

**Community-Scale Monitoring to Measure Ambient Concentrations of Ethylene Oxide (EtO)
in the North Charleston Area, South Carolina**

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Requested Funding: **\$261,128**
Total Project Cost: **\$261,128**
Project Period: 2 years (01/02/2021-01/02/2023)
DUNS Number: 80 8385892

Narrative Proposal Work-Plan

1. Project Summary and Approach (35 points):

A. (22 points) Includes a well-conceived strategy for addressing the requirements in Section I, Parts B (Scope of Work), and C (EPA Strategic Plan Linkage and Anticipated Outcomes/Outputs).

South Carolina Department of Health and Environmental Control, Environmental Affairs (SCDHEC) proposes to conduct Community-Scale sampling to measure ambient concentrations of ethylene oxide (EtO) in several Environmental Justice (EJ) communities in the North Charleston area.

The objectives of this project are to:

- Measure EtO concentrations in the ambient air in the North Charleston area which has contributions from stationary and mobile sources;
- Measure ambient concentrations at a location with a high traffic pattern and no known EtO stationary sources;
- Measure community concentrations at locations upwind and downwind of a known EtO source; and
- Compare EtO concentrations to previous sampling results.

This proposed project will be in alignment with the Environmental Protection Agency's (EPA) strategic plan goals of: 1) **a cleaner, healthier environment** by measuring the actual concentration of EtO in the community; 2) **more effective partnerships** by sharing sampling data from this study with the EPA, other states, local communities, and other stakeholders; and 3) **greater certainty, compliance, and effectiveness** by measuring actual ambient EtO concentrations as it relates to the revised risk factor. In addition, this project supports SCDHEC's Vision of "healthy people living in healthy communities," and SCDHEC's strategies of Science in Action, Leadership and Collaboration, Service and Accessibility, Operational Excellence, and Education and Engagement. The three priorities for Environmental Affairs of SCDHEC for 2020 are collaborative partnerships, environment justice (EJ)/community engagement, and sustainable funding. This project will expand SCDHEC's existing partnerships with the EJ communities in the North Charleston area and provide the necessary funding to complement a broader sampling project started in 2019 to help address questions and concerns raised by the communities. The focus of this project will be solely concentrated in the North Charleston area. Also, the EPA has identified EtO as an air toxic of particular interest.

The outputs from this project will be to:

- Make EtO data available to the EPA using the Air Quality System Database (AQS);
- Post information regarding sampling on the SCDHEC hosted National Air Toxics Assessment (NATA) and EtO webpage;
- Provide midpoint and final reports; and
- Host community meetings and develop outreach materials for the public.
- Provide quarterly progress reports to the EPA no later than 45 days after the end of each calendar quarter

The outcomes from this project will be to:

Short-term

- Increase community and stakeholder awareness of EtO ambient concentrations in North Charleston Area; and
- Develop a baseline EtO concentration in the study area by conducting ambient air sampling.

Mid-term

- Provide additional data for the EPA's national effort to understand EtO ambient concentrations; and
- Keep communities and other stakeholders abreast of new information.

Long-term

- Maintain historical strong relationships with the North Charleston community;
- Educate the public, communities, and other stakeholders about EtO; and
- Evaluate seasonal and locational variation of EtO concentrations in the study area.

The EPA updated the EtO's risk factor in the Integrated Risk Information System (IRIS) in 2016. Using this updated factor, the NATA released in August 2018, identified a calculated increased cancer risk for EtO across the United States. As a result, two census tracts in the North Charleston area were identified as having a greater than 100-in-1 million cancer risk (see Figure 1).

There is limited data regarding EtO concentrations in ambient air throughout the nation. Initial sampling conducted by SCDHEC in 2019 shows a wide range of EtO concentrations in different locations across the state.

Given EPA's increased risk factor, South Carolina needs to better understand the actual ambient EtO concentrations in the North Charleston area. These sampling results will also be evaluated in conjunction with data from the National Air Toxics Trends Station (NATTS) located in Chesterfield, SC. The initial sampling results conducted in 2019 and 2020 are shown in Table 1 below.

