

Enviva accused of over-polluting
Expansion announcement may have forestalled DEQ investigation
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[Editor's note: This is the first of a multi-part series. The next part will feature Enviva's response.]

COURTLAND

Letters between Enviva Pellets Southampton LLC officials and the Virginia Department of Environmental Quality — which *The Tidewater News* obtained in June — indicate that the company's December 2018 announcement of a planned \$75.7 million expansion may have been made with the intention of delaying a DEQ investigation into allegations that the Southampton County wood pellet plant had, for years, been producing toxic emissions in excess of its DEQ air quality permit and a threshold set forth in the federal Clean Air Act. Enviva Pellets Southampton's parent company, Enviva Partners LP, is one of the world's largest producer of wood pellets, also known as solid biomass fuels, which the company sells primarily to European utilities to reduce emissions at coal-fired power plants.

A letter dated June 12, 2018, from Todd Alonzo, manager of the DEQ's Office of Air Compliance Coordination, addressed to Joe Harrell, manager of corporate environmental health and safety for Enviva Southampton, states that the DEQ "has reason to believe emissions factors in use by Enviva Southampton are not representative of actual operations" and that, "as a result, Enviva Southampton may be incorrectly identified as an area source for hazardous air pollutants (HAPs), and may actually be operating as a major source of HAPs without the appropriate permit."

According to the federal Environmental Protection Agency website, HAPs, also known as air toxics, are pollutants known or suspected to cause cancer, birth defects and/or seriously impact the environment. According to Tamera Thompson, manager of the DEQ's Office of Air Permit Programs, a major source is defined in section 112 of the Clean Air Act as a source that has the potential to emit 10 or more tons of a single HAP or 25 or more tons of a combination of HAPs annually. Anything under this threshold, she said, is classified as an area source, which refers to a minor source of pollution.

The letter then states that the DEQ "also has reason to believe that due to the variability of volatile organic compound (VOC) testing results at Enviva Southampton ... the VOC emissions factors used by Enviva Southampton may also not be representative of ongoing operations."

VOCs, according to the EPA, are a group of organic chemicals that include any compound of carbon (excluding carbon dioxide, carbon monoxide and a few other compounds) that, when introduced into the atmosphere, contribute to the formation of ozone. The EPA's website states that health effects from high-level exposure and/or long-term exposure to VOCs may include damage to the liver, kidney and central nervous system, as well as other symptoms. Some VOCs can also reportedly cause cancer in animals and some are known or suspected to cause cancer in humans.

When asked what the DEQ meant by "emissions factors in use by Enviva," Thompson explained that Enviva Southampton is required to track its monthly emissions and report the total to the DEQ on an annual basis. Enviva Southampton is also required to keep the monthly records on-site so that they are available if and when DEQ officials conduct their periodic scheduled inspection or a surprise inspection. Wood pellet plants that have not conducted site-specific emissions tests are allowed to use industry standard estimates.

"This industry [biomass wood pellets] as a whole has grown a lot in recent years, especially in the southeast where there are a lot of trees," Thompson said.

She then explained that the wood pellet industry has relied upon these standard estimates for years. The DEQ, Thompson said, now has reason to believe that site-specific emissions at wood pellet plants, including the Enviva plant in Southampton County, are likely higher than what the industry has traditionally assumed. The letter concludes with the DEQ requesting that Enviva Southampton test the emissions from its facility, "including those from the burner/dryer, the hammer mills, and the pellet coolers to provide actual site-specific emissions data for VOCs, as well as for the following HAPs: acetaldehyde, acrolein, benzene, cumene, formaldehyde, hydrogen chloride, methanol, methyl isobutyl ketone, phenol, propionaldehyde, toluene, and

xylene.”

According to Thompson, these 12 chemicals are the most common ones emitted when wood is dried and turned into biomass pellets.

A pattern of underestimation

Enviva Southampton’s original DEQ air quality permit — which was issued in 2012 prior to the Southampton plant even being constructed, and to which Enviva Southampton initially agreed — specified a facility-wide limit of 3.5 tons per year of any single HAP and allowed no more than 15.2 tons per year in total HAP emissions. VOC limits were set at 99.4 tons per year. These limits, which Thompson confirmed had been negotiated with the DEQ based on industry standard emissions estimates Enviva had provided, placed the then-proposed Southampton facility not only well under the federal major source threshold, but also below the 100-ton-per-year Title V threshold.

Title V, she explained, is a federal operating permit program implemented at the state level, which mandates additional record-keeping, reporting and fees for companies that emit or have the potential to emit over 100 tons per year of any category of pollutant. Companies that meet or exceed the federal major source threshold for HAPs automatically trigger Title V requirements, Thompson added.

Then in May 2013, still several months before the plant began operations, Enviva Southampton actually requested that the DEQ lower the plant’s total HAP limit to 14.7 tons per year, and that its VOC limit be lowered to 79 tons per year. On May 9, 2013, in a letter to Troy Breathwaite of the DEQ, sent along with Enviva Southampton’s revised air quality permit application, Joe Sullivan — an engineer with Trinity Consultants — acknowledges that Enviva’s original plan to process mostly softwood at the Southampton facility could result in higher-than-anticipated VOC emissions. Sullivan further explains that the requested lower HAP and VOC limits are to coincide with the company’s plan to limit production of pellets at the Southampton facility to hardwood only.

The letter from Sullivan states, “As indicated during recent meetings with the Virginia Department of Environmental Quality (DEQ), Enviva has conducted an engineering evaluation at one of its Mississippi facilities to determine whether there are measurable volatile organic compound (VOC) emissions from dried wood hammermills and pellet cooler aspiration systems during production of wood pellets at Enviva’s facilities ... Enviva believes that this analysis confirms that there are previously unknown VOC emissions from these sources during production of softwood pellets.”

Further, “In order to ensure that the facility maintains the current minor source [classification], Enviva is submitting this permit application to limit the manufacturing of pellets at Southampton to hardwood only. Enviva believes that this step will reduce potential VOC emissions since VOC emissions from manufacture of hardwood pellets is generally only a small fraction of emissions from softwood production.”

