



Thursday November 17, 2022  
6:00 PM - 8:00 PM  
Green Square Training Room  
217 West Jones Street  
Raleigh, NC 27603

## Agenda

I. Call to Order, *Chair, Dr. Jim Johnson 6 PM (5 min)*

### **New Business**

II. Division of Air Quality Permitting Overview, *Michael Abraczinskas, Air Quality Division Director, DEQ (10 min)*

III. Community Perspectives;

*a. Dr. Ruby Bell, Sampson County resident and member of Impacted Communities Against Wood Pellets Coalition (10 min)*

*b. La'Meshia Whittington, Member, DEQ's Secretary's EJ and Equity Advisory Board (10 min)*

IV. Board Discussion *(30 min)*

V. Public Comment Period 7:00 PM – 8:00 PM

VI. Adjourn



# Air Quality Permitting of Wood Pellet Facilities

November 17, 2022

NC Division of Air Quality

*Department of Environmental Quality*



# *Overview of Wood Pellet Manufacturing Permits*

# *Air Pollutants from Wood Pellet Manufacturing*

- **Particulate Matter** is emitted from multiple parts of the manufacturing process.
  - Total Suspended Particulate Matter (**TSP**),
  - Particulate Matter less than 10 microns (**PM<sub>10</sub>**), and
  - Particulate Matter less than 2.5 microns (**PM<sub>2.5</sub>**)
- **Volatile Organic Compounds (VOCs), Toxic Air Pollutants (TAPs), and Hazardous Air Pollutants (HAPs)** are emitted primarily from drying and milling operations. Hardwoods vs. softwoods have an impact on these emissions.
- **Carbon Monoxide (CO), Sulfur Dioxide (SO<sub>2</sub>), and Nitrogen Oxides (NO<sub>x</sub>)** come from drying operations.
- **Greenhouse Gases** are emitted by pollution controls such as thermal oxidizers that burn other pollutants such as VOCs and HAPs to destroy them.

# *Who Are The Wood Pellet Manufacturers?*

- **Enviva Pellets:**

- **Ahoskie** – Ahoskie, NC (Hertford County) *Title V*
- **Northampton** – Garysburg, NC (Northampton County) *Title V*
- **Sampson** – Faison, NC (Sampson County) *Title V*
- **Hamlet** – Hamlet, NC (Richmond County) *Title V*

*Enviva has shipping port facilities in Wilmington, NC.*

- **American Wood Fibers** – Laurinburg, NC (Scotland County) *Synthetic Minor*  
*Formerly Nature's Earth Pellets*
- **Active Energy Renewable Power** – Lumberton, NC (Robeson County)  
*Facility closed, permit rescinded July 2022*

# *History of Enviva Pellets Permitting*

- **Enviva Ahoskie:** First Title V permit in 2010, began operations 2011.  
**Enviva Northampton:** First Title V permit in 2012, began operations 2013.
- **Testing data revealed Enviva facilities' actual emissions were much higher than expected, and were major sources for Prevention of Significant Deterioration (PSD) and Hazardous Air Pollutants (HAPs).**
- **DAQ pursued enforcement action; Enviva facilities were re-permitted to be major for PSD and HAPs.**
- **Enviva Sampson (2014) & Enviva Hamlet (2016) first-time Title V permits were major for PSD and HAPs.**
- **Following a settlement with Enviva in 2019, facilities were required to apply for and install regenerative catalytic oxidizer/regenerative thermal oxidizer to control emissions.**
- **After new controls installed, each facility will be minor for PSD and HAPs.**



## *Emission reductions as a result of the most recent permitting actions for Enviva pellet facilities*

<i>Combined total from all four Enviva facilities</i>		<b>Startup</b>	<b>Latest Permits</b>	<b>Change</b>
<b>Throughput (OOT/yr)</b>		<b>2,116,429</b>	<b>2,693,266</b>	<b>+ 27%</b>
<b>Potential to Emit (tons/yr)</b>	<b>VOCs</b>	<b>1,453.36</b>	<b>467.75</b>	<b>- 68%</b>
	<b>HAPs</b>	<b>261.8</b>	<b>89.1</b>	<b>- 66%</b>
	<b>PM</b>	<b>663.92</b>	<b>505.25</b>	<b>- 24%</b>

**DAQ required Enviva to install more stringent controls to reduce emissions of VOCs, HAPs and Particulate Matter. Emissions have declined even as production increased.**



# *Enviva Pellets Northampton: Fugitive Dust*

**Enviva Northampton permit renewal/modification issued Aug. 2021**

- **From June 2021 to February 2022, Raleigh Regional Office staff performed unannounced weekly or biweekly visits to the facility and surrounding areas to check for dust issues and take photos.**
  - **Staff did not observe dust leaving the property boundary at any point.**
- **DAQ has received no complaints regarding Enviva Northampton since January 2015.**
- **DAQ's air monitoring site in Northampton County continues to record no health issues with fine particles or nitrogen dioxide in the area.**





# *Air Quality permit for Enviva Pellets Ahoskie*

## *Meaningful engagement from enhanced public process*

- **Published public notice** (DAQ website & Roanoke-Chowan News Herald)
- **Held in-person public hearing**
- **Sent press release & reminder press release**
- **Posted draft Environmental Justice report**
- **Developed and shared 1-page fact sheet**
- **Set up voice mail call-in option for public comments**
- **Posted to social media** (Twitter & Facebook)
- **Shared information with nearby sensitive receptors**
- **Shared information with Meherrin Tribe multiple times**
- **Shared information with Town of Ahoskie & Hertford County Health Dept.**
- **Consulted community leaders for outreach recommendations**



# *Air Quality permit for Enviva Pellets Ahoskie*

## *Additions as a result of the public process*

- **Required updated fugitive dust plan to develop strategies to control fugitive dust emissions from all new sources.**
- **Added hydrogen chloride in all stack testing conditions concerning HAP emissions**
- **Added conditions to limit HAP emissions (and require testing) during the construction phase of project.**
- **Added language to ensure facility is responsible for collecting sufficient data to justify new parametric monitoring values.**
- **Removed the pellet cooler cyclone construction schedule.**
- **Additional minor adjustments and corrections.**



# *Current status of the Enviva Ahoskie permit*

- **Draft Permit posted for public comment** July 13, 2022
- **Public Hearing** Aug. 16
- **Public Comment period ended** Aug. 19
  
- **Hearing Officers report signed** Sept. 28
- **Updated permit sent to EPA for review** Sept. 29
- **EPA response: No comments** Nov. 9
  
- **DAQ deadline for final action** Nov. 28, 2022



# *Contact information*

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*Department of Environmental Quality*





# The Wood Pellet Industry in North Carolina

Presented by Dr. Ruby Bell on behalf of *The Impacted  
Communities Against Wood Pellets Coalition*

