl bromide is regulated under the Clean Air Act as a hazardous air pollutant ("HAP").

Despite being listed as a federal HAP, there is currently "no specific federal air quality standard or air quality regulation to protect the general public from log fumigation related methyl bromide releases. Similarly, since methyl bromide is not [currently] listed as a North Carolina [TAP], there are no state air quality regulations."[29] The proposed regulations discussed in more detail below are intended to fill this gap and ensure that North Carolinians are protected from the hazardous associated with methyl bromide exposure. Specifically, the proposed regulations are meant to address chronic exposures from all types of methyl bromide log fumigation operations, regardless of if the operation is more intermittent or continuous in nature.

[24] EPA, *Methyl Bromide* (last visited July 12, 2019), https://www.epa.gov/ods-phaseout/methyl-bromide.
[25] *Id.*
[26] Budnik, *supra* note 5, at 2.
[27] *See generally AAL Report*, *supra* note 1; *Fiscal Note*, *supra* note 23; DEQ Power Point to EMC, *Temporary and Permanent Rulemaking for Control of Hazardous Air Pollutants from Log Fumigation Operations*, at slides 11-23 (Nov. 7-8, 2018) (presentation from Dr. Sandy Mort, Environmental Toxicologist) (Attachment 2).
[28] Budnik, *supra* note 5, at 3.
[29] *AAL Report*, *supra* note 1, at DAQ's Charge.

Currently, there are four operating methyl bromide log fumigation facilities in North Carolina.[30] All four of these facilities are permitted as synthetic minor facilities, meaning that the facility cannot emit more than 10 tons per year of any given HAP or 25 tons per year of total HAPs, including methyl bromide. Because the existing synthetic minor log fumigation operations are limited to 10 tons per year, they can operate in a more "intermittent" manner over the course of a year. These existing operations, however, are located in close proximity to residential communities[31] and there is currently nothing preventing the facilities from using all 10 tons per year of methyl bromide in a short, condensed time period, exposing the surrounding community to much higher concentrations of methyl bromide than if the 10 tons was evenly emitted during the course of the year. Furthermore, air modeling conducted by the Division demonstrated that these existing synthetic minor facilities may expose over 152,000 people in North Carolina to methyl bromide levels above the proposed AAL of .005.[32] In fact, the modeling showed concentrations anywhere from 0.613 to 29.0 mg/m^3 at the fenceline of the fumigation sites.[33] The Division also estimated that of these potentially affected people, "91,000 to 107,000 . . . may have th[e] special genetic variation" that enhances the neurotoxic effects of methyl bromide exposure.[34] Thus, as demonstrated by the Division's modeling, existing methyl bromide operations are not currently protective of the public health.[35]

There is also a significant and present threat of much larger sources of methyl bromide emissions coming into the state if the EMC does not set an AAL low enough to protect the public health. As discussed in more detail above, over the past year there have been two attempts by the log fumigation industry to establish massive methyl bromide log fumigation operations in the state. Although these two operations were eventually withdrawn due to public opposition, it is the duty of the Division to ensure that sources of toxic air pollution are not being permitted in a way that harms the public. As documented during the public comment period for the Malec Brothers' permit, the Division's draft permit suffered from many deficiencies[36] that demonstrate the need for additional regulatory oversight of the methyl bromide log fumigation industry in North Carolina. According to the Division there has been a "[r]ecent[] . . . increase in the number of permit applications and inquiries from entities interested in using methyl bromide for log