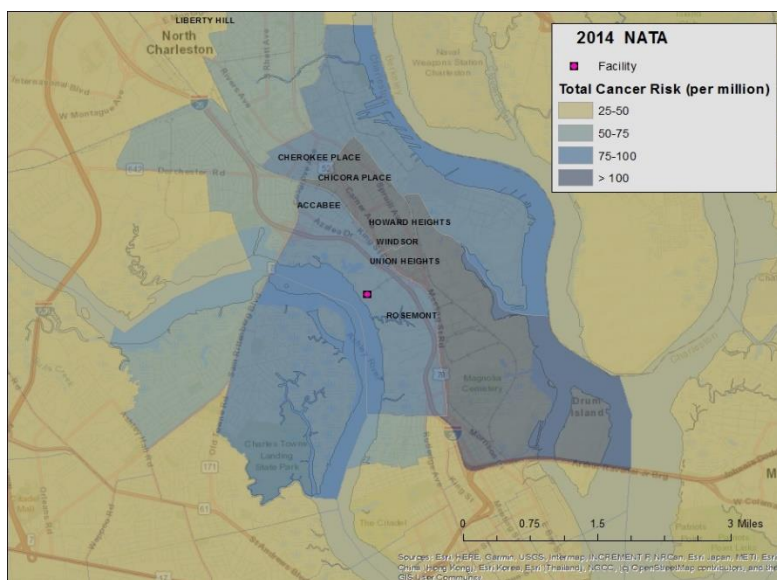


Figure 1 – Calculated Cancer Risk in North Charleston Communities

Table 1: Initial EtO 24-hr Sampling

County	Location	Site Description	2019 Results (µg/m ³)	2020 Results (µg/m ³)
Chesterfield	National Air Toxics Trend Site (NATTS)	Rural	0.18	*
Charleston	Cape Romain (Class I Area)	Background	ND (≤0.0452)	*
Spartanburg	Croft Fire Station	Industrial (multiple EtO sources)	0.14	*
Spartanburg	Arkwright/ ReGenesis Community	Community near multiple EtO sources	0.14	*
Charleston	Gussie Green Community Center (across interstate)	Community near EtO source	0.05	E
Charleston	Rosemont Park	Community near EtO source	0.16	E

ND – Non-Detect

E – Sampling Error Occurred

* – Results Pending

SCDHEC has a long-standing relationship with the communities in the North Charleston area. SCDHEC has partnered with various groups in the Charleston area to conduct monitoring and sampling of various pollutants. In 2009, SCDHEC worked with EPA to participate in the Assessing Outdoor Air Near Schools project. Chicora Elementary in North Charleston was selected as one of the 63 priority schools in 22 states. SCDHEC has also partnered with the South Carolina Ports Authority and various community groups to monitor and better understand the impact of mobile sources and air quality in the North Charleston area.

Since the 2014 NATA was released in 2018, SCDHEC has met with the North Charleston communities three times regarding EtO and its calculated risk in NATA. In these meetings, SCDHEC showed the NATA maps with the two census tracts with greater than 100-in-1 million cancer risk, explained how the NATA results were calculated, explained how SCDHEC regulates air toxics, explained the status of federal rules geared at reducing EtO emissions nationwide, shared the results from the initial round of statewide EtO sampling, explained the sampling process and equipment used, and answered questions and addressed concerns from the community. Representatives from the EPA Region 4 office participated in one of the meetings with the community.

B. (13 points) Sets forth a reasonable time schedule for the execution of the tasks associated with the project and for achieving the project goals and objectives by project end.

The project timeline will include:

- Three months for study preparation, including but not limited to, Quality Assurance Project Plan (QAPP) and Standard Operating Procedures (SOP) development and approval, staff hiring and training, and procurement of services;
- Twelve months to conduct sampling every six days; and
- Four months for project completion, community engagement, and final report development.

Timeline

Task	Grant Year 1				Grant Year 2			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Pre-sampling meetings								
Procurement								
QAPP								
SOPs								
Hiring and Training								
Sampling								
Community meetings/updates								
Grant Reports								

2. Environmental Results – Outputs, Outcomes and Performance Measures (15 Points)

A. (7 points) The effectiveness of the applicant’s plan for tracking and measuring its progress toward achieving the expected project outputs and outcomes, including those identified in Section I of this announcement.

The following steps and tools will be used to track and measure the effectiveness of this project:

- Upload data to Air Quality System Database (AQS) within 60 days after the results are released from the contract laboratory;
- Obtain feedback from community meetings using questionnaires or evaluations;
- Evaluate hits to the NATA and EtO webpage after EtO data and outreach materials are posted on the website; and
- Respond and track inquiries from the public and media outlets received from the NATA and EtO webpage and meeting announcements.