Yet, when Enviva Southampton requested and received another permit revision in 2014, this time presumably after several months of using hardwood exclusively, the VOC limit on which Enviva and the DEQ agreed had nearly doubled to 153.5 tons per year — putting the Southampton plant well above the Title V threshold. In 2015, when Enviva filed for its third permit revision, the agreed-upon VOC limit rose by another 59.6 percent to its current limit of 245 tons per year.

As for total HAP limits, these were further reduced in 2014, again at Enviva Southampton’s request, to 13.8 tons per year, with limits on individual HAPs being reduced to 3 tons per year. Yet, in its 2015 permit revision request, Enviva Southampton asked that their individual HAP limit be increased to 9.9 tons per year — more than triple the limit the company had requested in 2014, and just under the 10-ton-per-year threshold that would result in the facility being reclassified as a major source of pollution.

Enviva Southampton also requested in their 2015 permit revision application that their limit for total HAPs be raised to 24.1 tons per year, which is an increase of about 74.6 percent over the limit the company had requested in 2014.

Enviva responds to pollution claims
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[Editor's note: This is the second of a multi-part series. The third part will address the possibility that Enviva's \$75.7M expansion was prompted and/or accelerated by the DEQ's June 2018 letter.]

COURTLAND

In response to the DEQ's June 2018, letter, Royal Smith, executive vice president of operations for Enviva Southampton, wrote to Michael Dowd, director of the DEQ's Air and Renewable Energy Division, on July 12, 2018, stating that the June 12 letter set forth "a schedule for submitting a test protocol, and performing emissions testing, that is impossible for Enviva to meet."

Smith then stated, "Most importantly, as discussed with Mr. [DEQ Director David] Paylor and other DEQ representatives on July 2, [2018] Enviva has immediate plans to expand the Facility and install significant new emission controls, including a regenerative thermal oxidizer ('RTO'), on the existing dryer. These plans pre-date the receipt of the June 12th letter, and will result in very significant reductions in total VOC and HAP emissions from the Facility ... Rather than conducting emissions testing on the Facility in response to the June 12th letter, when the facility is in the process of engineering major operational changes and reductions in VOC and HAP emissions, Enviva requests that DEQ delay the emissions testing requirement until Enviva implements proposed modifications to the Facility as discussed in this letter."

According to Ann Regn, a spokeswoman for the DEQ, an RTO is a piece of equipment used to control air pollution that works similar to an incinerator in that it uses temperatures in excess of 1400 F to decompose HAPs and VOCs in exhaust air, as well as other airborne pollutants, into carbon dioxide and water vapor. Tamara Thompson, manager of the DEQ's Office of Air Permit Programs, confirmed that Enviva Southampton's response to the DEQ's June 12, 2018, letter, both in writing and in person during the company's meeting with Paylor, had not refuted the DEQ's claims that the Southampton plant may be over-polluting, nor produced any evidence to suggest that Enviva Southampton was still operating within the HAP and VOC limits in its air quality permit or within the federal threshold for area sources.

"They asked us to delay the requirement to test, specifically all the HAP testing, until after the expansion, with the additional controls, was complete," Thompson said.

On Aug. 1, 2018, Dowd replied to Enviva Southampton's July 2018 letter, granting the Southampton County plant's requested suspension of the DEQ's June 12 letter. This was done on the condition that Enviva Southampton's permit application to the DEQ for the proposed expansion specifies how the company plans to control HAP and VOC emissions, and that the company conducts emission testing on the modified facility once the expansion is complete. Dowd's response also mandates a deadline of Sept. 30, 2018, for Enviva Southampton to submit the permit application, which Thompson confirmed the company did indeed meet. Maria Moreno, a spokeswoman for Enviva Partners LP, however, claimed on Friday, July 12, that Enviva's Southampton plant has been operating in compliance with all terms in the plant's 2015 air quality permit, to include stack testing for air emissions. Stack testing, Thompson confirmed, is another term for emissions testing. Moreno then told *The Tidewater News* that the Enviva Southampton plant's most recent stack compliance report, based on stack testing conducted in April 2019, indicated the plant to be in full compliance with its current air quality permit. This report, she said, was submitted to the DEQ.

Yana Kravtsova — Enviva Partners' vice president of environmental affairs and chief compliance officer — likewise referenced the April 2019 test results on Thursday, July 24, when responding to the allegations made in the first part of this series, which was published in the Wednesday, July 23 edition of *The Tidewater News*. Kravtsova added that the Southampton facility has "never received a notice of violation for the facility."

Thompson, when asked about the April 2019 test results, clarified that the testing Enviva conducted this year had only been for particulate matter and nitrogen oxides, and had not included any results for HAPs or VOCs. As such, these results are "not the same as requested by DEQ in June 2018," she said.

"With regard to HAP emissions," Kravtsova said, "These are not required to be tested per the terms of the

existing permit. However, Enviva has no reason to believe we have ever exceeded any HAP emissions limitations in our SOU permit.”

The vice president then claimed that Enviva’s purpose in informing the DEQ of its expansion plans last summer and committing to install additional air emission controls at the Southampton plant was to “account for the expansion and transition to a higher softwood pellet production.”

“One change we are making across our entire operation is to use a higher percentage of softwood versus hardwood,” she said. “[Softwood] happens to be more energy dense and efficient, which is a win for the environment, and for our customers.”

Kravtsova explained, “The wood pellets the Southampton plant produces are used as a drop-in substitute for coal by utilities around the world. Wood pellets have been found to reduce lifecycle greenhouse gas emissions by roughly 85 percent and reduce the levels of sulfur, lead, arsenic and mercury that coal plants would otherwise have emitted to the atmosphere ... By providing power companies with sustainably-produced wood pellets, we allow them to quickly transition away from coal with minimal changes to their infrastructure. And because utilities can do so quickly and very cost effectively, demand for our product is growing rapidly, and our facilities are growing and changing to meet this demand.”

However, when asked if it would be accurate to say Enviva’s position is that, were the Southampton plant not expanding and/or transitioning to softwood, additional emission controls at the facility would not be needed, Kravtsova did not answer “yes” or “no.” Instead, she issued the following statement:

“To be clear, we have demonstrated compliance with Southampton’s existing air permit consistently throughout its operation, most recently with its compliance stack testing in April. We are confident that the proposed emissions controls associated with the transition to softwood and expansion of the facility will be similarly fully compliant with the plant’s operating profile following their installation.”