[30] There is an additional permitted facility in Bladen County that is no longer fumigating logs and is therefore not "currently operating" despite having an active air permit.
[31] These facilities range from 200 to 600 feet from the nearest residence: Royal Pest Solutions in Chadburn at 463 and 610 feet; Royal Pest Solutions in Wilmington (#1) at 238, 346, 496, and 550 feet; Royal Pest Solutions in Wilmington (#2) at 621 feet; and Flowers Timber in Seven Springs at 220 feet. DEQ Power Point (July 24, 2019), *supra* note 18, at slides 14-17.
[32] *Fiscal Note*, *supra* note 23, at 27-28.
[33] *Id.*
[34] *Id.*
[35] There is also evidence of at least one of the existing facilities violating its air quality permit by exceeding the 10 tons per year limit. *See* Notice of Violation / Notice of Recommendation for Enforcement for Royal Pest Solution Air Permit No. 10313R01 (Aug. 24, 2018) ("Violation: Exceedance of the 10-ton HAP limit during the months of May, June, and July 2018" for one of Royal Pest Solution's facilities in New Hanover County), file:///C:/Users/hhillaker/Downloads/22065%20(4).pdf.
[36] Comment Letter from Southern Environmental Law Center, et al., to N.C. Division of Air Quality re: Comments on the Draft Air Quality Permit for Malec Brothers Transport, LLC Fumigation Yard (Permit No. 10560R00) (May 8, 2018), https://www.southernenvironment.org/uploads/words_docs/2018-05-07_DRAFT_Malec_MeBr_comments.pdf.

fumigation" in the state.[37] This continuing interest, especially from companies wanting to operate large, more continuous emissions sources, underscores the need for increased regulatory oversight of this industry.

CONTROL OF EMISSIONS FROM LOG FUMIGATION OPERATIONS
(15A N.C. Admin. Code 02D .0546)

The EMC has proposed adding an entirely new provision within section .0500 of the state's air pollution control requirements in order "to establish emission control requirements for hazardous air pollutants and toxic air pollutants from log fumigation operations." 15A N.C. Admin. Code 02D .0546(a) (proposed May 23, 2019). Although the undersigned support the proposed regulation, there is one minor edit needed within the definitions section to ensure that the proposed regulation is "clear and unambiguous," as required by North Carolina's APA. N.C. Gen. Stat. § 150B-19.1(a)(3).

As drafted, there is an inconsistency between how the term "fumigation operation" is defined and the scope of fumigation operations intended to be covered by the rule. "Fumigation operation" is defined as "the period of time that the fumigant is injected and retained in the *container or chamber* for the purposes of treating the logs for insects and other pests to prevent the transfer of exotic organisms." 15A N.C. Admin. Code 02D .0546(b)(5) (emphasis added). This definition implies that the regulation only applies when log fumigation occurs within a container or chamber, despite the fact that the rule's applicability provision explicitly states that the rule applies to all three types of log fumigation, including bulk operations. *Id.* at 02D .0546(c) ("This Rule applies to new, existing, and modified bulk, chamber, and container log fumigation operations that use a hazardous air pollutant or toxic air pollutant as a fumigant."). To clarify this potential ambiguity, the definition of "fumigation operation" should be amended to read:

> (5) "Fumigation operation" means the period of time that the fumigant is injected and retained in the container, chamber, or bulk piles for the purposes of treating the logs for insects and other pests to prevent the transfer of exotic organisms.

The EMC can adopt the rule as edited above without undergoing a new round of public comments because such an amendment does not "differ[] substantially" from the rule as proposed. *See* N.C. Gen. Stat. § 150B-21.2(g).

> An adopted rule differs substantially form a proposed rule if it does one or more of the following:
>
> (1) Affects the interests of persons who, based on the proposed text of the rule published in the North Carolina Register, could not reasonably have determined that the rule would affect their interests.

[37] *AAL Report*, *supra* note 1, at 1; *Fiscal Note*, *supra* note 23, at 3; DAQ Power Point (July 24, 2019), *supra* note 18, at slide 4.

(2) Addresses a subject matter or an issue that is not addressed in the proposed text of the rule.

(3) Produces an effect that could not reasonably have been expected based on the proposed text of the rule.

Id. The edit suggested herein does not implicate any of these three factors and is merely an attempt to clarify a potential typo and seemingly overlooked inconsistency with the rules stated intent, which is to cover all forms of methyl bromide log fumigation operations. Specifically, the proposed rule explicitly applies to bulk fumigation operations, 15A N.C. Admin. Code 02D .0546(c), and provides a separate definition for what constitutes "bulk or tarpaulin fumigation," *id.* at 02D .0546(b)(1). Both of these provisions are sufficient to put bulk fumigation operations on notice that the proposed rule "[a]ffects their interests" and fully "[a]ddresses" the issue of bulk or tarpaulin fumigation. *See* N.C. Gen. Stat. § 150B-21.2(g)(1)-(2). The suggested edit will not expand the scope of the rule beyond what is already contemplated and therefore will not "[p]roduce[] an effect that could not reasonably have been expected based on the proposed text of the rule." *Id.* § 150B-21.2(g)(3).

