EPA KEY CONTACTS FORM

OMB Number: 2030-0020
Expiration Date: 06/30/2024

Authorized Representative: *Original awards and amendments will be sent to this individual for review and acceptance, unless otherwise indicated.*

Name: Prefix: Mr. First Name: Darrin Middle Name:
Last Name: Bodner Suffix:

Title: Executive Deputy Secretary for Admin. & Mgmt.

Complete Address:

Street1: 400 Market Street, 16th Floor RCSOB
Street2:
City: Harrisburg State: PA: Pennsylvania
Zip / Postal Code: 17101 Country: USA: UNITED STATES

Phone Number: 717-772-5964 **Fax Number:** 717-783-7244

E-mail Address: RA-EPFISCALGRANTS@pa.gov

Payee: *Individual authorized to accept payments.*

Name: Prefix: Ms. First Name: Stephanie Middle Name:
Last Name: Clark Suffix:

Title: Commonwealth Account Manager

Complete Address:

Street1: 555 Walnut Street, 9th Floor
Street2:
City: Harrisburg State: PA: Pennsylvania
Zip / Postal Code: 17101 Country: USA: UNITED STATES

Phone Number: 717-425-6623 **Fax Number:** 717-425-6647

E-mail Address: stephaniec@pa.gov

Administrative Contact: *Individual from Sponsored Programs Office to contact concerning administrative matters (i.e., indirect cost rate computation, rebudgeting requests etc).*

Name: Prefix: Ms. First Name: Jennifer Middle Name:
Last Name: Brandt Suffix:

Title: Senior Fiscal Management Specialist

Complete Address:

Street1: 400 Market Street, 15th Floor RCSOB
Street2:
City: Harrisburg State: PA: Pennsylvania
Zip / Postal Code: 17101 Country: USA: UNITED STATES

Phone Number: 717-783-4539 **Fax Number:** 717-783-7244

E-mail Address: jennbrandt@pa.gov

EPA Form 5700-54 (Rev 4-02)

EPA KEY CONTACTS FORM

Project Manager: *Individual responsible for the technical completion of the proposed work.*

Name: **Prefix:** Dr. **First Name:** Min **Middle Name:**

Last Name: Zhong **Suffix:**

Title: Air Quality Program Specialist

Complete Address:

Street1: 400 Market Street, 12th Floor RCSOB

Street2:

City: Harrisburg **State:** PA: Pennsylvania

Zip / Postal Code: 17101 **Country:** USA: UNITED STATES

Phone Number: 717-772-4022 **Fax Number:** 717-772-3415

E-mail Address: mzhong@pa.gov

EPA Form 5700-54 (Rev 4-02)

BREENA HOLLAND
Associate Professor, Lehigh University
Dept. of Political Science & the Environmental Initiative

Contact Information

Work: 307 Maginnes, 9 W. Packer Ave Lehigh University, Bethlehem, PA 18015
Tel. 610-758-5982 Email: brh205@lehigh.edu

Education

University of Chicago (2005)	**Ph.D.**	Political Science
University of Chicago (1998)	**M.A.**	Political Science
Univ. of California at Berkeley (1996)	**B.S.**	Environmental Science, Policy, & Management
Univ. of California at Berkeley (1996)	**B.A.**	Jurisprudence and Social Policy

Publications

Five publications most closely related to project:

1) Holland, Breena. 2020. "Capabilities, Well-Being, and Environmental Justice" in Brendan Coolsaet (ed.), *Environmental Justice: Key Issues*. Routledge
2) Hammond, Thomas, Alec Bodzin, David Anastasio, **Breena Holland**, Kate Popejoy, Dork Sahagian, Scott Rutzmoser, James Carrigan, and William Farina. 2018. "'You know you can do this, right?': Developing geospatial technological pedagogical content knowledge (GS-TPACK) and enhancing teachers' cartographic practices with socio-environmental science investigations." *Journal of Cartography and Geographic Information Science*. 45/4: 305-318
3) Holland, Breena. 2014. *Allocating the Earth: A Distributional Framework for Protecting Capabilities in Environmental Law and Policy*. Oxford UK: Oxford University Press
4) Holland, Breena, Eike Reichard, and Lauren Schneck. 2013. "Special Focus, Environmental Quality" *2012 State of the Lehigh Valley Report*, Lehigh Valley Research Consortium, pp. 20-32
5) Sclove, Richard, Madeleine Scammel, and **Breena Holland.** 1998. *Community-Based Research in the United States*. Amherst, MA: The Loka Institute

Five other significant publications:

1) Holland, Breena. 2022. "Capabilities, Future Generations, and Climate Justice," in Steven Gardiner (ed.) *Oxford Handbook of Intergenerational Ethics*, Oxford University Press
2) Holland, Breena. 2017. "Procedural Justice in Local Climate Adaptation: Political Capabilities and Transformational Change." *Journal of Environmental Politics* 3/17: 391-412
3) Holland, Breena. 2012. "Environment as Meta-Capability: Why a Dignified Life Requires a Stable Climate System," in Allen Thompson and Jeremy Bendik-Keymer (eds.). *Ethical Adaptation to Climate Change: Human Virtues of the Future*. The MIT Press, pp. 145-164
4) Holland, Breena. 2008. "Justice and the Environment in Nussbaum's 'Capabilities Approach': Why Sustainable Ecological Capacity is a Meta-Capability." *Political Research Quarterly* 61/2: 319-332