Thompson, however, said that the DEQ’s purpose in requiring testing last summer was to determine “if there was/is a problem.” She added, “Had they not come and proposed the expansion, we would have wanted them to do the testing [originally requested].”

Regarding the allegations in the Wednesday, July 23 article concerning a “pattern of underestimation,”

Kravtsova acknowledged that Enviva has made changes periodically to the emissions estimates for its wood pellet plants, in order to “reflect adjustments in our plant operating parameters, such as wood mix and throughput, and to reflect the most recent emissions data from our facilities, so as to ensure continued compliance under the law and the permit being a minor source of emissions under the Clean Air Act.”

Asked where Enviva gets its “most recent emissions data,” particularly for facilities such as Southampton whose current permits do not require HAP testing, and what circumstances — absent any HAP test results — would prompt Enviva to change its emissions estimates, Kravtsova issued the following statement:

“Environmental stewardship is the core of our business and informs everything we do at Enviva. At all of our facilities, we always seek to operate in full compliance with all laws and regulations, at the local, state and federal levels. We have a culture of continuous improvement at Enviva and perform periodic testing as required under the applicable permits at our facilities. We use that test data to inform and improve our processes company-wide. This includes periodically updating emission factors under the permits to reflect the most recent emissions data from our facilities or changes in operating parameters such as wood mix or throughput. From the day we commenced operations, our Southampton facility has consistently demonstrated compliance with the terms of its existing permit.”

“After the currently-proposed permit is issued and the control technology is installed, Southampton will be among the most, if not the most, stringently-controlled wood pellet manufacturing facilities in the world,” Kravtsova said. “It will also be subject to strict testing and reporting requirements to ensure our continued compliance with the Clean Air Act. We are proud to be an industry leader in environmental stewardship in air emissions controls, as in other areas of our business.”

Enviva accelerated expansion timeline?
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[This is the third of a multi-part series. The fourth part investigates a claim that Enviva has already tested for HAP and VOC emissions.]

According to Patrick Anderson, legal counsel for the Environmental Integrity Project — a Washington, D.C.-based nonprofit organization that advocates for enforcement of environmental laws — the EIP, along with four other community and environmental groups, first brought concerns regarding Enviva Southampton's emissions to the attention of Virginia's state government in April 2018 via a letter to Gov. Ralph Northam. Anderson told the newspaper he was "positive" that it was this letter that had prompted the Virginia Department of Environmental Quality's June 12, 2018, notice to Enviva asking for emissions testing at the Southampton facility. Tamera Thompson, manager of the DEQ's Office of Air Permit Programs, confirmed that the DEQ had been copied on this letter, but said that the letter was not the only source suggesting that the Southampton County pellet plant might be over-polluting.

"Sources throughout the southeast have shown emissions [at wood pellet plants] should be higher than what was previously thought," Thompson said.

The attorney confirmed that his Decatur, Georgia-based firm, Powell Environmental Law, did not, as of June 25, 2019, have "concrete evidence" that Enviva Southampton's decision to go public in December 2018 with its plans for expansion had been the direct result of the DEQ's June 12, 2018, letter. However, the DEQ's Sept. 30, 2018, deadline for Enviva to submit a "substantially complete permit application" to the agency for the Southampton facility's expansion, Anderson said, suggests that even though the company claimed in July 2018 that its plans to expand the Southampton facility were in the works prior to its receipt of the DEQ's June 12, 2018 letter, that document may have forced the company to move up its timeline for implementing the expansion.

"DEQ has put them [Enviva Southampton] on a pretty tight timeline in exchange for letting them off the hook for testing," Anderson said. "That sort of timeline is not typical in air permitting."

"It was a little quick, actually," Thompson confirmed. "Normally, it takes a little bit longer than that. They [Enviva Southampton] understood they were under a deadline and it was a very important issue for us to get [pollution] controls on as soon as possible."

Also atypical, according to Anderson, is the fact that Enviva Partners LP went public with its plans for expansion in Southampton County only after Enviva Southampton had already met the Sept. 30 DEQ application deadline.

"As a publicly traded company, Enviva typically informs investors well in advance of planned expansions and well before applying for air permits," Anderson said. "For instance, Enviva planned for a 2019 expansion of the Enviva Sampson plant [in Sampson County, North Carolina] as early as 2016 ... and only submitted an air permit application in March of 2018. Likewise, Enviva has told investors about plans to expand the Enviva Greenwood plant in South Carolina since February 2018 ... but to date, Enviva has still not applied for the necessary permit for that plant.

"I'm not a financial guy, but my sense is Enviva wants to boast about potential expansions to investors as early as possible, so it's odd that they waited in this instance until after submitting the air permit application and telling [DEQ] they had 'immediate plans to expand' the plant on July 2, 2018."

Thompson made one statement that potentially corroborates Enviva Southampton's claim that expansion plans were in the works prior to the plant's receipt of the DEQ's June 2018, letter. Asked to speculate on why Enviva Southampton agreed in 2014 and again in 2015 to volatile organic compound (VOC) limits that put the facility well above the Title V threshold, she said, "I can't say exactly but my guess would be a desire to increase production or to give themselves some breathing room to make sure they were under their limits ... the emission factors associated with trees can vary greatly depending on multiple factors, and the higher number

would allow them [Enviva Southampton] to account for some of that variation without being concerned about going over their limits.”

However, Thompson also confirmed that the DEQ had not received “anything in writing” from Enviva Southampton prior to July 2018 suggesting that the company would be expanding its operation. She added that it was Enviva Southampton which had requested the meeting with DEQ Director David Paylor in July 2018, the purpose of which she said was for Enviva to “inform us of their intent to expand the facility.”

“This [meeting] was a result of the June letter sent by DEQ,” Thompson said.

Yana Kravtsova — vice president of environmental affairs and chief compliance officer for Enviva Partners LP, the parent company of Enviva Southampton — claimed on Thursday, July 25, that Enviva “has been planning for the transition to higher softwood pellet production and expansion of the Southampton plant since 2017.” Then, on Friday, July 26, the vice president added, “In 2016 and 2017, we began to consider plans for an expansion of Southampton and its sister facility in Northampton [County], North Carolina, as well as other existing facilities, and began a planning process involving conceptual and detailed engineering and design work, supply chain analysis, cost evaluation and numerous other factors.” However, she confirmed Thompson’s assertion that the company had waited until the summer of 2018 to inform the DEQ of its plans.