TOXIC AIR POLLUTANT GUIDELINES
(15A N.C. Admin. Code 02D .1104)

The EMC has proposed amending the state's Toxic Air Pollutant Guidelines, 15A N.C. Admin. Code 02D .1104, to add methyl bromide as a state toxic air pollutant ("TAP") and set an accompanying acceptable ambient level ("AAL"). The EMC has proposed an AAL of .005 mg/m^3 at a 24-hour averaging time, but is accepting public comment on increasing the AAL to up to .078 mg/m^3. The undersigned support the proposed additions to the Toxic Air Pollutant Guidelines and support an AAL of no higher than .005 mg/m^3.

I. An AAL of no more than .005 mg/m^3 complies with the North Carolina Administrative Procedure Act.

As stated above, the EMC must follow six general principles when developing and drafting new rules. Specifically, the EMC must "seek to reduce the burden upon those persons or entities who must comply with the rule," N.C. Gen. Stat. § 150B-19.1(a)(2), base the rules "on sound, reasonably available scientific, technical, economic, and other relevant information," *id.* § 150B-19.1(a)(5), and design rules "to achieve the regulatory objective in a cost-effective and timely manner," *id.* § 150B-19.1(a)(6). In order to comply with these principles and meet its obligations under the APA, the EMC must set the methyl bromide AAL no higher than .005 mg/m^3.

a. An AAL of .005 mg/m^3 as proposed does not unduly burden the log fumigation industry.

North Carolina's APA does not require that rules have zero burden on the industry they are regulating, but merely that the rulemaking agency "seek to reduce" burden when developing new rules. *See* N.C. Gen. Stat. § 150B-19.1(a)(2). The resulting regulatory burden is then

balanced with the regulatory need and purpose for the rule. Here, the Division has spent the last year researching and developing regulations to reduce the threat to public health from methyl bromide exposure while also providing flexibility to the industry to reduce the burden of complying with the regulations. This is perhaps most noticeable in the Division's decision to move forward with a regulation based on an ambient air concentration, rather than a control-technology based approach.[38]

A control technology standard would have required methyl bromide log fumigation operations to install technology to capture and control emissions by a set percentage.[39] Although such a standard would significant reduce methyl bromide emissions, the Division determined that it "may not protect the public" from methyl bromide exposure because each individual facilities' post-control emissions depends on many factors, including the size of the facility and the timing of aerations.[40] For example, a control-technology standard requiring at least 90 percent reduction in methyl bromide emissions would have two drastically different impacts depending on whether the facility was using 10 tons per year (like the currently operating synthetic minor facilities) or 140 tons per year (like the proposed Malec Brothers operation) of methyl bromide, resulting in post-control emissions of 1 ton per year and 14 tons per year, respectively. Based on the research and modeling conducted by the Division, facilities emitting 14 tons per year (and less) are potentially harmful to the general public. Moreover, the Division determined that a control-technology standard "would come at a much higher cost" as compared to the proposed AAL standard.[41]

Instead, the Division decided to develop "a rule based on the facility meeting an AAL," which "provided the *most flexibility* for the fumigation companies but also provided *protection to the citizens of North Carolina*."[42] Under the Divisions approach, log fumigation operations have several "different options to achieve compliance with the methyl bromide" AAL, including the installation of a stack and fan, leasing additional land or otherwise increasing the distance to the property boundary, limiting the number of containers aerated, or installing capture and control technology.[43] Each company can decide what option or combination of options best suits their needs while also ensuring compliance with the AAL, or the company can decide to utilize several alternatives that do not implicate the methyl bromide AAL.[44] "If the fumigation companies decide to not provide log fumigation services in North Carolina, the log exporting companies have a couple of options to continue exporting logs overseas. These include debarking the logs themselves or fumigating the logs in a neighboring state."[45]

1. Total Economic Impact

According to the Division, the most likely outcome of the proposed regulation is for log fumigation operations to either install capture and control technology to meet the AAL, move the