SCDHEC has emission inventory information for identifying EtO emitting sources, their emission levels, and past trends in emissions. This information, along with analysis of the local meteorology, air dispersion modeling, and population data, will be used to identify appropriate sampling sites to meet the project objectives. Existing sampling procedures will ensure sampling is done appropriately and to meet the developed schedule. SCDHEC will continue to have discussions with other states and the EPA to develop similar sampling programs and share information sampling protocols, QAPPs, and other components of an effective sampling program.

B. (8 points) The performance measures proposed by the applicant and how they will be used to help track and measure the applicant’s progress toward achieving the expected outputs and outcomes.

The performance measures will include the:

- Completion and approval of the QAPP and SOP for EtO sampling;
- Collection of EtO sampling data over a period of one year;
- Timely execution of the proposed sampling schedule;
- Pre-sampling community meeting to discuss sampling plan and establish final sampling locations;
- Mid-point community meeting or update to report progress of the project;
- Final community meeting(s) to present and explain sampling results;
- Timely submission of the proposed deliverables to the EPA (reports); and
- Timely and efficient expenditure of funds.

3. Programmatic Capability and Past performance (20 points)

A. (5 points) Past performance in successfully completing and managing the assistance agreements identified in the project narrative as described in Section IV.C of the announcement.

The SCDHEC has worked closely with the EPA on several active monitoring grants. The Section 105 grant has successfully funded a portion of SCDHEC's ambient air quality monitoring network. The Section 103 PM_{2.5} and NATTS grants are also a success with mutual benefits to the state's monitoring program. Other grant programs successfully administered by SCDHEC include the State and National Diesel Emission Reduction Act (DERA) grants as well as the Radon Program. The Air Program has been very careful in assessing the commitments to be made in these agreements and has carried out those commitments successfully, including the tracking and management of funds provided. All of these grant programs have been closely reviewed by the EPA and SCDHEC continues to meet or exceed its commitments.

B. (5 points) History of meeting the reporting requirements under the assistance agreements identified in the project narrative as described in Section IV.C. of the announcement, including whether the applicant submitted acceptable final technical reports under those agreements and the extent to which the applicant adequately and timely reported on their progress toward achieving the expected outputs and outcomes under those agreements and if such progress was not being made whether the applicant adequately reported why not.

Regarding the administration of the grants listed in section 3.A. above, there is a history of SCDHEC routinely meeting grant commitments and the proper use of associated grant funds. Some examples are included here. On February 23, 2020, SCDHEC received an email and FY19 End of Year Acceptance Letter from the EPA stating the following "The Environmental Protection Agency found that your agency has met or will be addressing all of your commitments" regarding the Section 105 Air Pollution Control Grant. Also, on February 14, 2020, SCDHEC received an email from the EPA regarding the NATTS grant stating "Thank you for submitting the updated quarterly reports. I approve them as meeting the terms and conditions of your grant." Additionally, the EPA has awarded SCDHEC with three competitive National DERA grants in 2012 (\$2.17 million), 2016 (\$1.5 million), and 2019 (\$2.0 million) which illustrates that EPA has confidence in SCDHEC's abilities to administer large grants. These grants were awarded in addition to the state DERA allocations. Many SCDHEC programs have demonstrated their ability to meet grant commitments in a timely manner and practice responsible financial stewardship.

C. (5 points) Organizational experience and plan for timely and successfully achieving the objectives of the proposed project.

SCDHEC is tasked with ensuring South Carolina is meeting all the National Ambient Air Quality Standards (NAAQS) for Particulate Matter, Ozone, Sulfur Dioxide, Carbon Monoxide, Lead and Nitrogen Dioxide. To that end, SCDHEC operates an ambient air quality monitoring network with 28 sites containing 81 monitors/samplers across the state. SCDHEC has extensive experience operating this network in various configurations since the 1960's. Further, SCDHEC has operated various air toxics monitor programs, including a rural NATTS in Chesterfield county since June 2003 and the Assessing Outdoor Air Near Schools project at Chicora Elementary in North Charleston in 2009. The NATTS in Chesterfield was first established utilizing similar community-

based air toxics grant funding. SCDHEC's ability to operate a sampling program like this proposed project is well established.

D. (5 points) Staff expertise and qualifications, staff knowledge, and resources or the ability to obtain them, to successfully achieve the goals of the proposed project.