# The Impacted Communities Against Wood Pellets Coalition

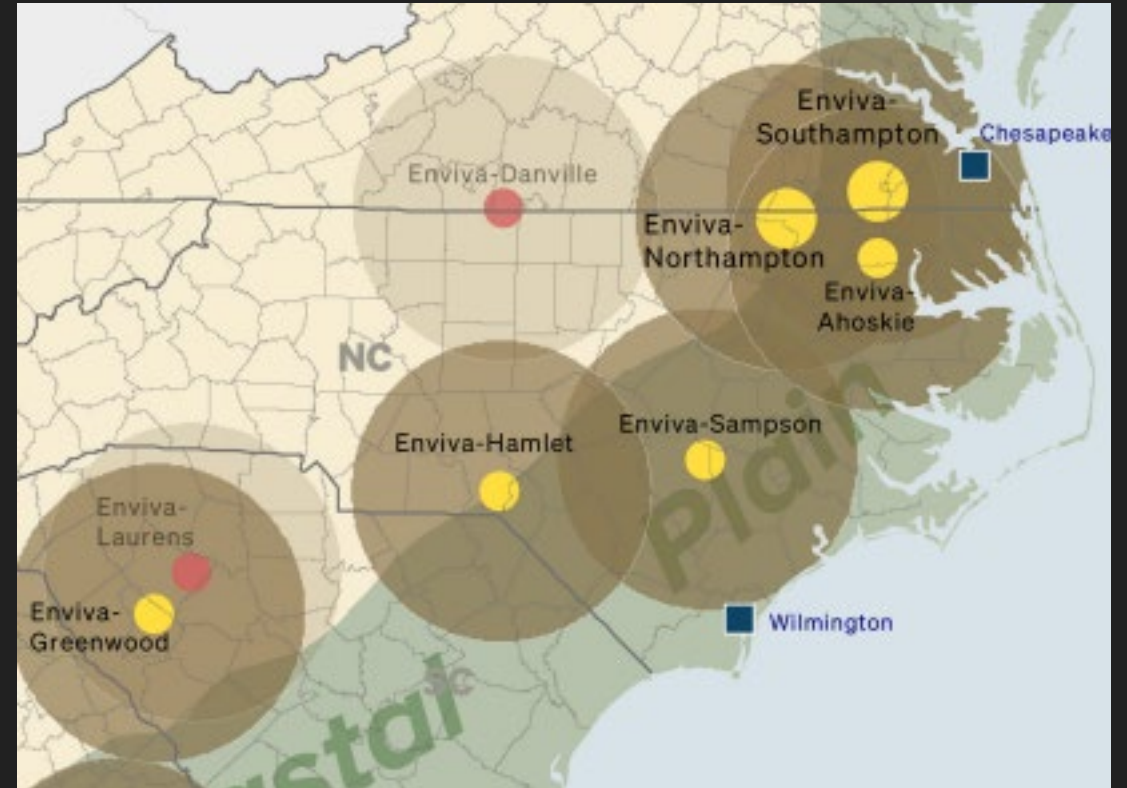
The Impacted Communities Against Wood Pellets is a coalition of residents who are impacted by the pollution, dust, noise, and forest destruction of the biomass wood pellet industry, and the forest protection and environmental justice organization Dogwood Alliance.

The coalition members have been studying the impacts of the wood pellet industry since the first plant opened in Ahoskie, NC in 2011.



# NC and the Wood Pellet Industry

- NC exports more wood pellets than any other state in the nation.
- Enviva operates 4 wood pellet plants in NC that produce 2.5 million tons of wood pellets per year.
- NC DEQ's Clean Energy Plan (2019) states: "Currently, the wood pellet industry does not contribute to NC's energy generation portfolio and does not advance NC's clean energy economy".
- Yet the NC DEQ has continued to approve permits to expand wood pellet production in NC.
- Enviva has received nearly \$10 million in subsidies from NC.



*The map here shows proposed plants in red, existing plants in yellow, and the sourcing radius in brown.*

# Enviva's Permit for Expansion

Currently, Enviva has a permit application under consideration for their Ahoskie, NC plant. The permit would require Enviva to install air pollution controls, but would also allow them to greatly expand production, resulting in more dust pollution, truck traffic, forest destruction, and the increase of some harmful toxins.

For years, Enviva claimed it was too expensive to install pollution controls. A 2019 lawsuit resulted in Enviva agreeing to install controls. However, in the many years of operating without controls, Enviva's operations polluted local communities and Enviva was able to pocket \$130 million by failing to install these controls.

Enviva should install these air pollution controls at Ahoskie. But their request for expansion warrants further consideration.



The Impacted Communities Against Wood Pellets Coalition  
Recommends the following actions for the EJEAB to Consider:



## Recommendation#1: Deny Enviva's application to expand production at the Ahoskie, NC facility:

### Why?

- a. Lack of consultation with the Meherrin Tribe.
- b. Enviva's high emissions of Hazardous Air Pollutants (HAPs), which should classify them as a major source of emissions, not minor. Enviva should reduce production limits to stay under the major source threshold.
- c. Enviva's increased production will emit harmful levels of the toxic air pollutant acrolein. With this expansion, Enviva would become the highest emitter of acrolein in the state. Acrolein is linked to respiratory disease, cancer, and can cause dizziness and lightheadedness.
- d. DEQ has an obligation under Title VI of the Civil Rights Act of 1964 to consider disproportionate impacts.

## Recommendation #2: Require Enviva to strengthen their fugitive dust plan in Ahoskie (Hertford County), and install fugitive dust control plans at their other 3 facilities.

These plans should:

- a. Ensure that areas with dust are fully enclosed.
- b. Cover wood piles at the facility and on transportation vehicles.
- c. Increase the use of water sprays to control dust.
- d. Ensure that trucks entering or exiting the facility are fully covered.

### Why?

"Fugitive dust emissions" are particulate matter released from wood pellet production that does not pass through a filter, and that goes into the surrounding community.

NC DEQ [has acknowledged](#) that Enviva's facilities "the potential to emit a substantiated amount of fugitive dust emissions (pg. 8)."

Yet Enviva has not installed fugitive dust control plans at 3 of the 4 facilities. The plan at the Ahoskie plant is not sufficient to address all of the dust emissions.

**Recommendation #3:** Install an air quality monitoring system that is operated by NC DEQ within  $\frac{1}{4}$  mile of all of Enviva's NC facilities.

**Why:**

Current air quality monitors are not close enough to the facilities to be effective. NC DEQ air quality monitors placed within  $\frac{1}{4}$  mile of Enviva production facilities would provide more accurate data on Hazardous Air Pollutants (HAPs) and dust pollution.

## **Recommendation #4: Require Enviva to implement Continuous Emissions Monitoring (CEMS) for Volatile Organic Compounds (VOCs).**

This should include:

- a. Frequent reporting to NC DEQ.
  - i. Any exceedances of the monthly limit should be reported to NC DEQ within 10 days.
- b. Public notice requirement for emission violations.
  - i. Public notices should be posted both by NC DEQ and by Enviva.

### **Why:**

Enviva's current permits require Enviva to test about once every other year. The test lasts approximately 3 hours. This type of testing does not capture fluctuations in emissions, and could be failing to record high peaks of emissions. NC DEQ could better protect public health by understanding what is being emitted throughout the entire year, and taking appropriate action to limit the high peaks in emissions that are harmful to the health of the surrounding residents.