5) Holland, Breena. 2008. "Ecology and the Limits of Justice: Establishing 'Capability Ceilings' in Nussbaum's Capabilities Approach." *Journal of Human Development & Capabilities 9/3: 399-423*

Selected Awards

- *Faculty Sustainability Award*, Office of Sustainability, Lehigh University (2019)
- *New Directions Fellowship*, College of Arts & Sciences, Lehigh University *(2016-2017)*
- *Class of 1961 Professorship*, College of Arts and Sciences, Lehigh University (2012 - 2014)
- *Andrew Mellon Foundation Post-Doctoral Fellowship* in Ethics and the Public Sphere, Political Science Department and Centre for Ethics, University of Toronto, (2005-2007, declined)
- *Charlotte W. Newcombe Doctoral Dissertation Fellowship*, Woodrow Wilson National Fellowship Foundation (2002-2003)
- *Eisenhower/Clifford Roberts Dissertation Fellowship*, Eisenhower Institute (2001-2002)
- *Searle Fellowship*, University of Chicago (1996-2000)

Relevant Activities (Selected)

- Member, *Environmental Justice and Equity Steering Committee*, Bethlehem Climate Action Plan, City of Bethlehem (fall 2020)
- Member, *Smart Transportation Committee*, Renew Lehigh Valley (2015-2017)
- Executive Board Member, *Lehigh Valley Research Consortium* (2013-2015)
- Member, *CAS Dean's (ad hoc) Committee on Community Engagement* (2012)
- Member, Provost and Dean Community Engagement Center Committee (fall 2014 – spring 2016)
- Director, *South Side Initiative*, Lehigh University (2014-2018)

Funding for Related Projects

- CO-PI. *Socio- Environmental Science Investigations (SESI) Using the Geospatial Curriculum Approach with Web GIS*, 2016-2018, National Science Foundation ($1,199,792)
- Advisor. *Food in the Public Square*, 2015, National Endowment for the Humanities ($156,340)
- CO-PI. *Innovations in Ventilation: A Combined Research Experience on Indoor Air Pollution*, 2014, Lehigh University, Mountaintop Project ($38,020)
- PI. *Avoiding Air Pollution: Diesel Particulate and Children's Route to School*, PA Department of Environmental Protection, 2012, Environmental Education Research Grant ($7,445)

Media Related to Recent Community-Based Projects

- "Spotlight on Community: Air Monitoring in Bethlehem" ***Community in Action Series at Nurture Nature Center*, September 24, 2020.**
- "See how these Lehigh Valley educators are transforming STEM lessons" ***The Morning Call Newspaper*, May 21, 2018**
- "Promoting Geospatial Learning" ***The Lehigh Review*, April 12, 2018**
- "Municipal ethics reform in PA" ***The Bethlehem Press*, July 20, 2017**

BREENA HOLLAND
Associate Professor, Lehigh University
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Tel. 610-758-5982 Email: brh205@lehigh.edu

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- "Promoting Geospatial Learning" ***The Lehigh Review*, April 12, 2018**
- "Municipal ethics reform in PA" ***The Bethlehem Press*, July 20, 2017**

Perelman School of Medicine
University of Pennsylvania

CEET
CENTER OF EXCELLENCE IN ENVIRONMENTAL TOXICOLOGY

March 3, 2022

Nick Lazor, Chief
Division of Air Quality Monitoring
Bureau of Air Quality
Rachel Carson State Office Building
400 Market Street, 12th Floor, PO Box 8468
Harrisburg, PA 17105-8468

Re: Enhanced Air Monitoring for Communities RFA# EPA-OAR-OAQPS-22-01

Dear Mr. Lazor:

The Center of Excellence in Environmental Toxicology (CEET), is pleased to offer support for the Pennsylvania Department of Environmental Protection's (PADEP) Bureau of Air Quality proposal entitled " Enhanced Particulate Monitoring in the Environmental Justice Communities of the Delaware County Waterfront" Through this grant you would work collaboratively with multiple partners to expand monitoring of air pollution and use that data in collaborative mitigation efforts to reduce the public's exposure to air pollutants and improve their health.

The Center of Excellence in Environmental Toxicology (CEET) is the University of Pennsylvania's P30 Environmental Health Science Core Center (EHSCC) funded by the National Institute of Environmental Health Science (NIEHS). It is the only EHSCC in Pennsylvania. The environmental health researchers, physicians and public health professionals of the CEET work every day on environmental health issues and recognize the value of quality scientific discovery to the establishment and maintenance of good public policy.

For nearly 10 years, the CEET has worked in Chester, PA with many community partners with the goal of reducing exposures and enhancing environmental health. Chester and its surrounding communities meet environmental justice criteria for both low income and high minority status. The residents hare exposed to particulates from numerous sources including I-95, a municipal waste incinerator, refinery, and numerous other industries. There are significant disparities in health outcomes in these communities including adverse birth outcomes, asthma, heart disease and cancer. We have worked

collaboratively with colleagues from the PADEP Bureau of Air Quality to address some of these concerns and look forward to the opportunity to do so in this grant.