SCDHEC has the organizational structure and qualified staff required to manage the proposed community-scale EtO ambient sampling project, track timely completion of grant-funded activities and required reports, and ensure that project results are shared with the North Charleston community and other stakeholders. The following areas within SCDHEC will participate in this project:

- SCDHEC – Environmental Affairs (EA). The Director of Environmental Affairs has over 30 years of environmental experience, including many years as Chief of the Bureau of Air Quality, and a strong passion for community engagement and EJ.
- SCDHEC – Bureau of Air Quality (BAQ). Senior management has nearly 30 years of experience in air quality and grant management, air toxics programs, and working with EJ communities.
- SCDHEC – Bureau of Air Quality (BAQ). Meteorology and modeling staff have over 30 years of meteorology, air quality modeling, and ambient air monitoring experience. These personnel have performed work involving ongoing air quality analyses for both criteria and toxic air pollutants related to various permit-related work as well as for State Implementation Plans, enforcement actions, and special studies.
- SCDHEC – Bureau of Environmental Health Services (BEHS) - Air Laboratory. The Air Laboratory has been conducting air quality analysis, building expertise, and administering monitoring grants over the last 40 years. The Air Laboratory management and staff have a well-established working relationship with colleagues in EPA Region 4.
- SCDHEC - Community Engagement Team. SCDHEC has dedicated staff that routinely engage with communities and citizens. This nationally recognized program has been in place for many years and has a long standing, well established relationship with the North Charleston community and its leadership. The community engagement team will also be responsible for posting sampling information, updating the NATA and EtO webpage, and maintaining social media information.

In addition to the areas listed above, which will provide the technical expertise and direct experience required to manage federally funded projects effectively, SCDHEC also has finance, accounting, budgeting, human resources, and information technology staff who support project activities and are committed to comply with all federal grant agreement requirements.

4. Budget (10 points)

A. (5 points) The extent and quality to which costs are reasonable to accomplish the proposed goals, objectives, and measurable environmental outcomes.

Budget Item	Budget Amount
<p>Personnel: Project Manager/Sample Collector (full-time)– 1950 hours per year. Oversee the daily project activities including coordination with the EPA contract laboratory for sample canister receipt and shipment, track data from sample collection to reporting to ensure results are being received from the contract laboratory, review data completeness and report to management throughout the project, travel to the sites for sample placement and collection, prepare reports for management and EPA, track and ensure Data Quality Objectives (DQOs) are being met, work with management to make decisions on missed samples and technical issues that arise during the sampling period.</p> <p>Outreach Coordinator (5% of existing full-time position) - Update the NATA and EtO webpage and develop social media posts.</p> <p>Public Participation Coordinator (10% of existing full-time position) - Plan and coordinate community meetings and updates and outreach materials.</p>	\$159,107 (includes fringe and indirect rates)
<p>Contractual – Contract lab analysis of samples Sample 1 in 6 days per EPA sampling calendar = 32 samples/site 5 samples (4 sites plus 1 collocated sampler) x 32 samples = 160 samples analyzed 160 x \$186/per sample = \$29,760 Charge for use of timers 5 canisters x \$100/month x 3 months = \$1,500</p>	\$62,520
<p>Supplies– Computer, canister stands, and security for sampling Laptop - \$1,349 (includes accessories) Canister stands – 6 x \$350/per stand = \$2,100 Chains and Locks to secure sampling equipment - \$100 Lab Supplies - \$200</p>	\$3,749
<p>Other EA Rate (17.50% x \$47,950) This is the rate for administrative support functions for the cost of leases, telephones, and overhead utility costs. The rate is determined annually and is assessed against personnel salaries. For 2 years</p>	\$16,782
<p>Travel – (Meals, Lodging, Fuel)</p>	\$18,970 (weekly trips to Charleston)
Total	\$261,128

B. (5 points) The extent and quality to which the proposed budget provides a detailed breakout of the approximate funding used for each major activity.

SCDHEC plans to hire two temporary staff (project manager/sample collector) to perform the majority of the activities related to this proposed project. SCDHEC also plans to utilize existing staff (EA’s Outreach Coordinator and BAQ’s Public Participation Coordinator) to educate the

general public and to engage directly with the communities in the North Charleston area about EtO concentrations. See above table for each position description.

SCDHEC will use SUMMA canisters to conduct the EtO sampling. The samples will be analyzed using EPA Method TO-15. Five sampling sites will be determined based on the project objectives above. The sampling will take place at a frequency of 1 in 6 days in accordance with the EPA sampling calendar. SCDHEC plans to use Eastern Research Group, Inc. (ERG) as its contract laboratory. See budget table above for more information regarding the proposed sampling costs.