**Recommendation #5:** Require Enviva to limit nighttime operations while nearby residents are sleeping (10pm - 7am) and/or coordinate with local town officials to investigate potential violations of the town's noise ordinance.

**Why:**

Enviva pellet production facilities operate 24/7, and many residents have shared concerns about the noise impacting their ability to sleep. While noise ordinances do not fall within the jurisdiction of NC DEQ, there are steps NC DEQ could take to better ensure a healthy environment for NC residents.

**Recommendation #6:** DEQ should recognize their obligation under **Title VI of the Civil Rights Act of 1964** to consider disproportionate impacts, and deny permits such as this one that adversely impact communities of color.

**Why:**

All 4 Enviva facilities are in environmental justice communities. This production expansion would adversely impact Black communities surrounding Enviva Ahsoskie facility. DAQ should retain the requirement to install new air pollution controls regardless.

**Recommendation #7:** Require Enviva to consult with the Meherrin Tribe during the application review process.

**Why:**

Both the NC Department of Environmental Quality and Enviva have a responsibility and duty to consult with the Meherrin Tribe in reference to Enviva's permit application related to their Ahoskie facility.

The NC Commission on Indian Affairs, the Lumbee and Haliwa-Saponi Tribes, National Environmental Justice Council, the U.S. Advisory Council on Historic Preservation, the National Congress of American Indians, and the United Nations have all affirmed the need for local, state, and federal governments to engage in meaningful consultation in order to consider and mitigate the impacts of development projects on and in tribal communities.



**Recommendation #8:** NC DEQ should acknowledge and measure the greenhouse gas emissions of industrial logging in North Carolina by:

- a. Updating the carbon accounting methodology of the land use and forestry sector in the state's greenhouse gas emissions inventory.
- b. Cataloging the emissions of the forestry industry separate from any net-growth benefits.
- c. Perform more detailed accounting of forest health & age within Enviva's sourcing radius.
- d. Recommend that NC DEQ evaluate North Carolina-based CO2 emissions from the wood pellet industry for compliance with Executive Order 80. This includes CO2 emissions from the pellet manufacturing facilities themselves, as well as logging and transportation emissions associated with those facilities.

**Why:**

The production and burning of wood pellets produce high levels of greenhouse gas emissions that are currently not being accounted for.

# Thank you for your time

Members of the Impacted Communities Against Wood Pellets Coalition are available to answer questions.

More detailed information on these asks will be provided by various experts during the public comment period.

A packet with more detailed information has been provided to board members.

# Review

1. **Deny Enviva's permit** to expand production at their Ahoskie, NC plant, and require them to install pollution controls.
2. Require Enviva to **install fugitive dust plans** at all facilities and strengthen their existing fugitive dust plan in Ahoskie.
3. Install **air quality monitoring** within  $\frac{1}{4}$  mile of the facility.
4. Install **Continuous Emissions Monitoring** to capture fluctuations in emissions.
5. Address **noise pollution** through limiting Enviva's nighttime operations and/or coordinating with local towns to address noise ordinance violations.
6. DEQ should recognize their obligation under **Title VI of the Civil Rights Act of 1964** to consider disproportionate impacts, and deny permits such as this one that adversely impact communities of color.
7. Require Enviva to **consult with the Meherrin Tribe** prior to any issuance of a permit for expansion.
8. **Acknowledge and measure the greenhouse gas emissions** of industrial logging and the wood pellet industry in North Carolina.

# Biomass: The Health Impact Concerns for Environmental Justice Communities and Low-Wealth Populations in Eastern NC

A Community Perspective  
Professor La'Meshia Whittington  
Member, DEQ's Secretary's EJ and Equity Advisory Board

# Biomass

“Biomass is organic matter used as fuel to produce heat or electricity. Examples are:

- Wood and wood residues
- Energy crops
- Agricultural residues
- Waste from industry, farms and households.

Since biomass can be used as a fuel directly, some people use the words biomass and biofuel interchangeably.” - *U.S. Energy Information Administration.*

# Wood Pellet

“Wood pellets are small cylindrical pieces 10–20 mm long with diameters varying from 5 to 10 mm produced from fine-ground wood bark. They are usually used as fuel by feeding into burner automatically because of their small and fixed form. On the other hand, energy is consumed in the process of drying and grinding wood barks for making wood pellets.” - *Science Direct*

# Presentation Overview

- Pollution Priorities
  - Air pollution
  - Noise Pollution
    - Need for appropriate operation hours
    - Influx of road traffic
  - Truck pollution
    - Carbon emissions on communities
  - Cumulative Impact
    - Tier 1 - economically distressed
    - Health factors rankings
    - Urban heat island potential
- Summary and Recommendations

# Local Landscape: Economically Distressed Communities

“The N.C. Department of Commerce annually ranks the state’s 100 counties based on economic well-being and assigns each a Tier designation. The 40 most distressed counties are designated as Tier 1, the next 40 as Tier 2 and the 20 least distressed as Tier 3. “ - Commerce NC

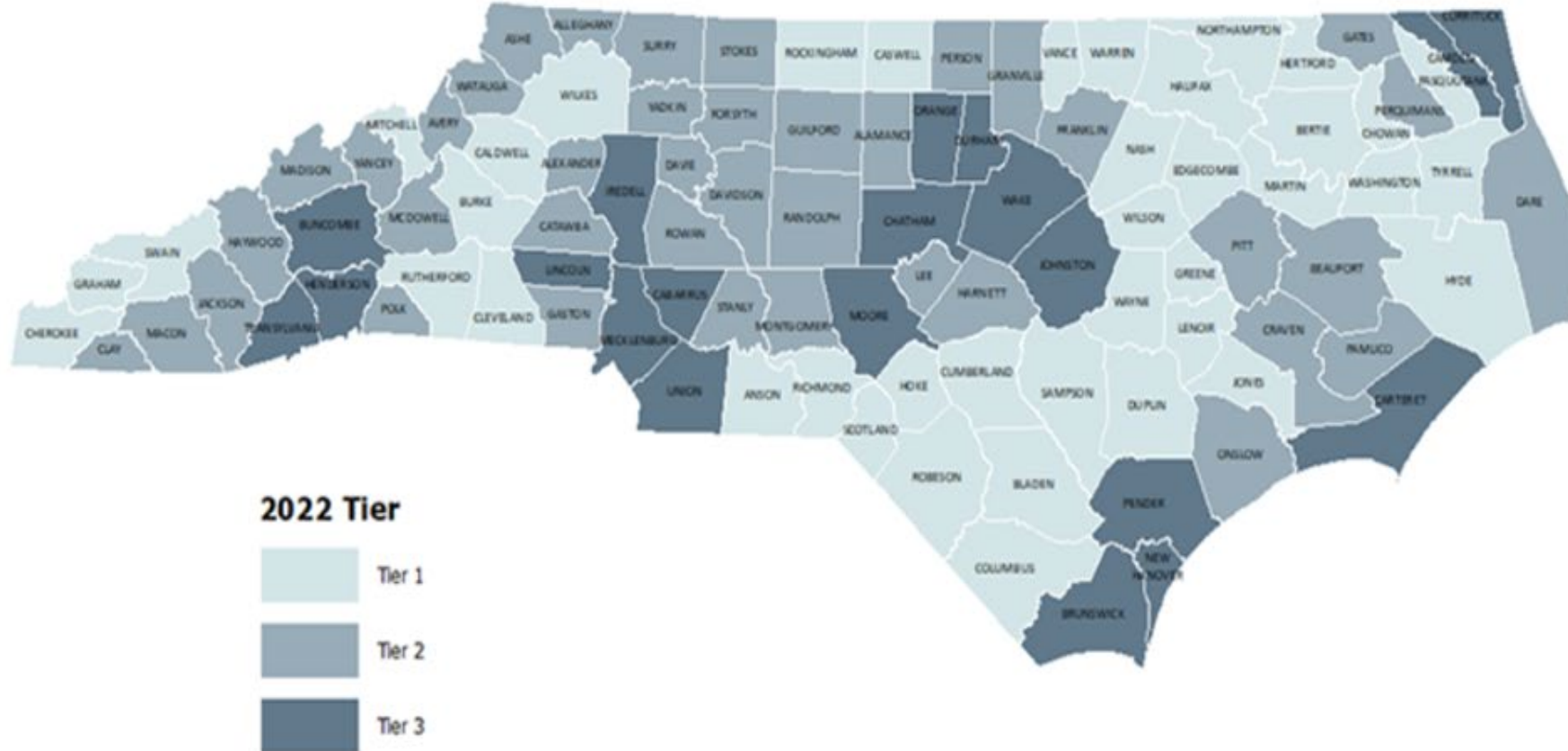
County Tiers are calculated using four factors:

- Average unemployment rate
- Median household income
- Percentage growth in population
- Adjusted property tax base per capita

All counties chosen for wood pellet operations are ranked as Tier 1 counties, insert picture



# County Distress Rankings



# Local Landscape: Health Impacts and Health Factors

What is this ranking?

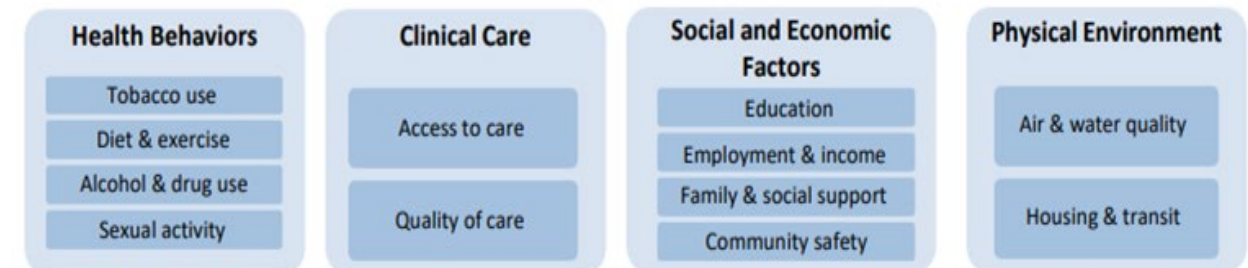
The Rankings help us understand what influences how long and how well we live. They provide measures of the current overall health (health outcomes) of each county

Health factors represent things that, if modified, can improve length and quality of life. They are predictors of how healthy our communities can be in the future.