For this grant, we commit to working with you in several areas. We will collaborate with you to engage community members in the identification of sites for monitoring in particular through our membership on the Chester Environmental Partnership and relationships with the Boys and Girls Club, the Foundation for Delaware County and others. We will work with the research team to analyze the data and present it in an accessible way to community partners. We plan to create a dissemination strategy collaborating with community partners. Our established reputation as trusted health experts will facilitate the acceptance of our message. We also plan to provide scientific presentations to researchers, legislators and policymakers to maximize the usefulness of the data collected.

We are committed to working with the PADEP and Delaware County planning staff to ensure the success of this monitoring and communication effort if you are awarded this grant to improve the environmental health of residents of Delaware County. We strongly encourage the EPA to fund your grant application. We would be happy to provide any additional information as needed.

Sincerely,

Marilyn V. Howarth, MD

Marilyn V. Howarth, MD, FACOEM
Director
Community Engagement Core

DELAWARE VALLEY dvrpc REGIONAL PLANNING COMMISSION

190 N INDEPENDENCE MALL WEST
8TH FLOOR
PHILADELPHIA, PA 19106-1520
Phone: 215-592-1800
Fax: 215-592-9125
www.dvrpc.org

March 1, 2022

Mr. Nick Lazor
Pennsylvania Department of Environmental Protection
Rachel Carson State Office Building
400 Market Street
Harrisburg, PA 17105

Reference: Letter of Support for the Delaware County Air Quality Monitoring Project

Dear Mr. Lazor:

I would like to express the support of the Delaware Valley Regional Planning Commission (DVRPC) for the Pennsylvania Department of Environmental Protection's grant proposal to fund an air quality monitoring project through the U.S. Environmental Protection Agency's Enhanced Air Quality Monitoring for Communities Program (EPA-OAR-OAQPS-22-01). The implementation of your proposal will provide critical data to help federal, state, and local partners identify sources of air pollution and develop mitigation strategies to improve health outcomes for the people who live and work in the disadvantaged communities along the waterfront in Delaware County, Pennsylvania.

Your proposal will deploy up to 50 $PM_{2.5}$ and 10 Carbon Monoxide, Nitrogen Dioxide, and Ozone Modulair monitors in the study area which consists of Chester City; Chester and Lower Chichester townships; and Upland, Trainer, and Marcus Hook boroughs. These municipalities are designated Environmental Justice Communities. They are bisected by major transportation corridors used by heavy-duty diesel trucks (I-95, US 13 and PA 291) and host a concentration of emitting industries. The proposed project area is included in the Philadelphia – Wilmington – Atlantic City Ozone Non-Attainment and Delaware County $PM_{2.5}$ Maintenance Areas.

The proposed project will provide essential data about the character, and spatial and temporal distribution of these pollutants. This data is critical for research, as well as informing the design and implementation of efforts aimed at improving the quality-of-life and environmental health of these disadvantaged communities.

DVRPC has committed to helping Delaware County identify sources of air emissions and census tracts with concentrations of environmental health issues through a Fiscal Year 2023 Unified Work Program Project. If awarded, this grant will support that effort by providing real time data regarding air pollution concentrations near sources of emissions and in the communities suffering from respiratory health conditions. DVRPC will support the monitoring project by raising awareness of the project through the Commission's standing committees, task forces, and partnerships in the communities that may benefit from this project.

Your proposal supports our shared goals of improving local and regional air quality and improving the health and quality of life of the citizens of our region. If you have any questions, please contact Sean Greene at (215) 238-2860.

Sincerely,

Barry J. Seymour
Executive Director

cc. Christine Reuther - Delaware County Council
Tom Shaffer - Delaware County Planning Department

Chester Environmental Partnership

March 3, 2022

Nick Lazor, Chief
Division of Air Quality Monitoring
Bureau of Air Quality
Rachel Carson State Office Building
400 Market Street, 12th Floor, PO Box 8468
Harrisburg, PA 17105-8468

Dear Mr. Lazor:

The Chester Environmental Partnership is pleased to offer our support for the Pennsylvania Department of Environmental Protection's (PADEP) Bureau of Air Quality proposal entitled "Enhanced Particulate Monitoring in the Environmental Justice Communities of the Delaware County Waterfront" in response to RFA# EPA-OAR-OAQPS-22-01 Enhanced Air Monitoring for Communities. This monitoring effort is absolutely consistent with our mission and goals.

Supporting efforts to reduce air pollution in the City of Chester is critical to the mission of the Chester Environmental Partnership which seeks to address the causes of environmental health disparities in Chester. The Chester Environmental Partnership is a non-profit organization that was formed in 2005 to improve the environmental health of the residents of Chester through cooperative action. It includes residents, industry leaders, regulators, academics and others working together toward environmental justice for a community that has been overburdened with environmental hazards. 23% of children in Chester have asthma compared with 8.3% nationally. The constant stream of trucks driving on the roadways in and around Chester is a significant contributor to the poor air quality in the region as are the many industries that are located in and around Chester,PA. Data about the impacts of particulates continue to point to their role in causing and exacerbating asthma and causing cancer. According to the PA Department of Health, Chester has higher rates of cancer than expected in the larynx, lung and bronchus, colon, uterus, bladder and thyroid. Having only two EPA monitors near Chester has led to very limited data on the extent of particulate exposure. The proposed monitoring will provide data taken in many places over a year or more. We will use the data in our efforts to improve our environment.