[38] *Fiscal Note*, *supra* note 23, at 36 (discussing several alternatives DAQ considered).
[39] *Id.*
[40] *Id.*
[41] *Id.*
[42] *Id.* (emphases added).
[43] *Id.* at 6, 12.
[44] *Id.* at 6.
[45] *Id.*

log fumigation operations to South Carolina or Virginia, or debark logs prior to export.[46] The proposed fiscal note analyzed the total economic impact of each of these options over the first two years. The control technology option resulted in a total impact of $2.3 million over the first two years ($1.1 and $1.2 million in year 1 and year 2, respectively), moving fumigation to another state resulted in a total impact of $3.1 million ($2.3 and $.84 million), and debarking resulted in a total impact of $1.66 million ($2.3 and -$.64).[47] The two easiest and most cost-effective outcomes from the proposed regulation is installation of the capture and control technology and debarking logs prior to export.

First, if a facility choses to install a control technology to comply with the proposed AAL, the Division has identified the Nordiko capture and control technology as the "easiest installation path and lowest cost for the facilities of the proven technologies" and therefore the most likely option.[48] Although installation and use of the Nordiko technology would "add an average of $276 to the cost of each container that is aerated," at an estimated pre-control value of $6,166 per container (assuming the container is only filled to 80 percent), there is only a modest decrease in the value of each container.[49]

Second, as discussed by the Division, debarking logs prior to export is a viable alternative to log fumigation that is currently being used by Malec Brothers in Columbus County. Not only does debarking avoid the environmental and public health concerns associated with methyl bromide log fumigation operations, but it also "may be more economical than fumigation."[50] This is in part because "by removing the bark, [the export company] can load 10 percent more wood into each container, in comparison to exporters that fumigate; and they recapture 40 percent of the cost of debarking by selling the removed bark to an industrial mulch operation."[51]

Finally, although there is some potential for job loss as a result of the proposed rule, any such loss is temporary and relatively minor, especially when balanced against the severe health risks associated with methyl bromide exposure and the potential 152,000 North Carolinians that are currently exposed to harmful levels of this toxicant. The Division estimated that there are currently only twelve jobs in North Carolina associated with methyl bromide log fumigation.[52] With either of the last two regulatory outcomes, there is a potential for some temporary job loss, but those options could also result in new opportunities to offset the potential loses.[53] Even in a worst case scenario where all twelve of these jobs are lost it is assumed that these workers would likely obtain comparable paying work after the first year.[54]

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[46] *Id.* at 30.
[47] *Id.* at 37.
[48] *Id.* at 18.
[49] *See id.* at 18 ("A comparison of the estimated control cost and the value of the logs in the container gives a percentage of 4.5 percent.").
[50] *Id.* at 17.
[51] *Id.* at 17.
[52] *Id.* at 19.
[53] *See id.* at 19 (stating that "workers could be transferred" to others states if log fumigation moved outside of North Carolina), 21 (stating that debarking could lead to "potential loss of fumigation jobs in North Carolina, but the creation of debarking jobs").
[54] *Id.* at 19-20.

2. Benefit to the Community

Pursuant to the North Carolina APA, when developing a new rule the rulemaking agency must consider both the costs and *benefits* of a proposed regulation. *See* N.C. Gen. Stat. § 150B-19.1(e) (requiring a rulemaking agency to "quantify the costs and benefits to all parties of a proposed rule to the greatest extent possible"). The proposed methyl bromide regulations and the proposed AAL of .005 have clear environmental and health benefits to local communities: "While these communities may lose jobs or tax income from log fumigation facilities, they will receive the health benefits from not having tons of HAP emitted in their town or city on a yearly basis."[55]

Although the Fiscal Note does discuss the potential benefits of the proposed regulation, the total economic impact analysis discussed above does not.[56] In particular, certain community benefits such as the avoided costs of healthcare, lost work hours and earnings, permanent disabilities, or premature mortality, which are more economic in nature, were "not quantified" in the Division's cost/benefit analysis, despite the Division recognizing that "the goal of the proposed rule is to minimize these consequences and to protect public health."[57]