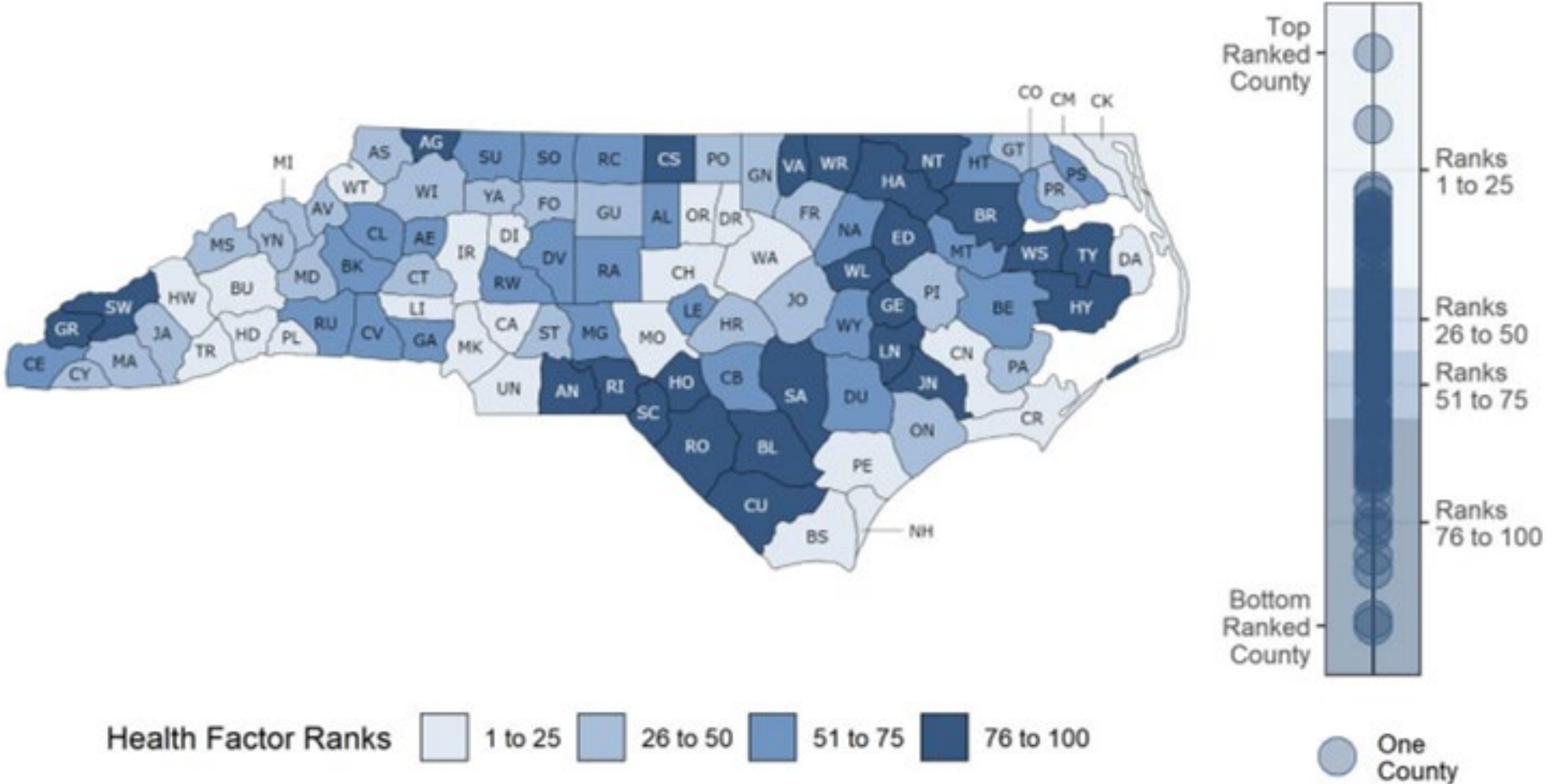
County Health Rankings 2022

## What are Health Factors?

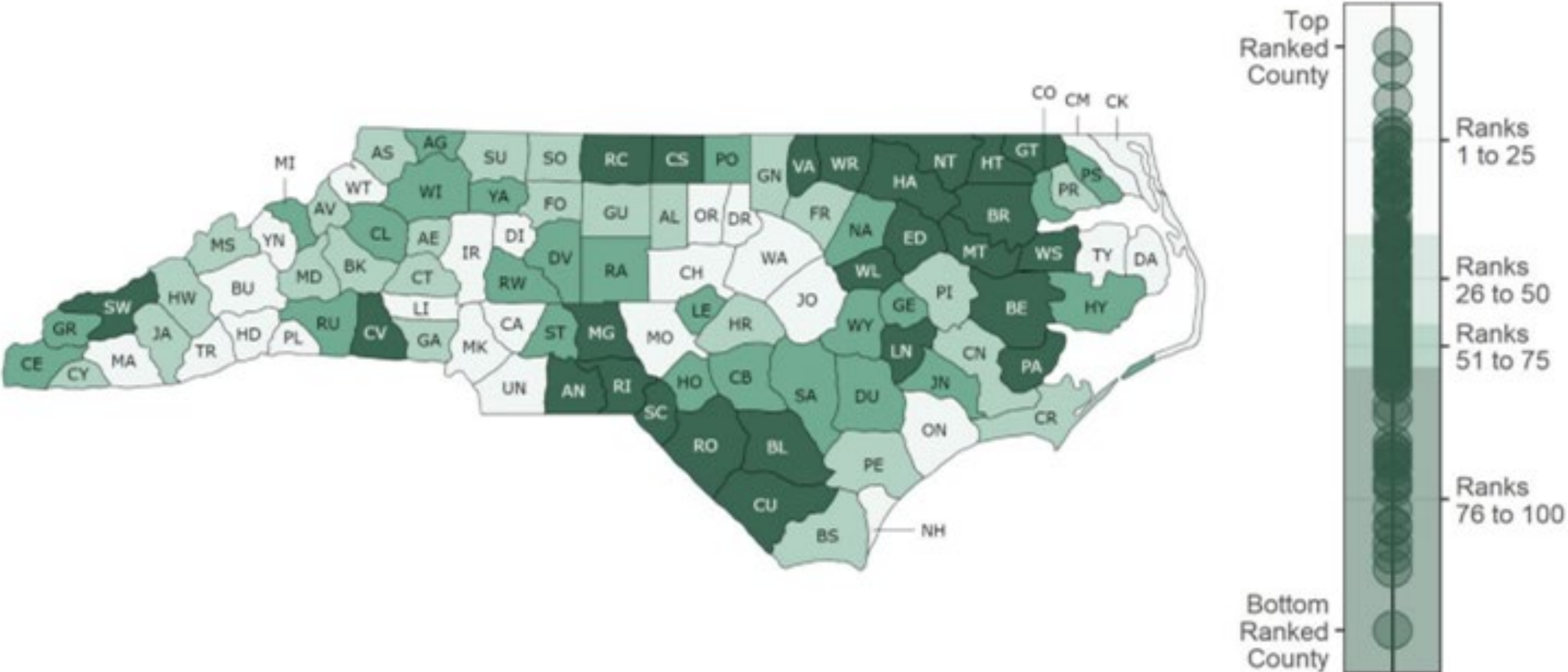
Health factors represent community conditions that we can change to improve health and opportunity, such as access to quality education, living wage jobs, quality clinical care, nutritious foods, green spaces, and secure and affordable housing. We measure four health factor areas.



# 2022 Health Factors



# 2022 Health Outcomes



Health Outcome Ranks 1 to 25 26 to 50 51 to 75 76 to 100

One County

# Air Pollution

## **Definition:**

“Air pollution is the contamination of air due to the presence of substances in the atmosphere that are harmful to the health of humans and other living beings, or cause damage to the climate or to materials.”

# Air Pollution cont.

## *Air Pollution*

- Although levels of particle pollution and ground-level ozone pollution are substantially lower than in the past, levels are unhealthy in numerous areas of the country.
- An extensive body of scientific evidence shows that long- and short-term exposures to fine particle pollution, also known as fine particulate matter (PM<sub>2.5</sub>), can cause premature death and harmful effects on the cardiovascular system, including increased hospital admissions and emergency department visits for heart attacks and strokes. Scientific evidence also links PM to harmful **respiratory effects, including asthma attacks.**
- Ozone can increase the frequency of asthma attacks, cause shortness of breath, aggravate lung diseases, and cause permanent damage to lungs through long-term exposure. Elevated **ozone levels** are linked to increases in hospitalizations, **emergency room visits** and premature death.
- Both pollutants cause environmental damage, and fine particles impair visibility.
- Fine particles can be emitted directly or formed from gaseous emissions including **sulfur dioxide or nitrogen oxides.**
  - Ozone, a colorless gas, is created when emissions of nitrogen oxides and volatile organic compounds react. - US EPA

# Air Pollutants from Wood Pellet Manufacturing

## Carbon Monoxide (CO)

"Carbon monoxide poisoning occurs when carbon monoxide builds up in your bloodstream. When too much carbon monoxide is in the air, your body replaces the oxygen in your red blood cells with carbon monoxide. This can lead to serious tissue damage, or even death.

## Nitrogen Oxides (NOx)

The term nitrogen oxides (NOx) describes a mixture of nitric oxide (NO) and nitrogen dioxide (NO<sub>2</sub>), which are gases produced from natural sources, motor vehicles and other fuel burning processes.

- Elevated levels of nitrogen dioxide can cause damage to the human respiratory tract and increase a person's vulnerability to, and the severity of, respiratory infections and asthma.
- Long-term exposure to high levels of nitrogen dioxide can cause chronic lung disease.

## Sulfur Dioxide (SO<sub>2</sub>)

Sulfur dioxide (SO<sub>2</sub>) is a gaseous air pollutant composed of sulfur and oxygen. People who live and work nearby these large sources get the highest exposure to SO<sub>2</sub>.

- Increased risk of hospital admissions or emergency room visits, especially among children, older adults and people with asthma.<sup>2</sup>

## Greenhouse Gas Emissions

"Greenhouse gas emissions from human activities strengthen the greenhouse effect, contributing to climate change. Most is carbon dioxide from burning fossil fuels: coal, oil, and natural gas."