A shift from hardwood to softwood requires regulatory approval, as does expanding production, Kravtsova explained. Decisions such as these, she said, require “careful planning and years of development.” Asked why Enviva — if it had been planning to expand the Southampton plant since 2016 or 2017 — chose to wait until mid-2018 before beginning the regulatory approval process for said expansion, Kravtsova said that this was when Enviva “reached a stage where we had a viable solution” sufficiently detailed to present to the DEQ. This apparently coincided with the DEQ’s June 2018 letter asking for hazardous air pollutant (HAP) and VOC testing at the Southampton facility.

“The timing of our initial engagement with [Virginia’s] DEQ to discuss a permit modification is consistent with their expectations that a permit holder have a concrete proposal of what they want to build before initiating the permitting process,” Kravtsova said.

Asked when Enviva had first notified its investors of the planned expansion in Southampton County, Kravtsova said Enviva’s expansion plans for its Southampton County plant were communicated to investors as part of the company’s “earnings release and investor conference call for the third quarter of 2018, which occurred on Nov. 9, 2018.”

She then disagreed with Anderson’s assertion that this was atypical, stating, “The timing of this was fully consistent with normal and expected practices for public company announcements of projects of this nature and has been part of our ongoing public guidance for Enviva.”

When asked how much of the planned \$75.7 million expansion would go toward new pollution controls versus actually expanding production, Maria Moreno, a spokeswoman for Enviva Partners, said she did not believe this could be broken down, as “one’s related to the other.” Kravtsova, when asked this question, said, “As Enviva scales up to meet growing global demand for the sustainable biomass we produce, we continuously seek ways to increase our production through both process improvements and new capital investments in increased capacity. Our plans for the Southampton facility involve both a capital investment in production equipment and environmental controls and a process change to increase the percentage of softwood used to make our pellets.”

Ann Regn, a spokeswoman for the DEQ, confirmed that her agency is working with Enviva on a new air quality permit that will allow for the Southampton County facility’s expansion, and also require additional air pollution controls. According to Thompson, these controls will include a total of four regenerative thermal oxidizers, as well as other pollution mitigation equipment.

Regarding the DEQ’s arrangement with Enviva to delay the testing requirement in exchange for the company’s incorporating these pollution controls into its planned expansion of the Southampton County plant, Regn said the DEQ’s subsequent discussions with Enviva representatives following the agency’s June 2018 letter revealed Enviva’s “willingness to upgrade/install controls beyond what is currently listed and required by their existing permit.”

“We believe this approach will place restrictions on air pollution based on our analysis and extensive air quality modeling for the area,” Regn said. “We also believe it will fully address the air quality impact of the facility and

provide improved control of air pollution.”

Regn added that the permitting process will include public comments. A public notice advertising an informational meeting regarding Enviva Southampton’s permit process was advertised in the Sunday, July 21, edition of *The Tidewater News*. This meeting will be on Tuesday, Aug. 6, at 6 p.m., in Conference Hall A of the Regional Workforce Development Center at Camp Community College, 100 N. College Drive, Franklin. The stated purpose of the meeting is for DEQ officials to describe the project requested by the permit application and provide information on how the public can comment on the application and proposed draft permit during the upcoming public comment period.

Enviva Southampton testing already completed?
HAP tests from 2013, 2015 cited in permitting for North Carolina plant
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[This is the fourth of a multi-part series. The fifth part investigates a claim that the DEQ required a pollution control device in Enviva Southampton's 2012 permit, but removed this requirement the following year at the company's request.]

COURTLAND

While the Virginia Department of Environmental Quality appears to hold the opinion that Enviva is keeping up its end of the bargain, the Environmental Integrity Project — which sent a letter to Gov. Ralph Northam in April of last year alleging that Enviva Southampton was over-polluting — is still arguing for some type of enforcement action to be taken against the company. When the EIP learned of Enviva Southampton's arrangement with the DEQ to delay the testing requirement for hazardous air pollutants (HAPs) and volatile organic compounds (VOCs) until after the plant's proposed expansion, Patrick Anderson, the EIP's legal counsel, sent another letter on behalf of the nonprofit organization and other environmental groups, this time to the director of the DEQ's Air and Renewable Energy Division, Michael Dowd, on Nov. 5, 2018. This letter states, "Unfortunately, it now appears that DEQ has decided not to require those tests until after Enviva has radically modified the facility, meaning those tests will not reveal what is almost certainly a serious, years-long violation of the Clean Air Act and the facility's permit ... we therefore write to ask that DEQ bring an enforcement action based on existing credible evidence that Enviva Southampton constructed a major source of HAPs without undergoing the appropriate permitting and that the facility has likewise been violating permit limits on individual and total HAPs since it began operations... ."

Anderson's Nov. 5 letter then claims Enviva conducted HAP emission testing on the wood dryer at the Southampton County facility in 2013 before the plant began operations and again in 2015, and therefore either knew or should have known about the alleged excess HAP emissions at that time. As proof of this claim, Anderson provided *The Tidewater News* with a copy of a July 18, 2018, letter from Michael Carbon, managing principal of the consulting firm Ramboll, to Kevin Godwin, a permit engineer with North Carolina's DEQ, which was written on behalf of Enviva Pellets Hamlet LLC in regards to the planned expansion of Enviva's Hamlet, North Carolina plant. This letter, according to Anderson, had been sent in response to the North Carolina DEQ's July 6, 2018, request that Enviva identify what testing the company relied upon to develop its emission estimates for the Hamlet facility.

Attached to this letter is a list of the various Enviva plants the company tested when developing its emissions estimates. Included in this list are references to two tests conducted at the Southampton County facility — one on Dec. 3, 2013, and another on Dec. 1, 2015. Both tests, according to the list, were conducted on the Southampton facility's wood dryer, and both tested for the following pollutants: acrolein, formaldehyde, methanol, phenol and propionaldehyde. The list of pollutants tested in 2015 also includes acetaldehyde. These six pollutants — as Tamera Thompson, manager of the DEQ's Office of Air Permit Programs, previously confirmed — are the most prominent HAPs emitted by wood pellet manufacturing facilities.