> While quantifying the specific value of the proposed rule for prevention of the above symptoms from methyl bromide inhalation remains beyond the ability of state personnel to reliably calculate, logically, *prevention of any of the above symptoms holds value to the state and our citizens*. The delayed exposure-effect response, lack of taste or odor recognition, and lack of measurements of exposure concentrations further limit the ability to quantify impacts. *Regardless, the risk for adverse effects exists at exposures above the proposed AAL*. Prevention would minimize risk of lowered productive work hours, health care visits, and hospitalization costs.[58]

If the state were able to fully account for the benefits to the community from the proposed methyl bromide regulations, the total economic impacts of around $2 million for the first two years would be drastically reduced.

b. An AAL of no higher than .005 mg/m^3 is supported by the most up to date and sound science on the health impacts of methyl bromide exposure.

In April 2019, the Secretaries' Science Advisory Board on Toxic Air Pollutants ("SAB"), which is charged, among other things, with assisting the Department by reviewing and evaluating the health impacts of exposure to hazardous contaminants, voted unanimously to support the Division's proposed range for a methyl bromide AAL of .002 mg/m^3 to .005

[55] *Id.* at 24 (stating that "[s]ome local communities will benefit from not having log fumigation facilities operating in their town or city," when discussing Tima Capital and Malec Brothers).
[56] *Id.* at 31 ("Note: The health benefits for local communities were unable to be quantified.").
[57] *Id.* at 30.
[58] *Id.* at 26 (emphases added).

mg/m^3.[59] Accordingly, a range of .002 to .005 at a 24-hour averaging time was presented to the EMC in May 2019 to be approved for public comment. Despite the "professional judgment of [the Division's] Environmental Toxicologist and input and feedback from the SAB" indicating that a methyl bromide AAL should be set *no higher* than .005 in order to protect the general public, the EMC has requested comments on setting the AAL as high as .078 mg/m^3—over 15 times higher than the level identified by experts as necessary to protect public health.[60]

1. EPA's IRIS Reference Concentration

The proposed AAL of .005 mg/m^3 was recommended and approved by the Division and SAB after months of research and consideration and is based on the EPA's Integrated Risk Information System ("IRIS") program's chronic inhalation reference concentration ("RfC") for methyl bromide. As stated by the Division, "the IRIS chronic RfC is the most appropriate and scientifically valid human health value to provide protection for the long-term health of persons in North Carolina[.]"[61] IRIS reference concentrations are the preferred source of toxicity information for EPA, and are important resources relied on by state and local agencies, including North Carolina. The process for deriving an IRIS RfC is extensive and involves a comprehensive review of all available research, as well as an internal EPA review and external peer review. For purposes of methyl bromide, EPA has indicated a "high confidence" level in the IRIS chronic RfC of .005 mg/m^3.

Although the IRIS chronic RfC for methyl bromide was set in the early 90s, recent studies have confirmed the .005 mg/m^3 reference concentration and supported its continued use for purposes of protecting the public health from methyl bromide exposure. For example, in 2018 the Agency for Toxic Substances and Disease Registry ("ATSDR") conducted a comprehensive review of the most up to date research and concluded that the IRIS chronic RfC was still the most representative and appropriate number to use for chronic methyl bromide exposure.[62] Thus, despite being originally formalized in the early 90s, EPA's IRIS RfC remains the most up to date and scientifically defensible level to protect the public against chronic methyl bromide exposure.

2. Chronic (.005) versus Intermediate (.078) Exposure Levels

Despite expert recommendations, some members of the EMC have expressed that the proposed AAL of .005 is too low. Instead, they have suggested an "interim" level of .078, from the 2018 draft ATSDR report, as a more appropriate level.[63] A methyl bromide AAL of .078—and, in fact, any AAL higher than .005—is not supported by the science to protect the public from the effects of chronic exposure to methyl bromide.

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[59] *AAL Report*, *supra* note 1, at 22 ("Based on a combination of the professional judgment of DAQ's Environmental Toxicologist and input and feedback from the SAB, the range of AAL values that could be considered by the EMC are 0.002 mg/m^3 to 0.005 mg/m^3.").
[60] EMC, *Public Notice on Proposed Methyl Bromide Regulations* (May 23, 2019), https://files.nc.gov/ncdeq/Air%20Quality/rules/hearing/log-fumigation/Public-Notice-Log-Fumigation-5-23-2019.pdf.
[61] *AAL Report*, *supra* note 1, at 1.
[62] *Id.* at 11 ("When presented in the same units and reduced to one significant figure the ATSDR provisional chronic MRL is equal to the IRIS chronic RfC, 5 µg/m^3.").
[63] Discussion between Commissioners at EMC Air Quality Committee Meeting (May 8, 2019).