We strongly support reducing the excess risk that our residents in Chester experience by monitoring and ultimately reducing air pollution exposure. We commit to working with you to facilitate the placement of monitors in the community and disseminating the results through the Chester Environmental Partnership and our local community partners.

Sincerely,

Dr. Horace Strand, Chair
Chester Environmental Partnership
1007 W. 7th Street
Chester, PA 19013
Office: 610-872-7471Fax: 610-872-7470
cepchester@aol.com
Web: www.CEPChester.org Like us on Facebook Follow us on Twitter @CEPChester

COUNTY OF DELAWARE
GOVERNMENT CENTER BUILDING
201 W. FRONT STREET
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AREA CODE (610) 891-4453
FAX NUMBER (610) 891-0647

COUNCIL

Brian P. Zidek
Chair

Dr. Monica Taylor
Vice Chair

Kevin M. Madden
Elaine Paul Schaefer
Christine Reuther

Francine Locke
Chief Sustainability Officer

March 3, 2022

Nick Lazor, Chief
Division of Air Quality Monitoring
Bureau of Air Quality
Rachel Carson State Office Building
400 Market Street, 12th Floor, PO Box 8468
Harrisburg, PA 17105-8468

RE: Pennsylvania Department of Environmental Protection's (PADEP) Bureau of Air Quality application for Enhanced Air Monitoring for Communities RFA# EPA-OAR-OAQPS-22-01

Dear Mr. Lazor:

Delaware County strongly supports the Pennsylvania Department of Environmental Protection's (DEP) grant proposal to fund an air quality monitoring project through the U.S. Environmental Protection Agency's Enhanced Air Quality Monitoring for Communities Program (EPA-OAR-OAQPS-22-01). The project, "Enhanced Particulate Monitoring in the Environmental Justice Communities of the Delaware County Waterfront," will provide nearly real-time data on particulate matter (PM) in the Environmental Justice communities along the Delaware County waterfront.

The disadvantaged communities along Delaware County's waterfront are exposed to air pollution from high volumes of truck traffic and emissions from industries. The DEP's proposed project will install up to 50 Modulair-PM monitors, with a focus on transportation corridors, vulnerable populations, and local neighborhoods. It will provide critical data to help identify sources of air pollution and develop mitigation strategies to improve health outcomes for the people who live and work in these Environmental Justice communities. This data is critical for research, as well as informing the design and implementation of efforts aimed at improving the quality of life and environmental health for our residents. Delaware County has committed to

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being a local partner for the PA DEP. The County will conduct extensive community outreach to raise public awareness and to engage local stakeholders in selecting monitor placement.

DEP's application supports the goals the Delaware County Office of Sustainability of improving air quality and improving the health and quality of life of the citizens of our County. If you have any questions, please contact Anne Stauffer (610) 891-4910.

Sincerely,

Francine Locke

Francine Locke
Chief Sustainability Officer

ED_013931A_00000065-00002

DEPARTMENT of
BIOSTATISTICS
EPIDEMIOLOGY &
INFORMATICS

Perelman
School of Medicine
University of Pennsylvania

Blanca E Himes, PhD, ATSF, FAMIA
Associate Professor of Informatics

March 3, 2022

Nick Lazor, Chief
Division of Air Quality Monitoring
Bureau of Air Quality
Rachel Carson State Office Building
400 Market Street, 12th Floor, PO Box 8468
Harrisburg, PA 17105-8468

Re: Enhanced Air Monitoring for Communities RFA# EPA-OAR-OAQPS-22-01

Dear Mr. Lazor:

As a researcher interested in the monitoring the effects of air pollution on respiratory health at the Center of Excellence in Environmental Toxicology, I am pleased to offer my support for the Pennsylvania Department of Environmental Protection's (PADEP) Bureau of Air Quality proposal entitled " Enhanced Particulate Monitoring in the Environmental Justice Communities of the Delaware County Waterfront". This grant will expand monitoring of particulate air pollution at the neighborhood level in Environmental Justice communities outside Philadelphia.

The Center of Excellence in Environmental Toxicology (CEET) is the University of Pennsylvania's P30 Environmental Health Science Core Center (EHSCC) funded by the National Institute of Environmental Health Science (NIEHS). My research focuses on the health impacts of air pollution on asthma, COPD and other respiratory conditions. Exposure data in the region around Chester, PA has been lacking to adequately complete such studies. By gathering this data at the neighborhood level, we will be able to better understand the contribution of the individual sources and make evidence-based recommendations for exposure reduction to enhance the public's health.

Our Community Engagement Core has been working in Chester for nearly a decade. These strong ties to the community will facilitate action based on our scientific findings. I am among those who are very enthusiastic about the data that will be collected and look forward to using it to improve the environmental health of residents of Delaware County. I strongly encourage the EPA to fund your grant application. If I can provide you with additional information, please do not hesitate to contact me.