Asked to describe the health effects of some of these HAPs, Dr. Dwight Flammia, a state public health toxicologist with the Virginia Department of Health, said acetaldehyde is a plant product and potential human carcinogen that is present in small amounts in fruits and bread. Its most likely health effect, when people are exposed to high concentrations in air, is eye, nose and throat irritation. Benzene, he said, is derived from petroleum. As such, it is found in car exhaust, but burning plant material also produces small amounts of benzene. At lower concentrations, it can cause drowsiness, confusion, dizziness and rapid heart rate. Exposure over a long period of time can cause anemia and is linked to leukemia. Very high concentrations can cause death. Formaldehyde, he said, is found in low levels in plants and animals, as well as many consumer products, including pressed wood, carpets and some personal care products. At low levels, formaldehyde can cause eye,

nose and throat irritation. People exposed at their workplace to very high levels of formaldehyde over years have developed nose and throat cancers. Phenol and propionaldehyde are not considered to be carcinogens. However, short-term exposure to phenol can cause irritation to lungs, headaches and burning eyes. Higher concentrations over several weeks can cause heart, liver, kidney and lung damage, and even paralysis or death in some cases. Short-term exposure to propionaldehyde in studies on animals caused liver damage and increased blood pressure, but no studies about human health are available.

“Anytime you go to the gas station, you’re breathing in benzene,” Flammia said, adding that health effects of each of these chemicals are “dependent on what the individual is exposed to, the length of duration, and route of exposure.”

“That document [sent to the North Carolina DEQ] does not include the results [of the tests at the Southampton plant], nor have we ever been able to obtain the tests or the results,” Anderson said. “Last time I inquired with Virginia DEQ and North Carolina DEQ, around October 2018, neither agency had these tests nor the results, as Enviva never submitted the tests to the agencies.”

What the document does provide for each test at the Southampton facility is an operating production rate and percentage of softwood. For the 2013 test, an operating production rate of 62 oven-dried tons per hour (ODT/hr) is listed. For the 2015 test, 64.3 ODT/hr is listed. The percentage of softwood for each test is listed at 10 percent.

“The operating production rate is the amount of wood being processed by the unit during testing,” Anderson explained. “Because the weight of wood depends on the amount of moisture it contains, and that in turn varies considerably throughout the manufacturing process, the industry uses ‘oven-dried ton,’ or ODT as a consistent baseline to measure weight. ODT is what the wood would weigh if all the moisture were removed.”

The production rate is important in the context of emissions, he explained, because typically emissions are estimated by multiplying the ODT by an emission factor. Emission factors, he said, are estimates for the rate at which a particular pollutant is emitted, in terms of pounds per ODT. The attorney then provided the following example: if a plant produces 500,000 ODTs per year and the emission factor for, say, methanol, is 0.25 pounds per ODT, the plant can be estimated to emit 62.5 tons of methanol per year.

“But without the actual results of the testing, the production rate itself is basically useless,” Anderson said. “One of the main problems with this industry is that there are no industry-standard emissions factors, unlike most other, more established industries ... so the reason why so many plants in this industry have had issues with excess emissions is due to faulty (i.e. low) emission factors that are based on incorrect engineering assumptions or cherry picking from available emission factors.

“For example, one problem we frequently see is that if there are, say, five emission factors available for a particular process, all based on real testing, companies will often select the lowest of the available factors in order to lower projected emissions, without adequate justification. Or they simply invent an emission factor based on ‘engineering judgement’ without a basis in testing, which often turns out to be low.”

According to Thompson, the 1990 amendments to the Clean Air Act task the federal Environmental Protection Agency (EPA) with setting industry-specific standards — either in terms of a numerical emissions limit or requiring a specific pollution control technology — for all pollution source categories that emit a major amount of the 187 HAPs the federal government currently regulates. The EPA, she said, has established 139 different maximum achievable control technology (MACT) standards — meaning best practices for pollution control — for both major and area (minor) sources, including sources as large as power plants and paper mills, and sources as small as dry cleaners. Thompson confirmed that at present, wood pellet manufacturing facilities are not included in the EPA’s list of pollution sources, and therefore, no federal MACT standard exists.

Since Enviva Southampton agreed to air quality permit limits to stay below the federal major source threshold, “DEQ applied the Virginia State Air Toxics regulations [when issuing air quality permits],” she said.

Thompson then confirmed that Enviva had tested the Southampton County facility in 2013 and again in 2015 for VOCs, particulate matter and nitrogen oxides, and had sent the results of those tests to the Virginia DEQ, but had not forwarded any test results for HAPs to the agency.

The VOC, particulate matter and nitrogen oxide test results, she said, indicated that the Southampton County plant was in full compliance with its air quality permit and federal standards for each of these pollutants, both in

terms of its short-term limit measured in pounds per hour, and its annual limit measured in tons per year. When asked why the DEQ requested additional VOC testing in June 2018, given that the 2013 and 2015 tests showed full compliance, Thompson explained that Enviva Southampton had only conducted testing on its wood dryer, as was required by their original permit. However, there are other sources of VOCs at the facility, such as the hammermills, she said, which Enviva's original permit did not require to be tested.

The fact that Enviva Southampton showed neither the 2013 HAP test results, nor the 2015 results to the DEQ following its receipt of the agency's June 2018 letter requiring testing, Anderson added, is what leads him to believe that these results likely showed something other than compliance with state and federal limits for HAPs. Maria Moreno — a spokeswoman for Enviva Partners LP, the parent company of Enviva Southampton — when asked if Enviva had tested its Southampton County plant for HAP and VOC emissions in 2013 and again in 2015, did not answer "yes" or "no." Nor did she provide any figures when asked for the results of these alleged tests in terms of tons per year. Moreno, rather, issued the following statement:

"The Southampton plant has a valid air permit, which was issued in January 2015, and has been operating under and in compliance with all of its terms, including stack testing of the required air emissions. We performed the most recent stack testing in accordance with the requirements of the existing permit in April of this year and our stack compliance report was submitted to VA DEQ and is publicly available from VA DEQ. The test results are fully compliant with the permit and VA DEQ confirmed that in June."