"Burning wood pellets releases as much or even more carbon dioxide per unit of energy as burning coal." - *Yale University*

## Who Are the Wood Pellet Manufacturers?

- **Enviva Pellets - All Title V**
  - Ahoskie, NC (Hertford County) - est. 2011
  - Garysburg, NC (Northampton County) - est. 2012
  - Faison, NC (Sampson County) - est. 2014
  - Hamlet, NC (Richmond County) est. 2016
- **American Wood Fibers**
  - Laurinburg, NC (Scotland County)

# Air Pollutants from Wood Pellet Manufacturing

## Particulate Matter (PM)

"PM stands for particulate matter (also called particle pollution): the term for a mixture of solid particles and liquid droplets found in the air. Some particles, such as dust, dirt, soot, or smoke, are large or dark enough to be seen with the naked eye. Others are so small they can only be detected using an electron microscope." - US EPA

## Volatile Organic Compounds (VOCs)

"Volatile organic compounds (VOCs) are emitted as gases from certain solids or liquids. VOCs include a variety of chemicals, some of which may have short- and long-term adverse health effects.

EPA's Total Exposure Assessment Methodology (TEAM) studies found levels of about a dozen common organic pollutants to be 2 to 5 times higher inside homes than outside, regardless of whether the homes were located in rural or highly industrial areas." - US EPA

## Hazardous Air Pollutants (HAPs) or Toxic Air Pollutants (TAPs)

"Hazardous air pollutants, also known as toxic air pollutants or air toxics, are those pollutants that are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental effects." - US EPA

## Who Are the Wood Pellet Manufacturers?

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  - Hamlet, NC (Richmond County) est. 2016
- **American Wood Fibers**
  - Laurinburg, NC (Scotland County)



# Sawdust Inhalation: Community Health Impact on Residents and Workers

“In 1995 the International Agency for Research on Cancer (IARC) categorized hard wood dust as carcinogenic to humans (Group 1)<sup>1</sup>, and soft wood dust was also classified in Group 1 seven years later. “

## Community Health Impact: Residents and Workers

- **Long Term Damage:** In addition to adverse health effects caused by exposure to chip and visible sawdust, we cannot neglect to include a most damaging element: coarse inhalable particles or invisible fine dust (this ranges from 2-10 microns).
  - The immediate effect is unnoticeable, but over long periods of time, this can result in significantly decreased lung capacity, respiratory diseases and other related health issues.
- Taking things a step beyond being just irritating, some woods can make us more and more sensitive upon each successive exposure (NIH).
  - Sometimes the eventual reaction can be quite strong, resulting in rashes or boils, severe sinus or respiratory pain/inflammation, or a number of other conditions depending on the wood species.

# Closer Look: Inhalation of Hardwood and Softwood



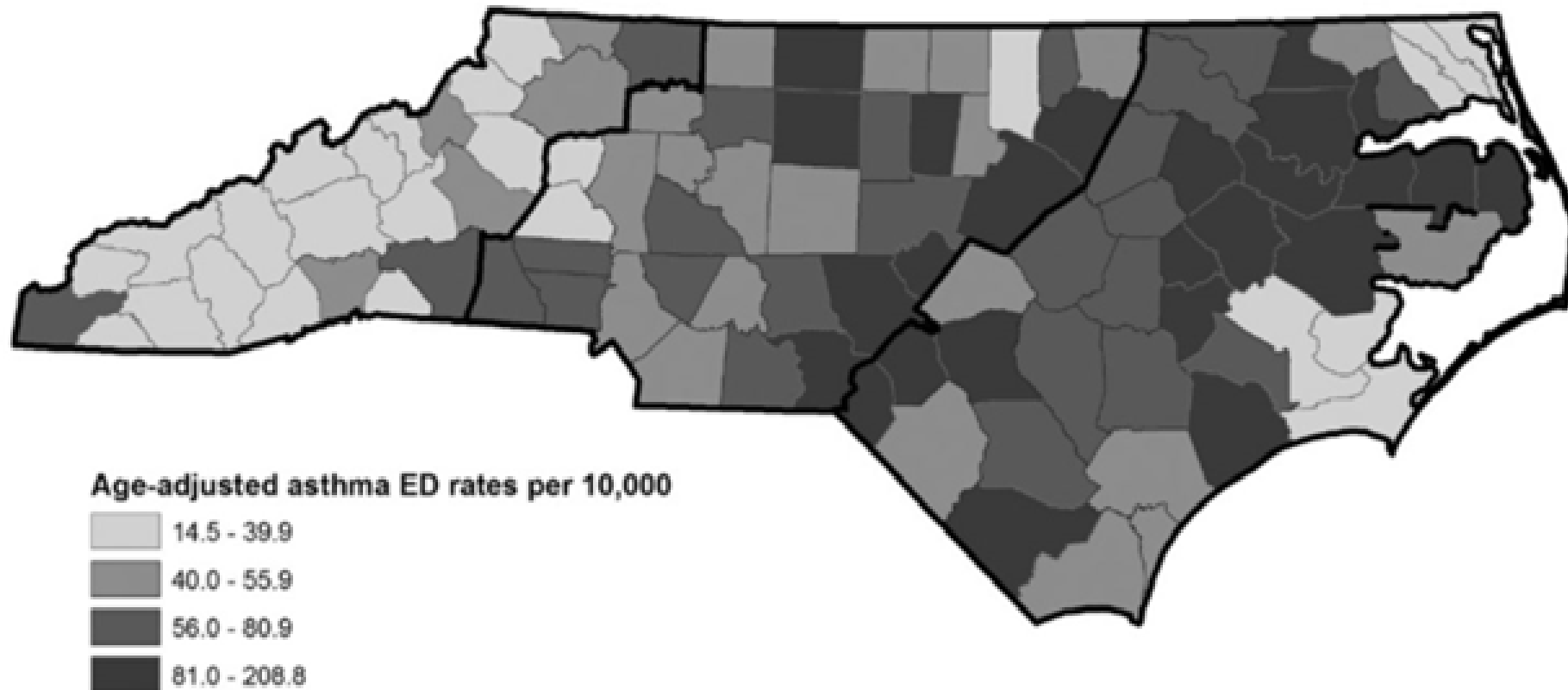
Professor La'Meshia Whittington

“The cancer of the upper respiratory tract develops after exposure to many kinds of wood dust. However, **the wood dust of oak and beech seems to be most carcinogenic.**”

- It is assumed that exposure to wood dust can cause an increased incidence of other cancers, especially lung cancer and Hodgkin's disease.”
- [The adverse effects](#) of microorganisms, mainly mould fungi and their metabolic products are manifested by alveolitis allergica and ODS. These microorganisms can induce aspergillomycosis, **bronchial asthma**, rhinitis and allergic dermatitis.
- Worker related [illness](#)

# Age-Adjusted, Asthma-Related ED rates (2010-2014)

**FIGURE 1.**  
Age-Adjusted, Asthma-Related ED Rates (per 10,000 persons) Averaged Over 2010-2014 by County Name, Region, and Urbanicity Classification



# Asthma-Related Emergency Department Rates (2010-2014)

Increase noted in  
Eastern North  
Carolina.