Sincerely,

Blanca E Himes, PhD, ATSF, FAMIA

402 Blockley Hall, 423 Guardian Drive • Philadelphia, PA 19104-6021 • bhimes@pennmedicine.upenn.edu • 215-573-3282

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Hyunok Choi

eRA COMMONS USER NAME (credential, e.g., agency login): HyunokChoi

POSITION TITLE: Associate Professor

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
Barnard College, Columbia University	BA	05/1992	Biology
Emory University	MPH	05/1998	Epidemiology
Columbia University	PhD	02/2006	Environmental Health
Harvard School of Public Health	Post-Doc	07/2010	Environmental Health

A. Personal Statement

I am an environmental life-course epidemiologist. Within the last twenty years, I have been examining the population's chronic exposure to environmental pollutants and determining their childhood developmental consequences. This pushed me to cultivate expertise in 1) conducting chronic individual level air pollution exposures; 2) estimating personal, indoor, and outdoor exposures to semi-volatile organic compounds; 3) source apportionment of complex air pollutant mixtures; 3) identifying and validating multiple biomarkers; 4) determining sex- and age-specific risks of exposures to environmental pollutions; and 5) incorporating multiscale genomics and transcriptomic data into environmental epidemiology so that we could identify sub-species of asthma. My long-term goal is to translate such carefully estimated dose-response to developing environmental justice-sensitive local policies. Secondarily, I hope to further validate several biomarkers as tools of early detection of asthma.

B. Scientific Appointments

2011 – 2019 Assistant Professor, Departments of Environmental Health Sciences, University at Albany
2020 – Present Associate Professor, College of Health, Lehigh University

C. Contributions to Science

Choi, H., Song, W.M., Libalova, H., Wang, M.H., Sram, R.J., Zhang, B. (July 2019). Benzo[*a*]pyrene is associated with dysregulated myelo-lymphoid hematopoiesis in asthmatic children. *Environment International.*

Wu, W., Yao, M., Yang, X., Hopke, P. K., **Choi, H.,** Qiao, X., Zhao, X., & Zhang, J. (2021). Mortality burden attributable to long-term ambient PM2. 5 exposure in China: using novel exposure-response functions with multiple exposure windows. *Atmospheric Environment*, *246*, 118098.

Choi, H., Dostal, M., Pastorkova, A., Rossner, P., & Sram, R. J. (2021). Airborne Benzo [a] Pyrene may contribute to divergent Pheno-Endotypes in children. *Environmental Health*, *20*(1), 1-14.

Fernández, D., Sram, R.J., Dostal, M., Pastorkova, A., Gmuender, H., **Choi, H.** (January 2018). Modeling unobserved heterogeneity in susceptibility to ambient benzo[a]pyrene concentration among children with allergic asthma using an unsupervised learning algorithm. *International Journal of Environmental Research & Public Health.*

Choi, H., Tabashidze, N., Rossner, P., Dostal, M., Pastorkova, A., Kong, S.W., Gmuender, H., Sram, R.J. (July 2017). Altered vulnerability to Asthma at Various Levels of Ambient Benzo[*a*]Pyrene by *CTLA4, STAT4* and *CYP2E1* Polymorphisms. *Environmental Pollution.*

Honkova, K., Rossnerova, A., Pavlikova, J., Svecova, V., Klema, J., Topinka, J., Milcová, A., Libalova, H., ***Choi, H.****, Veleminsky, M., Sram, R., Rossner, P. (February 2018). Gene expression profiling in healthy newborns from diverse localities of the Czech Republic. Environmental and Molecular Mutagenesis.*

Choi, H., Song, W., Zhang, B. (September 2016). Environmental Systems Biology of Childhood Asthma: a review. *Reviews on Environmental Health*

Choi, H., McAuley, M., Lawrence, D. Prenatal Exposures and Exposomics of Asthma. AIMS Environmental Science. Special Issue: Systems Biology and Prenatal Exposure. Accepted for Publication. November 2, 2014

Choi, H., Wang, L., Lin, X., Spengler, J.D., Perera, F.P. Fetal Window of Vulnerability to Airborne Polycyclic Aromatic Hydrocarbons on Proportional Intrauterine Growth Restriction. PlosOne. March, 2012. 7(4): e35464. doi:10.1371/journal.pone.0035464

Choi, H. and Perera, F.P. Sources of greater fetal vulnerability to airborne polycyclic aromatic hydrocarbons among African Americans. Journal of Epidemiology and Community Health, May, 2010.

Choi, H., Rauh, V., Garfinkel, R., Tu, Y., Perera, F.P. Prenatal Exposure to Airborne Polycyclic Aromatic Hydrocarbons and Risk of Intrauterine Growth Restriction. Environmental Health Perspectives. May 2008. 116 (5): 658 – 665.

Choi, H, Jedrychowski, W, Spengler, J, Camann, DE, Whyatt, RM, Rauh, V, Tsai, WY, Perera, FP. International Studies of Prenatal Exposure to Polycyclic Aromatic Hydrocarbons and Fetal Growth. Environmental Health Perspectives. November 2006. 114 (11): 1744 – 1750.

Choi, H., Dostal, M., Pastorkova, A., Honkova, K., Rossner, P., Sram, R., Ho, SM. (August 2018). Greater Susceptibility of Girls to Airborne Benzo[a]pyrene for Obesity-Associated Childhood Asthma. *Environment International.*

Choi, H., Schmidbauer, N., Bornehag, C.G. (November 2016). Volatile Organic Compounds of Possible Microbial Origin and Their Risks on Childhood Asthma and Allergies within Damp Homes. *Environment International.*

Choi, H., Schmidbauer, N., Bornehag, C.G. (Mar 2016). Non-microbial sources of microbial volatile organic compounds. *Environmental Research. 148.* 127—136.