Thompson had previously confirmed that the April 2019 stack test data Enviva submitted for the Southampton County plant had only included results for particulate matter and nitrogen oxides. The April results did not include any figures for HAPs or VOCs, she said, and therefore, are not the same as the testing the DEQ requested in June 2018.

When asked if his firm had been able to obtain test results for any Enviva facilities that showed higher emissions than what the company had reported to its state environmental agency, Anderson said, "Not precisely, because few permits have required testing for HAPs. The closest instance is with regard to Enviva Sampson [in North Carolina], where Enviva eventually conceded that HAP emissions were much higher than originally estimated, but that plant was permitted as a major source for HAPs to begin with, so the higher emissions were not directly relevant to whether the facility was major or minor. That said, North Carolina did take action to require that plant to redo its major source HAP technology review and to install new pollution controls for HAPs."

Pollution controls removed?

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[Editor's note: This is the fifth of a multi-part series on Enviva. The sixth will investigate a claim that no new, permanent jobs will result from the proposed \$75.7M expansion.]

COURTLAND

An April 26, 2018, report titled “Dirty Deception: How the Wood Biomass Industry Skirts the Clean Air Act” — which Patrick Anderson, counsel for the Environmental Integrity Project, co-authored with fellow Powell Environmental Law attorney Keri Powell, and referenced in his firm’s April 2018 letter to Gov. Ralph Northam — alleges that “after the Georgia Biomass testing showed facilities like this could not comply with their synthetic minor limits without additional controls, Enviva found that the Southampton facility was indeed emitting well above 250 tons [of volatile organic compounds] per year.”

“The first plant in the industry to discover higher-than-expected VOC emissions was Georgia Biomass, in Waycross, Georgia, followed closely by Green Circle Bio Energy in Florida, both in late 2012 and early 2013,” Anderson explained when asked about his report’s allegation. “Based on this information, Enviva conducted VOC tests at its Mississippi plant that confirmed the high VOC emissions.”

The testing at an Enviva plant in Mississippi that Anderson references is the same testing consulting engineer Joe Sullivan referenced in his 2013 letter to the DEQ, which requested an air quality permit modification on behalf of Enviva Southampton.

Anderson’s and Powell’s report further alleges that, rather than installing additional control technology to reduce pollution at the Southampton plant, “plant operators actually removed the pollution control equipment to evade upgrade requirements and switched from processing softwood to hardwood... .”

“That statement is the one part of our report that Enviva has corrected us on, although we weren’t off by much,” Anderson said. “As background, when the plant was first permitted, the permit required the use of a regenerative thermal oxidizer (RTO) on the wood dryer, which reduces VOC and HAP (hazardous air pollutant) emissions by 95 percent or more. Additionally, Enviva planned to process mostly softwood [in 2012], which emits higher levels of VOCs than hardwood, but not necessarily high levels of all HAPs.”

After learning of the test results at the Mississippi Enviva plant, Anderson explained, Enviva Southampton opted to switch to hardwood rather than undergo major source permitting. At the same time, the latter plant requested that the DEQ eliminate the requirement of an RTO from its permit. This is confirmed in Sullivan’s 2013 permit application letter to the DEQ, which states, “As part of this permit application, Enviva is requesting removal of the regenerative thermal oxidizer (RTO) and providing a demonstration that thermal oxidation controls are unnecessary... .”

“Enviva believed that, by processing all hardwood, the facility would not need the RTO to reduce VOC emissions to minor source levels,” Anderson explained. “The mistake we made, however, was that at that point, Enviva had not actually installed the RTO, so they really only removed the requirement to install an RTO from the permit.”

The “Dirty Deception” report then stated that, while switching from processing mostly softwood to mostly hardwood “did allow Enviva Southampton to begin complying with the VOC limit ... research and recent testing at other facilities indicates that drying hardwood actually emits certain hazardous air pollutants at higher levels than drying softwood.” It adds that without the RTO requirement, the facility currently is not controlling its hazardous air pollutant emissions in any way.

As previously reported, the proposed \$75.7 million expansion of the Southampton County plant will include transitioning the facility to process a higher percentage of softwood, and the installation of four RTOs, as well as other pollution mitigation equipment.

Also reported before was the fact that — when asked if it would be accurate to say Enviva’s position is that were the Southampton plant not expanding and/or transitioning to softwood, these additional emission controls would not be needed — Yana Kravtsova, vice president of environmental affairs and chief compliance officer

for Enviva Southampton's parent company, Enviva Partners LP, did not answer "yes" or "no." She instead cited stack testing conducted at the Southampton plant this past April, pointing out that these results indicated full compliance with that plant's 2015 DEQ permit.

Tamera Thompson, manager of the DEQ's Office of Air Permit Programs, however, had clarified that the testing Enviva had conducted in April had only been for particulate matter and nitrogen oxides, and had not included any results for HAPs or VOCs.

Thompson had also added that if Enviva had not proposed the expansion in the summer of 2018 following the DEQ's initial request in June 2018 for site-specific HAP and VOC testing at the Southampton facility, the DEQ would have wanted the company to do the testing the agency had originally requested. As a result of the expansion, the DEQ allowed Enviva to delay testing until the expansion was completed and new pollution controls were installed.

Anderson's Nov. 5, 2018, letter to the DEQ concludes by alleging that if Enviva's Southampton plant is allowed to delay testing until its expansion is complete, the facility will continue to release "massive amounts of harmful and unlawful HAPs into the neighboring community of Franklin, Virginia," for at least two more years. His letter then estimated that "based on conservative estimates from 11 sets of stack testing at wood pellet mills across a wide range of hardwood/softwood mixes" the Enviva Southampton plant has "the potential to emit at least 46 tons of HAPs per year — almost double the legal limit... ."

"These unlawful HAP emissions have not occurred in a vacuum. The Southampton facility is located less than three miles from Franklin, Virginia's elementary, middle and high schools," Anderson writes. "Additionally, the residential neighborhoods of Franklin located closest to the Enviva Southampton — just two miles to the east of the facility — are predominantly low-income and minority communities, ranking in the 96th and 98th percentile nationally for environmental justice indicators. As the Commonwealth of Virginia has recognized, such communities should not 'bear disproportionately high or adverse effects from pollution.'"