As an initial matter, although the ATSDR report is more recent, it reinforces EPA's previous report recommending a chronic exposure limit of .005 mg/m^3. The difference between the .005 and .078 levels comes down to the exposure timeframe. An exposure level of .005 is recommended by both EPA and ATSDR for *chronic* exposure,[64] whereas the ATSDR also set an exposure level of .078 for *intermediate* exposure.[65] "Chronic" exposure is defined as "a repeated exposure by the oral, dermal, or inhalation route for more than approximately 10% of the life span in humans,"[66] and is often used for exposures of 365 days or longer.[67] "Intermediate" exposure, however, is limited to exposures lasting 15 to 365 days.[68]

Methyl bromide is known to have both "chronic (long-term) and acute (short-term) effects on human health,"[69] and the Division has "identified that the general public adjacent to log fumigation operations may experience both acute . . . and longer-term chronic exposures" to methyl bromide.[70] The Division, however, determined that focusing on chronic exposure is the best method to ensure that the public is protected:

> Persons living adjacent to log fumigation operations may be exposed to fumigants released in the ambient air in pulsed or nearly continuous exposures for short durations on a daily basis; however, over time these exposures may be of a frequency and duration that reflect the EPA chronic exposure definition.[71]

Accordingly, the Division's proposed regulations categorize methyl bromide as a "chronic toxicant" rather than an acute toxicant. *See* 15A N.C. Admin. Code 02D .1104 (proposed May 23, 2019).[72] Given this classification, which the EMC has not requested comment on, the EPA IRIS RfC of .005—and not the ATSDR intermediate level of .078—is the most accurate and representative level to rely when setting an AAL to protect against chronic exposure.

3. Other States' Levels are Not Representative

Over the last few months, some members of the EMC have pointed to methyl bromide ambient air values set by others states to argue that the proposed .005 AAL is too low. As the Division has repeatedly explained, extensive research into levels set by other states demonstrated that these higher levels are unsupported or based on outdated research and methodologies. For

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[64] *AAL Report*, *supra* note 1, at 3-4, 11 ("When presented in the same units and reduced to one significant figure the ATSDR provisional chronic MRL is equal to the IRIS chronic RfC, 5 µg/m^3.").
[65] *Id.* at 11.
[66] *Id.* at 3. The IRIS chronic reference concentrations is "an estimate (with uncertainty spanning perhaps an order of magnitude) of a continuous inhalation exposure to the human population (including sensitive subpopulations) that is likely to be without an appreciable risk of deleterious effects during a lifetime." *Id.*
[67] *Id.* at 11.
[68] *Id.*
[69] *Fiscal Note*, *supra* note 23, at 1.
[70] *AAL Report*, *supra* note 1, at DAQ's Charge.
[71] *Id.* at 1-2.
[72] *See also id.* at 15 ("The 24-hour averaging time reflects recommendations for 'chronic system toxicants' as referenced in the *NCSAB Risk Assessment Guidelines* (NCSAB 1997) and the state's air toxics regulations at 15A NCAC 02D .1104.").

example, the California reference level is based on a 1942 study of occupational exposure.[73] Additionally, as is the case with California, many states relied on occupational levels, which are also outdated. The Occupational Safety and Health Administrative level of 5 parts per million, for example, was set in 1969 and is based on research conducted in the 50s and 60s.[74]

Occupational levels are also not an appropriate basis for North Carolina's methyl bromide AAL because such levels are not representative of effects on the general public. Whereas the "[g]eneral public exposure must consider the possibility that persons will be exposed daily over their lifetime," occupational levels instead "assume 8-hr per day, 5-day per week exposures to healthy adults over less than a lifetime."[75] Additionally, an AAL must be based on levels sufficient to protect all members of the general population, including sensitive subpopulations: "In the context of public health, the 'general public' encompasses subpopulations, such as infants, children, the elderly and persons with pre-existing conditions or a genetic predisposition that may manifest as increased susceptibility to the adverse effects associated with inhalation of methyl bromide and other toxicants."[76]

c. An AAL of .005 mg/m^3 achieves the objective of North Carolina's toxic air pollutant regulations.