Choi, H., Sundell, J., Schmidbauer, N., Spengler, J.D., Bornehag, C.G. Common Household Chemicals and the Allergy Risks in Pre-school Age Children. PlosOne. October, 2010. 5(10): e13423. doi:10.1371/journal.pone.0013423.

Choi, H., Schmidbauer, N., Spengler, J.D., Bornehag, C.G. Sources of Glycol Ethers Exposure at Home. International Journal of Environmental Research and Public Health. December 2010. 7 (12): 4213-4237.

Choi, H., Byrne, S., Larsen, L., Sigsgaard, T., Thorne, P.S., Larsson, L., Sebastian, A., Bornehag, C.G. Residential Mold Concentration in Dust Is Not Associated with Asthma, Rhinitis or Eczema Diagnosis in Children. Indoor Air. 24(2): 158–170.

Choi, H., Melley, S., Perera F.P., Spengler J. Estimation of Chronic Personal Exposure to Airborne Polycyclic Aromatic Hydrocarbons. Science of the Total Environment. March 2015.

Choi, H., Melley, S., Perera F.P., Spengler J. Ten-Year Trend of Ambient Air Toxics in Krakow, Poland. International Journal of Environmental Research and Public Health. March, 2015.

Choi, H. and Spengler J.D. Attribution of Personal Exposure to Airborne Polycyclic Aromatic Hydrocarbon Mixture Using Concurrent Personal, Indoor, and Outdoor Measurements. Environment International. 63:173-81. November 2013.

Choi, H., Perera F.P., Penar A., Wang. L., Camann D., Chai-Onn, T., Becker M., Masters E., Jedrychowski W., Jaczek R., and Spengler. J. Estimating Individual-Level Exposure to Airborne Polycyclic Aromatic Hydrocarbons throughout Gestational Period based on Personal, Indoor and Outdoor Monitoring. Environmental Health Perspectives. November 2008. 116 (11): 1509 – 1518.

Wang, L. and **Choi, H.** Using Semiparametric Mixed Model And Functional Linear Model To Detect Vulnerable Prenatal Window To Carcinogenic Polycyclic Aromatic Hydrocarbons On Fetal Growth. Biometrical Journal. 56 (2): 243–255. March 2014.

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Hyunok Choi

eRA COMMONS USER NAME (credential, e.g., agency login): HyunokChoi

POSITION TITLE: Associate Professor

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
Barnard College, Columbia University	BA	05/1992	Biology
Emory University	MPH	05/1998	Epidemiology
Columbia University	PhD	02/2006	Environmental Health
Harvard School of Public Health	Post-Doc	07/2010	Environmental Health

A. Personal Statement

I am an environmental life-course epidemiologist. Within the last twenty years, I have been examining the population's chronic exposure to environmental pollutants and determining their childhood developmental consequences. This pushed me to cultivate expertise in 1) conducting chronic individual level air pollution exposures; 2) estimating personal, indoor, and outdoor exposures to semi-volatile organic compounds; 3) source apportionment of complex air pollutant mixtures; 3) identifying and validating multiple biomarkers; 4) determining sex- and age-specific risks of exposures to environmental pollutions; and 5) incorporating multiscale genomics and transcriptomic data into environmental epidemiology so that we could identify sub-species of asthma. My long-term goal is to translate such carefully estimated dose-response to developing environmental justice-sensitive local policies. Secondarily, I hope to further validate several biomarkers as tools of early detection of asthma.

B. Scientific Appointments

2011 – 2019 Assistant Professor, Departments of Environmental Health Sciences, University at Albany
2020 – Present Associate Professor, College of Health, Lehigh University

C. Contributions to Science

Choi, H., Song, W.M., Libalova, H., Wang, M.H., Sram, R.J., Zhang, B. (July 2019). Benzo[*a*]pyrene is associated with dysregulated myelo-lymphoid hematopoiesis in asthmatic children. *Environment International.*

Wu, W., Yao, M., Yang, X., Hopke, P. K., **Choi, H.,** Qiao, X., Zhao, X., & Zhang, J. (2021). Mortality burden attributable to long-term ambient PM2. 5 exposure in China: using novel exposure-response functions with multiple exposure windows. *Atmospheric Environment*, *246*, 118098.

Choi, H., Dostal, M., Pastorkova, A., Rossner, P., & Sram, R. J. (2021). Airborne Benzo [a] Pyrene may contribute to divergent Pheno-Endotypes in children. *Environmental Health*, *20*(1), 1-14.