To ascertain whether locals consider Enviva's alleged pollution to be a problem, *The Tidewater News* attempted to speak with residents living in proximity to the Enviva Southampton plant on the evening of Wednesday, July 24. Few appeared to be home that evening, but Robin May, Mason Britt and Darryl Bradshaw — all of whom live on Dogwood Bend, which is just outside Franklin's city limits and less than a mile from the Enviva Southampton plant — said they had experienced no issues with air quality or any health problems attributable to living near the plant.

No new jobs from Enviva expansion?

Cost estimates suggest more than half of \$75.7M will go toward pollution control

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[Editor's note: This is the sixth of a multi-part series on the Enviva Southampton plant.]

COURTLAND

No new, permanent jobs are expected to result from Enviva's proposed \$75.7 million expansion in Southampton County.

According to a copy of Southampton County's performance agreement with Enviva — which Enviva and county representatives signed in May 2019 — the company “proposes that the project will result in an investment in equipment of not less than seventy-five million seven hundred thousand dollars (\$75,700,000) within the performance period... .” The “performance period” is five years. In return, the county proposes to provide an annual economic incentive grant to Enviva for those five years, equivalent to a 50 percent reduction in the plant's machinery and tools taxes. The value of this incentive grant is projected to total \$2,725,200 at the end of the five-year period. This agreement is signed by Chris Tynan, Enviva's vice president of expansion projects; Dallas Jones, Chairman of the county's Board of Supervisors; and A. Ashburn Cutchin III, chairman of the county's Industrial Development Authority.

An “investment in equipment of not less than” \$75.7 million would seem to indicate that the expansion of the Southampton County plant will consist solely of new equipment, including new pollution controls, rather than the creation of any new, permanent jobs. Southampton County Administrator Mike Johnson confirmed this to be an accurate reading of the grant agreement, and that the benefit to the county would consist solely of new taxable machinery assets.

When asked about Enviva Southampton's economic impact on the county to date, he said Enviva has been among the county's largest taxpayers each year. In fiscal year 2019, tax revenues the county received from Enviva accounted for almost 4 percent of the total collected by the county in general property tax revenues. “That's equivalent to almost 6 cents on the county's real estate tax rate,” Johnson said.

When asked about the lack of new, permanent jobs related to the expansion, Patrick Anderson, legal counsel for the Environmental Integrity Project, said, “That's somewhat surprising to me. They are adding a fair amount of new equipment so I would have expected at least some new staff, but these plants do seem to be pretty automated, with a lot of staff monitoring and adjusting operations from control rooms.”

Anderson, as previously reported, had sent a letter to Gov. Ralph Northam in April of last year on behalf of the EIP and other environmental groups, alleging that Enviva Southampton was over-polluting. This letter was one of several sources of information the Virginia Department of Environmental Quality relied on when sending a letter to Enviva Southampton in June 2018 asking for site-specific testing for hazardous air pollutants (HAPs) and volatile organic compounds (VOCs).

Enviva's expansions in other localities seem to mostly involve adding duplicates of existing units, such as a second wood dryer, Anderson explained, “so perhaps the staff that runs the existing wood dryer will be capable of running both.”

But as to whether this is atypical for the wood pellet industry or something that might suggest the focus of this expansion is more on pollution mitigation than actually expanding production, he couldn't say.

“Unfortunately, I don't really have jobs numbers from other recent expansions in the industry, so I'm not sure how it compares to other companies,” Anderson said.

He added that the company Drax — which purchases much of Enviva's feedstock and operates three of its own wood pellet plants, two in Louisiana and one in Mississippi — recently announced those plants would be expanding.

“I haven't seen anything about new jobs [in those cases], however,” he said.

Franklin City Manager Amanda Jarratt had told *The Tidewater News* in December last year — when she had been serving in her previous capacity as president and CEO of Franklin-Southampton Economic Development Inc. — that FSEDI was expecting about 300 jobs related to construction during the expansion process, as well

as some retraining of the current workforce.

Barry Porter, who represents the Franklin District (in which the plant is located) on Southampton County's Board of Supervisors, said that when he first heard of Enviva's expansion plans in December 2018, he had considered it "a very positive announcement" because "it showed they were more committed to the area and were going to make a significant investment, which was going to increase our tax base."

Porter, who was first elected to the Board in November 2011 and took office in 2012 before the Enviva Southampton plant began operations, recalled that Enviva had placed money into a bank account under the control of Southampton County for the purpose of extending a natural gas pipeline up General Thomas Highway to the plant's location on Rose Valley Road. This, he recalled, would have been used to power machinery for drying softwood. These plans fell through when, in 2013, Enviva decided to process mostly hardwood at the Southampton facility for the reasons reported in the Wednesday, July 23 edition of *The Tidewater News*. Porter said that Enviva, following its December 2018 expansion announcement, requested the release of these funds. Johnson confirmed that as of May 22, 2019, Enviva and the county reached an agreement to release these funds, which as of that date totaled \$428,913.46, so that the Southampton plant can finally complete the proposed pipeline now that the plan is to increase its production of softwood. The county's 2019 gas line reimbursement agreement with Enviva specifies that Columbia Gas of Virginia will install roughly 4,240 feet of mainline along Rose Valley Road and Enviva Way to serve Enviva at the proposed meter location just west of the end of Enviva Way.

The cost of clean air

When asked to provide a breakdown of the \$75.7 million expansion in terms of what would be spent on new pollution controls versus what would be spent on expanding production, Maria Moreno, spokeswoman with Enviva's corporate office, had said she did not believe this could be broken down, claiming that one was related to the other. However, consulting engineer Joe Sullivan's 2013 letter to the DEQ on behalf of Enviva Southampton — which was last referenced in the Wednesday, Aug. 7 edition of *The Tidewater News* — had included cost estimates when requesting that Enviva Southampton's air quality permit issued in 2012 be revised to no longer include a regenerative thermal oxidizer (RTO) requirement for pollution control. This letter had claimed, "The economic impacts associated with RTO control are clearly cost prohibitive."

To support this claim, Sullivan had provided estimates from Enviva for the purchase, installation and annual operation of three RTO units. These estimates indicate the company would have needed to invest roughly \$12.2 million upfront to purchase and install the three units, plus an additional \$4.7 million each year to power and maintain the devices.