The personnel costs above include fringe and indirect costs. Other costs associated with personnel, including travel, supplies, and equipment, are also outlined in the budget table above.

5. Expenditure of Awarded Grant Funds (5 points).

SCDHEC will provide dedicated financial staff to assure that strict purchasing, contract, and grant expenditure requirements are followed in the administration of the project. SCDHEC maintains an operating budget with regular forecasts and updates it to ensure efficient, effective, and timely expenditure of grants and other funds. All contractors will be required to enter into detailed agreements/contracts specifying invoicing, documentation, accounting, and reporting to control and justify all grant expenditures. In addition, SCDHEC and contractors will conduct regular coordination and status updates, including expenditure and data reports of laboratory results. SCDHEC will work closely with its fiscal coordinator to ensure that grant funds are spent according to the project plan and agreed-upon timelines, in compliance with all federal requirements.

6. Leverage (5 points).

While the SCDHEC will perform all of the work under this grant, the information will be shared with other states and the EPA in a cooperative effort to obtain accurate ambient EtO concentration data where none is available now and to use this data to better assess risk factors. This information may also be used to determine if any additional regulatory actions (state or federal) are needed to further reduce EtO emissions from regulated (or presently non-regulated) facilities or other sources.

7. Community Benefits, Engagements, and Partnerships (10 points).

A. (5 points) Addresses the needs and concerns of affected communities, especially those that have faced or are facing environmental justice concerns.

Given EPA's determination that EtO has a greater health risk than previously known, SCDHEC is committed to addressing concerns of increased cancer risks from long term exposure in several North Charleston area environmental justice communities.

Two 2020 priorities of SCDHEC's Environmental Affairs are collaborative partnerships and environmental justice/community involvement. As a testament to those priorities, SCDHEC has a long history of community involvement, partnerships, and longstanding relationships with several community groups in the North Charleston area. Included in these groups are the Lowcountry Alliance for Model Communities (LAMC) and the Charleston Community Research to Action Board (CCRAB). LAMC is a non-profit organization founded for the purpose of advocating

environmental justice and promoting community development, education, employment, quality housing, and community involvement for the study area neighborhoods. CCRAB is a non-profit collaborative effort of diverse community-based organizations, academic institutions, and other stakeholders promoting environmental justice. These community relationships have been built over a decade and have involved several projects addressing community concerns including: the expansion of the Port of Charleston, the cleanup of Superfund sites in North Charleston, and air toxics sampling at Chicora Elementary. SCDHEC will continue to work closely with LAMC and CCRAB to establish sampling sites and share with community members EtO sampling data, project results, and outreach materials.

SCDHEC has worked to support environmental justice and community involvement for many years. Existing community relationships, as evidenced by LAMC and CCRAB, has enabled SCDHEC to quickly engage community-based groups and increase civic awareness of EtO concentrations in the North Charleston area.

B. (5 points) Includes previous, current and/or future efforts and plans for engaging affected communities, which may include: engaging community-based organizations; demonstrating community support for the proposed project; planning for ongoing community engagement; and/or building and supporting partnerships across multiple stakeholder groups.

Over many years, SCDHEC has worked to develop a strong collaborative partnership and relationship with several EJ communities in the North Charleston area. SCDHEC's commitment to collaborative partnerships with stakeholders is especially reflected in its past and current relationship with two North Charleston community organizations: Lowcountry Alliance for Model Communities (LAMC) and Charleston Community Research to Action Board (CCRAB). Specific/Successful EtO-related engagement efforts with LAMC and CCRAB include:

- SCDHEC conducted an initial round of EtO sampling in North Charleston and at rural background sites;
- SCDHEC – BAQ leadership staff briefed LAMC/CCRAB board members on EtO prior to a scheduled December 2, 2019, community meeting;
- SCDHEC developed and shared its NATA and EtO webpage;
- SCDHEC – BAQ leadership provided North Charleston community representatives with a presentation on EPA's NATA release and the estimated air concentrations of EtO in the North Charleston area; and
- SCDHEC – BAQ leadership conducted a follow-up meeting with LAMC/CCRAB board members to share the initial round of EtO sampling results and discuss next steps.

All stakeholders will continue to be periodically updated on the progress of the project through presentations, webpage uploads, social media posts, conference calls and meetings.