Fernández, D., Sram, R.J., Dostal, M., Pastorkova, A., Gmuender, H., **Choi, H.** (January 2018). Modeling unobserved heterogeneity in susceptibility to ambient benzo[a]pyrene concentration among children with allergic asthma using an unsupervised learning algorithm. *International Journal of Environmental Research & Public Health.*

Choi, H., Tabashidze, N., Rossner, P., Dostal, M., Pastorkova, A., Kong, S.W., Gmuender, H., Sram, R.J. (July 2017). Altered vulnerability to Asthma at Various Levels of Ambient Benzo[*a*]Pyrene by *CTLA4, STAT4* and *CYP2E1* Polymorphisms. *Environmental Pollution.*

Honkova, K., Rossnerova, A., Pavlikova, J., Svecova, V., Klema, J., Topinka, J., Milcová, A., Libalova, H., ***Choi, H.****, Veleminsky, M., Sram, R., Rossner, P. (February 2018). Gene expression profiling in healthy newborns from diverse localities of the Czech Republic. Environmental and Molecular Mutagenesis.*

Choi, H., Song, W., Zhang, B. (September 2016). Environmental Systems Biology of Childhood Asthma: a review. *Reviews on Environmental Health*

Choi, H., McAuley, M., Lawrence, D. Prenatal Exposures and Exposomics of Asthma. AIMS Environmental Science. Special Issue: Systems Biology and Prenatal Exposure. Accepted for Publication. November 2, 2014

Choi, H., Wang, L., Lin, X., Spengler, J.D., Perera, F.P. Fetal Window of Vulnerability to Airborne Polycyclic Aromatic Hydrocarbons on Proportional Intrauterine Growth Restriction. PlosOne. March, 2012. 7(4): e35464. doi:10.1371/journal.pone.0035464

Choi, H. and Perera, F.P. Sources of greater fetal vulnerability to airborne polycyclic aromatic hydrocarbons among African Americans. Journal of Epidemiology and Community Health, May, 2010.

Choi, H., Rauh, V., Garfinkel, R., Tu, Y., Perera, F.P. Prenatal Exposure to Airborne Polycyclic Aromatic Hydrocarbons and Risk of Intrauterine Growth Restriction. Environmental Health Perspectives. May 2008. 116 (5): 658 – 665.

Choi, H, Jedrychowski, W, Spengler, J, Camann, DE, Whyatt, RM, Rauh, V, Tsai, WY, Perera, FP. International Studies of Prenatal Exposure to Polycyclic Aromatic Hydrocarbons and Fetal Growth. Environmental Health Perspectives. November 2006. 114 (11): 1744 – 1750.

Choi, H., Dostal, M., Pastorkova, A., Honkova, K., Rossner, P., Sram, R., Ho, SM. (August 2018). Greater Susceptibility of Girls to Airborne Benzo[a]pyrene for Obesity-Associated Childhood Asthma. *Environment International.*

Choi, H., Schmidbauer, N., Bornehag, C.G. (November 2016). Volatile Organic Compounds of Possible Microbial Origin and Their Risks on Childhood Asthma and Allergies within Damp Homes. *Environment International.*

Choi, H., Schmidbauer, N., Bornehag, C.G. (Mar 2016). Non-microbial sources of microbial volatile organic compounds. *Environmental Research. 148.* 127—136.

Choi, H., Sundell, J., Schmidbauer, N., Spengler, J.D., Bornehag, C.G. Common Household Chemicals and the Allergy Risks in Pre-school Age Children. PlosOne. October, 2010. 5(10): e13423. doi:10.1371/journal.pone.0013423.

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Wang, L. and **Choi, H.** Using Semiparametric Mixed Model And Functional Linear Model To Detect Vulnerable Prenatal Window To Carcinogenic Polycyclic Aromatic Hydrocarbons On Fetal Growth. Biometrical Journal. 56 (2): 243–255. March 2014.

Min Zhong, Ph.D., P.E.

400 Market Street, Harrisburg, PA 17101
Phone: 717.772.4022; *Email*: mzhong@pa.gov

EDUCATION

Ph.D., Environmental Engineering Sciences, University of Florida, FL, USA; 2013
M.S., Computational Data Analytics, Georgia Tech, Atlanta, USA; 2022
M.S., Environmental Engineering, Pohang University of Science and Technology, South Korea; 2005
B.S., Environmental Engineering, Harbin Institute of Technology, P. R. China; 2003

EXPERIENCES

Air Quality Program Specialist, Pennsylvania DEP, Harrisburg, PA; 12/2019 – present
Research Scientist, Minnesota Pollution Control Agency, St Paul, MN; 02/2019 – 12/2019
Assistant Professor, Texas A&M University-Kingsville, TX; 09/2017- 01/2019
Postdoctoral Fellow, Emory University, Atlanta, GA; 09/2013-05/2017

SELECTED PUBLICATIONS

Saikawa, E, Wu, Q. Zhong, M., Avramov, A., Ram, K., Stone, E., Stockwell, C. E, Jayarathne, T., Panday, A.K, Yokelson, R., Garbage Burning in South Asia: How Important Is It to Regional Air Quality? *Environmental Science & Technology*, 2020, 54, 16, 9928–9938 *https://pubs.acs.org/doi/abs/10.1021/acs.est.0c02830*

Zhong, M., Vadali, M., Rinker, K., Palmer K., Nagel, D., McCourtney, M., Gavin, K., Ellickson, K., Dix, D., Charpentier L., Brown, D., Anderson, K., 2020 Air Monitoring Network Plan for Minnesota, 2019, Minnesota Pollution Control Agency, Saint Paul, MN https://www.pca.state.mn.us/sites/default/files/aq10-17a.pdf

Zhong, M., Chen, F., Saikawa, E., Sensitivity of projected $PM_{2.5}$-and O_3-related health impacts to model inputs: A case study in mainland China, *Environment international*, 123, 2019, 256-264 *https://doi.org/10.1016/j.envint.2018.12.002*