This would have equated to an investment of roughly \$35.8 million over a five-year period had Enviva chosen to purchase and install the three RTOs in 2013 rather than switch to hardwood and eliminate the RTO requirement. This estimate — which does not include any additional equipment other than the RTOs, or any planned increase in production — is already nearly half of the proposed \$75.7 million expansion announced in 2018.

The \$75.7 million expansion will also be over a five-year period, as indicated in Enviva Southampton's economic incentive agreement with Southampton County. Therefore, assuming the 2013 cost estimates were and still are accurate — and given that the proposed DEQ permit for the \$75.7 million expansion calls for not three but four RTOs, plus additional pollution control equipment — it appears likely that more than half of the \$75.7 million Enviva plans to spend in Southampton County over the next five years will go toward pollution control rather than increasing production.

Anderson, however, advised caution in using Enviva Southampton's 2013 cost estimates to predict what the company will spend on pollution control during the expansion, which is slated to begin once Enviva Southampton's 2019 DEQ permit is finalized. The attorney explained that in situations like the one from 2013, where Enviva is arguing against the necessity of pollution controls, it is almost always in the company's interest to inflate pollution control costs when communicating with the DEQ. That agency's decision on whether to require a plant to implement pollution controls, Anderson said, "frequently comes down to cost."

That said, a 2014 air quality permit application for the expansion of an Enviva plant in Hamlet, North Carolina, indicates that at least some of the company's 2013 cost estimates for Enviva Southampton are comparable to

what was submitted to North Carolina's DEQ for the Enviva Hamlet expansion.

In 2013, Sullivan had estimated the cost of installing an RTO on Enviva Southamptom's hammermills to be about \$4.16 million for purchase and installation, plus an additional \$1.53 million annually for operating costs. By comparison, according to the North Carolina DEQ application, Enviva Hamlet estimated the cost of an RTO on that facility's hammermills to be about \$4.26 million for the initial purchase, installation and startup, plus another \$1.58 annually in operating costs. Additional price comparisons between Enviva Southamptom's 2013 figures and Enviva Hamlet's 2014 figures were not possible, as the other pollution controls planned for Enviva Hamlet in 2014 are different than what was priced out for Southamptom in 2013.

Even if more than half of the \$75.7 million is spent on pollution control, there may still be some increased production. At the Virginia DEQ's public information meeting on Tuesday evening, Stanley Faggert, a DEQ air permit coordinator, said that Enviva's proposed expansion included plans to increase production from 535,000 tons of wood pellets per year to about 781,000 tons per year and increasing the plant's use of softwood from 10 percent to 80 percent. To do this, in addition to installing the aforementioned pollution controls, Enviva plans to install a second wood dryer and green wood hammermills. The green wood hammermills, he said, would take the place of a machine that is used to tear up logs before they are loaded into the wood dryer.

Faggert, however, said the DEQ was uncertain whether Enviva would follow through with its plans for a second wood dryer. When asked about this uncertainty, he explained that the proposed air quality permit for the expansion does not require Enviva to install a second dryer. The permit, he said, requires pollution controls to be implemented on the plant's existing processes. One of the RTOs would be installed on the new dryer and green hammermills, Faggert said, with the other three going on the existing dryer, hammermills and pellet cooler.

"If they [Enviva Southamptom] decide in based on market conditions in three to six months that maybe they don't really need to go to 781 [tons per year] or can go without that second dryer, that is their decision to make," he said. "We don't try to drive those kind of decisions."

Heather Hillaker, an attorney with the Southern Environmental Law Center, also asked at this meeting if Enviva would be allowed to increase production before completing the installation of the new pollution controls, to which Faggert replied that they would not. He added that while the new pollution controls are projected to decrease HAP and VOC emissions, the devices themselves emit some pollution and are projected to cause the facility's carbon monoxide, sulfur dioxide, particulate matter (PM 10) and nitrogen oxides to increase, which is why these emissions are allowed at a higher level in the draft permit than the current limits.

The DEQ's timeline for issuing Enviva a new permit for the expansion, Faggert said, is dependent on how many responses the agency receives during the public comment period, which will be from Aug. 12 through Sept. 27 of this year. The DEQ's public hearing for oral comments will be Sept. 12 at Camp Community College.

Correction: In the story titled "No new jobs from Enviva expansion?" published on Sunday, Aug. 11, it was reported that more than half of Enviva's \$75.7 million expansion in Southamptom County was likely to be spent on pollution control. This was based on upfront and annual cost estimates prepared by consulting engineer Joe Sullivan for Enviva Southamptom in 2013, multiplying the annual cost over a five-year period.

While Southamptom County's economic incentive grant, equivalent to a 50-percent reduction in machinery and tools taxes, is for a five-year period, the county's performance agreement with Enviva actually specifies that the \$75.7 million expansion is to be completed within 36 months (three years) from when it was signed in May 2019, assuming no unforeseen delays. When Sullivan's 2013 cost estimates for three regenerative thermal oxidizers (RTOs) are applied over a three-year period rather than five, the total cost would be \$14,166,183, or roughly 18.7 percent of the proposed \$75.7 million expansion. Factoring in a fourth RTO with a cost of \$5,638,380 and a \$10,530,654 cost for a second wet electrostatic precipitator (one of the other pollution controls Enviva will be required to install as part of its expansion), this would bring the total pollution control component of the three-year investment at Southamptom to \$30,335,217, which would be about 40 percent of the \$75.7 million total investment. This is based on what Enviva reported as the upfront and annual costs of a wet ESP for a plant in Hamlet, North Carolina in 2014, with the annual costs multiplied over three years. According to the Virginia Department of Environmental Quality, Enviva Southamptom will also be required to

install two wet scrubbers as part of its expansion. *The Tidewater News* has no cost estimates for wet scrubbers, and so the amount of the \$75.7 million devoted to pollution control may still be close to 50 percent. DEQ representatives have confirmed that Enviva would be required to add pollution controls whether or not the plant was expanding, and, as was reported on Sunday, have cast doubt on whether Enviva will follow through with its plans to install a second wood dryer and/or actually increase production to 781 tons per year.