## Summary of Repeated Measures ANOVA for Asthma-Related Emergency Department Rates (2010-2014).

**TABLE 2.**  
Summary of Repeated Measures ANOVA for Asthma-Related Emergency Department Rates (2010-2014)

Variable	2010		2011		2012		2013		2014		P	Partial $\eta^2$
	M	SE	M	SE	M	SE	M	SE	M	SE		
<b>Region (no. of counties)</b>	<i>F (8, 188) = 2.33, p = .02, partial <math>\eta^2 = .09</math></i>											
Western (N = 24)	40.1	7.8	37.1	7.4	31.9	8.2	32.0	8.4	31.4	8.1	.48	.15
Piedmont (N = 35)	68.3	6.5	63.7	6.1	65.6	6.8	63.8	7.0	64.2	6.7	.28	.15
Eastern (N = 41)	76.3	6.0	78.5	5.6	87.0	6.2	90.2	6.4	93.5	6.2	.01	.37
<b>Urbanicity (no. of counties)</b>	<i>F (8, 188) = 2.20, p = .03, partial <math>\eta^2 = .09</math></i>											
Rural (N = 80)	62.8	4.6	63.0	4.4	65.8	5.1	67.4	5.3	70.0	5.2	.39	.05
Suburban (N = 14)	76.6	10.9	64.1	10.6	69.0	12.2	71.1	12.7	64.4	12.5	.10	.51
Urban (N = 6)	62.6	16.6	66.4	16.2	73.4	18.6	60.0	19.3	63.0	19.1	.38	.79
<b>Age-Group</b>	<i>F (32, 68) = 2.20, p = .02, partial <math>\eta^2 = .47</math></i>											
0-4	198.6	10.3	189.5	10.7	199.5	12.4	194.6	11.2	197.6	11.0	.64	.01
5-9	50.5	4.3	52.6	4.4	56.1	4.7	60.1	4.9	64.0	4.8	.01	.05
10-14	29.1	3.0	28.6	2.7	32.2	3.0	30.0	2.4	31.7	2.7	.48	.01
15-17	30.4	3.3	30.5	2.6	30.2	2.7	26.6	2.4	29.1	2.6	.58	.01
18-24	44.4	3.6	44.2	3.4	40.5	3.2	42.0	3.6	43.8	3.2	.63	.01
25-44	44.5	2.9	44.1	2.9	47.2	3.4	46.5	3.6	46.6	3.4	.57	.01
45-64	57.7	4.0	57.7	4.2	61.4	4.9	62.0	5.2	61.9	4.9	.28	.01
65 and over	107.1	9.4	102.0	8.2	107.4	9.2	115.9	11.0	119.3	10.3	.03	.04

Note. M, mean; SE, standard error.

Holly Dieu et al. North Carolina Medical Journal 2018;79:81-87

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# Local Impacts

- Hertford County
- Northampton County
- Richmond County
- Sampson County

# Industrial Air Pollution: Tracking Increase of Health Impacts despite Lack of Air Monitors

Professor La'Meshia Whittington

## HERTFORD COUNTY

- Three facilities have been issued Title V permits, allowing them to emit more than 100 tons of air pollutants annually. This list includes Enviva Pellets, which began operations in 2011.
- The major pollutants in Hertford County include nitrogen oxides (NOx), carbon dioxide (CO2) and carbon monoxide (CO).

## Morbidity and Mortality

- Asthma-related emergency department visit rates for first and second diagnosis are higher than the state of North Carolina from 2013 to 2014.
- Increase in hospitalizations and death for heart disease and copd.

## Demographic factors and environmental justice populations:

- 66% of Hertford County residents identify as racial or ethnic minorities.

## RICHMOND COUNTY

- Exactly 23 facilities have toxic air emissions permits, 115% the state average.
- Three facilities have Title V permits, meaning they emit more than 100 tons of air pollutants annually.
- In 2014, asthma was listed as the primary diagnosis in Richmond County. Occurring at almost 3x the state level
- Morbidity rate of people dying from respiratory illnesses, exacerbated by poor air quality

In 2017, a biomass company, enviva acquired a title V permit to build a large wood pellet production facility in Hamlet. Placing Richmond county **past** the state average for Title V permits. *Research: Clean Air Carolina*

# *Industrial Air Pollution: Tracking Increase of Health Impacts despite Lack of Air Monitors*

## **SAMPSON COUNTY**

- Proximity to facilities using extremely hazardous substances for Sampson County is 59% higher than other NC counties.
- 6 facilities have Title V permits –2x the state average.

## **Cumulative Impact**

- Exposure to multiple industries create atmospheric cocktail of chemicals that cause adverse human health impacts.
- Pollutants released include but not limited to: ammonia, hydrogen sulfide, nitrous oxides (Nox), particulate matter (PM), carbon monoxide (CO) and carbon dioxide (CO<sub>2</sub>).

## **Morbidity and mortality**

- The rate for asthma as the first or second diagnosis in emergency room visits was consistently higher than state average.
- At a cost of \$12,809/case, Sampson County residents spend an estimated \$698,423 on asthma hospitalizations and \$2.9 million on COPD hospitalizations (\$16,922/case) every year.
- Cardiovascular diseases become more prominent in areas with high air pollution. In Sampson County, the age-adjusted 5-year mortality rates of a stroke are above the NC averages.

# *Industrial Air Pollution: Tracking Increase of Health Impacts with Limited Air Monitors*

Professor La'Meshia Whittington

## **NORTHAMPTON COUNTY**

- There are 10 sites with toxic air permits. This includes three Title V sites, emitting more than 100 tons of air pollutants annually.
- Proximity to facilities using extremely hazardous substances for residents of Northampton County is higher than 61% of NC counties.

## **Cumulative Impact: Environmental Justice**

- The current Title V sites are located in near proximity to I-95, with higher population percentage of minority and low income residents.
- Pollutants released include but not limited to: ammonia, hydrogen sulfide, nitrous oxides (Nox), particulate matter (PM), carbon monoxide (CO) and carbon dioxide (CO<sub>2</sub>).

## **Morbidity and mortality**

- Asthma hospitalization rates in Northampton County (all ages) from 2010-2014 were higher than the state average by about 15%.
- On average the residents of Northampton County spent \$16,546/case on asthma hospitalizations and an average of \$16,700/case on COPD. The median income for Northampton County residents during this time was \$18,836 for individuals and \$31,543 for families. • Death from Chronic Lower Respiratory Diseases (e.g., COPD, asthma, emphysema, etc.) are elevated in Northampton County compared to the rest of the state.



# Northampton County Air Monitoring

At the request of community, an air monitoring station was placed in Northampton County, operational in 2019.

## Air Monitor Site:

- To mitigate land overhead costs, the local high school was identified as the site for air monitoring.
- Community leaders have reported due to this location of the air monitor, they are not allowed access to the data yielded by the monitor.

## Air Monitor:

- There are no permitted facilities within 7 kilometers of the location
- Accessible by unpaved road
- Surrounded by farming land and dust emitted by tractors
- 8 kilometers from northeast halifax-northampton regional airport
- Based on the wind rate in Figure 8, the predominant increase of wind comes from the southwest and south. The Enviva plant is east of the air monitoring location
- The air monitor station is located 4.6 miles away from Enviva Pellets.