The stated purpose of North Carolina's regulations for the control of toxic air pollutants is "to protect human health." 15A N.C. Admin. Code 02D .1101. To protect human health, all state-designated TAPs are accompanied by a numerical ambient air concentration—or AAL—that cannot be exceeded beyond the facility's boundary:

> A facility shall not emit any of the following toxic air pollutants in such quantities that may cause or contribute beyond the facility's premises to any significant ambient air concentration that may adversely affect human health . . . . In determining these significant ambient air concentrations, the Division shall be governed by the following list of acceptable ambient levels . . . .

Id. at 02D .1104. When setting an AAL, the "goal . . . is to provide a level of health protection for the general public to prevent symptoms at the property boundary of a permitted facility."[77] As previously stated, within the context of public health, the "general public" includes sensitive subpopulations, such as infants, children, the elderly, and persons with pre-existing conditions or a genetic predisposition.[78] To ensure that all members of the general public, including sensitive subpopulations, are protected, North Carolina's TAP regulations err on the side of caution. Accordingly, AALs should be set at low enough levels to prevent *any possible* adverse health impacts:

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[73] *AAL Report*, *supra* note 1, at 19.
[74] *Fiscal Note*, *supra* note 23, at 28.
[75] *AAL Report*, *supra* note 1, at 19-20.
[76] *Id.* at 12-13.
[77] *Fiscal Note*, *supra* note 23, at 25.
[78] *Id.* at 25-26.

> AALs are airborne chemical concentrations below which a substance is not expected to have *any adverse impacts on human health*. They are used in pollution permitting to ensure that stationary sources do not add concentrations of toxic air pollutants to the air that *may possibly* be harmful to human health.[79]

Consistent with the regulatory objective for North Carolina's TAP regulations and the purpose and requirements for state AALs, the proposed methyl bromide AAL of .005 "represents a value below which no appreciable daily inhalation health risks are anticipated."[80] Thus, the proposed AAL of .005, which takes into account sensitive subpopulations, is the highest level of ambient air concentration of methyl bromide that will be protective of the general public

CONCLUSION

The undersigned groups support the proposed methyl bromide log fumigation regulations, as discuss in more detail above. In particular, the undersigned support the addition of 15A N.C. Admin. Code 02D .0546, with a small edit to the definition of "log fumigation operation" to avoid potential ambiguity regarding the rules applicability. The undersigned also support amendments to 15A N.C. Admin. Code 02D .1104 to add methyl bromide as a state toxic air pollutant and to set an accompanying acceptable ambient level of .005 mg/m^3 at a 24-hour averaging time.

For the reasons stated above, an AAL of .005 is permissible under the North Carolina Administrative Procedure Act as it does not unduly burden the industry, is based on sound science, and achieves the stated regulatory objective. An AAL of any higher than .005 would not. The undersigned therefore urge the EMC to dutifully consider the real and severe health risks posed by methyl bromide exposure and the recommendations of the state's own experts by setting the methyl bromide AAL at no higher than .005 mg/m^3.

Respectfully submitted,

Heather Hillaker
Associate Attorney
hhillaker@selcnc.org
Southern Environmental Law Center
601 West Rosemary Street, Suite 220
Chapel Hill, North Carolina 27516
On behalf of Clean Air Carolina, N.C. Environmental Justice Network, N.C. Conservation Network, and N.C. Sierra Club

[79] *Id.* at 4 (emphases added); *see also* 15A N.C. Admin. Code 02D .1104 ("A facility shall not emit any of the following [TAPs] in such quantities that may cause or contribute beyond the facility's premises to any significant ambient air concentrations that may adversely affect human health." (emphases added)).

[80] *Fiscal Note*, *supra* note 23, at 4.

* The comments submitted to DAQ erroneously stated that the health risks "do not outweigh" the potential economic benefit. This sentence has been edited in this version to reflect the intended meaning. *See* page 2.