\*A former school board member, cited the air monitor, while placed was not operational due to no power source being connected.

“A newborn, within 4-5 weeks old [had] complications with breathing, at a year and half old, the child needed a pump or machine.

*[In community], within a quarter of a mile people have asthma pumps and machines, this is a small area close to the plants.”*

- Richmond County Community Leader



Resident photo of filter, submitted by Emily Zucchini, Dogwood Alliance



Photos credited by community leaders located in Ahoskie, NC (Hertford) - Leader Belinda Joyner



Photo credit: (DENA) in Little Washington, NC

# Truck and Transportation Pollution

# Truck and Transportation Pollution

## Richmond County Leader

*“We witness 200 trucks a day with saw dust and chips and logs.*

*These trucks have no covers on the dust, chips or logs. The trucks break down, emit black smoke. This happens on the main road, we smell this and consume it everyday.*

*There are trains with sawdust and chips, not covered up. Dust debris is blown on vehicles when driving, blown from the plant during storms, heavy wind dust is blowing in all directions.”*

“Low-income people of color in the U.S. are exposed to 28 percent more **nitrogen dioxide (NO<sub>2</sub>)** in the air they breathe compared to their wealthier white counterparts, a new study using satellite measurements reports.”

researchers found that poor communities of color are highly exposed to toxic nitrogen dioxide pollution, largely due to diesel truck traffic.

NO<sub>2</sub> is a harmful pollutant that can cause cardiovascular disease, asthma and other respiratory ailments.”

# Hyperlocal Traffic Emissions Analysis

## Hertford County

- **Ozone levels** are higher than 37% of North Carolina counties.
- Traffic-related air pollutants include **diesel particulates, nitrogen oxides (NOx), and ozone.**

## Richmond County

- Traffic proximity is higher than 67% of North Carolina counties. In some areas individuals are exposed to traffic-related air pollution levels higher than 80-90% of North Carolinians.

## Northampton County

- Interstate 95 and US-301 run north-south, and US-158 runs east-west.
  - A larger concentration of identified ethnic minorities live in this area
- Overall traffic proximity, a measure of traffic volume near residences, is higher than 42% of North Carolina counties.

## Sampson County

- Traffic proximity is higher than 53% of North Carolina counties.
- Traffic pollution combined with cross-industry contaminant exposure creates cumulative impact on communities.

- US EPA and Clean Air

# Noise Pollution

## Definition:

“Inadequately controlled noise presents a growing danger to the health and welfare of the Nation's population, particularly in urban areas. The major sources of noise include transportation vehicles and equipment, machinery, appliances, and other products in commerce” - *Noise Control Act 42 U.S.C. §4901 et seq. (1972)*

## Sources of noise pollution

- Poor city and urban planning
- Deforestation
- Industry
- Transportation
- Machines



# Noise Pollution

## Common Sources of Noise and Decibel Levels

“Sound is measured in decibels (dB). A whisper is about 30 dB, normal conversation is about 60 dB, and a motorcycle engine running is about 95 dB. **Noise above 70 dB over a prolonged period of time may start to damage your hearing.** Loud noise above 120 dB can cause immediate harm to your ears.”

## Industry Average Noise Levels

- United States Wood product manufacturing average noise levels are 92-94, OSHA 1979-2006 [5], US EPA, 1971 [18] (Rikhotso, Oscar)

## Health Impact

Noise pollution adversely affects the lives of millions of people. Studies have shown that there are direct links between noise and health. Problems related to noise include:

- **Stress related illnesses**
- **High blood pressure**
- **Speech interference**
- **Hearing loss**
- **Sleep disruption, and lost productivity.**

# Noise Pollution

## International Studies:

The European Environmental Agency reports that noise ranks second only to air pollution as the environmental exposure most harmful to public health.

- They've shown that noise pollution not only drives hearing loss, tinnitus, and hypersensitivity to sound, but can cause or exacerbate cardiovascular disease; type 2 diabetes; sleep disturbances; stress; mental health and cognition problems, including memory impairment and attention deficits; childhood learning delays; and low birth weight. Scientists are investigating other possible links, including to dementia.

Professor La'Meshia Whittington

## Urban sprawl and deforestation

[Urban sprawl and deforestation](#) destroy natural carbon absorption reservoirs while removing natural sound buffers.

- There is need for epidemiological data with input from impacted community using sensors and apps to deliver precise location and health information

## Local Community Leader, Meherrin Indian Tribe:

*“The economic industry of Hertford [has been ongoing for years], but [this] magnitude is unprecedented. Over 130 acres, farmland development and standing timber, 60 acres had been clear cuts across from tribal ground. There was a lack of consultation and education on these industries with local communities.”*



# Intersectional Analysis: Issue Areas of Concern

- I. Landfill and Waste Disposal
  - A. Location of landfill and disposal sites
  - B. Tracking of waste on biodiversity, human health, ecology, water and air.
- II. Urban Heat Island
- III. Hurricane and Disaster
- IV. Economic data to track how many jobs and direct community investment by the community

## Consideration of:

- Environmental Justice communities and disproportionate impact of pollution.
- Health effects study data and epidemiological studies.
- Intersectional lens on cumulative impact:
  - Exposure to multiple permitted Title V industries and mixture of numerous pollutants.
- Clean Energy and Advanced Clean Truck Rule
- NC DAQ Must Either Require Enviva to Comply With Major Source Case-By-Case MACT or Restrict Production Rates to Avoid Maximum Achievable Control Technology (MACT).
- NC DEQ carry out noise pollution research and match requests for data on health impacts.
  - Cross agency collaboration

# Recommendations

## NC DEQ EJEAB

- Engage with local elected leaders
  - Inquire on the following:
    - How long has the industry committed to staying in the area and providing jobs?
    - Examine health and economic impacts to provide recommendations
- North Carolina does not provide subsidies to Enviva. The industry is recruited by local governments.

## NC DAQ

1. Industry is short term based on international market
2. What is the process of monitoring Enviva to stay within the limits of the permits?

# Summary and Recommendations

The recommended solutions provided by *The Impacted Communities Against Wood Pellets Coalition* recommendations are in alignment with addressing the health impacts elaborated in this presentation.

## The key areas of concern elaborated in this presentation:

- Air Pollution
  - Inhalation
- Noise Pollution
  - Traffic, Truck and Transit Pollution
- Examination of Tier 1 Counties
  - County data on Emergency-Department related Respiratory Diseases and Illnesses
- Landfill and Waste Disposal
- Cumulative Impact
- Consideration of Environmental Justice communities, all 4 counties are considered environmental justice.

## Additional recommendations:

- Appropriate air filtration systems for residents, including heir's property, unincorporated communities, tribal governments, and community centers.
- Land resource support for Air Monitors to be stationed in proximity to the permitted industries.
- Biomass, and other industries produce a disproportionate amount of Volatile Organic Compounds (VOCs) in this area. A total VOC sensor, though not required, would help to ease the concerns of residents of Northampton County and the general public.
- Covers for all vehicles transporting materials on behalf of the industry.

# Q&A