Zhong, M., Saikawa, E., Avramov, A., Chen, C., Sun, B., Ye, W., Keene, W.C., Yokelson, R.J., Thilina Jayarathne, Stone, E.A., Arnico K. Panday, A.K., and Rupakheti, M., Nepal Ambient Monitoring and Source Testing Experiment (NAMaSTE): Emissions of particulate matter and sulfur dioxide from vehicles and brick kilns and their impacts on air quality in the Kathmandu Valley, Nepal, *Atmospheric Chemistry and Physics, 2019, 19, 8209–8228, https://doi.org/10.5194/acp-19-8209-2019*

Zhong, M., Saikawa, E., Y. Liu, Naik, V., Horowitz, L.W., Takigawa, M., Zhao, Y., N.-H. Lin, and Stone, E.A., Air quality modeling with WRF-Chem v3.5 over East and South Asia: sensitivity to emissions and evaluation of simulated air quality, *Geoscience Model Development*, 2016, 9, 1201-1218, *doi: 10.5194/gmd-9-1201-2016*

Zhong, M. and Jang, M., Dynamic light absorption of biomass burning organic aerosol photochemically aged using natural sunlight, *Atmospheric Chemistry and Physics*, 2014, 14, 1517-1525, *doi:10.5194/acp-14-1517-2014*

DATA VISUALIZATION MAPPING TOOL

https://minair.github.io/tagging_o3/

OMB Number: 2030-0020
Expiration Date: 06/30/2024

Preaward Compliance Review Report for All Applicants and Recipients Requesting EPA Financial Assistance

Note: Read Instructions before completing form.

I. A. Applicant/Recipient (Name, Address, City, State, Zip Code)

Name: Darrin Bodner

Address: PA Department of Environmental Protection
400 Market Street, PO Box 2063

City: Harrisburg

State: PA: Pennsylvania Zip Code: 17101

B. DUNS No. 135668887

II. Is the applicant currently receiving EPA Assistance? ☒ Yes ☐ No

III. List all civil rights lawsuits and administrative complaints pending against the applicant/recipient that allege discrimination based on race, color, national origin, sex, age, or disability. (Do not include employment complaints not covered by 40 C.F.R. Parts 5 and 7.)

None

IV. List all civil rights lawsuits and administrative complaints decided against the applicant/recipient within the last year that allege discrimination based on race, color, national origin, sex, age, or disability and enclose a copy of all decisions. Please describe all corrective actions taken. (Do not include employment complaints not covered by 40 C.F.R. Parts 5 and 7.)

None

V. List all civil rights compliance reviews of the applicant/recipient conducted by any agency within the last two years and enclose a copy of the review and any decisions, orders, or agreements based on the review. Please describe any corrective action taken. (40 C.F.R. § 7.80(c)(3))

None

VI. Is the applicant requesting EPA assistance for new construction? If no, proceed to VII; if yes, answer (a) and/or (b) below.

☐ Yes ☒ No

a. If the grant is for new construction, will all new facilities or alterations to existing facilities be designed and constructed to be readily accessible to and usable by persons with disabilities? If yes, proceed to VII; if no, proceed to VI(b).

☐ Yes ☐ No

b. If the grant is for new construction and the new facilities or alterations to existing facilities will not be readily accessible to and usable by persons with disabilities, explain how a regulatory exception (40 C.F.R. 7.70) applies.

VII. Does the applicant/recipient provide initial and continuing notice that it does not discriminate on the basis of race, color, national origin, sex, age, or disability in its program or activities? (40 C.F.R 5.140 and 7.95) ☒ Yes ☐ No

a. Do the methods of notice accommodate those with impaired vision or hearing? ☒ Yes ☐ No

b. Is the notice posted in a prominent place in the applicant's offices or facilities or, for education programs and activities, in appropriate periodicals and other written communications? ☒ Yes ☐ No

c. Does the notice identify a designated civil rights coordinator? ☒ Yes ☐ No

VIII. Does the applicant/recipient maintain demographic data on the race, color, national origin, sex, age, or handicap of the population it serves? (40 C.F.R. 7.85(a)) ☒ Yes ☐ No

IX. Does the applicant/recipient have a policy/procedure for providing access to services for persons with limited English proficiency? (40 C.F.R. Part 7, E.O. 13166) ☒ Yes ☐ No

X. If the applicant is an education program or activity, or has 15 or more employees, has it designated an employee to coordinate its compliance with 40 C.F.R. Parts 5 and 7? Provide the name, title, position, mailing address, e-mail address, fax number, and telephone number of the designated coordinator.

See Attachment(EPA-CEP-01)

XI. If the applicant is an education program or activity, or has 15 or more employees, has it adopted grievance procedures that assure the prompt and fair resolution of complaints that allege a violation of 40 C.F.R. Parts 5 and 7? Provide a legal citation or Internet Address for, or a copy of, the procedures.

See Attachments (DEP Nondiscrimination Policy & MD 410.10)

For the Applicant/Recipient

I certify that the statements I have made on this form and all attachments thereto are true, accurate and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law. I assure that I will fully comply with all applicable civil rights statutes and EPA regulations.

A. Signature of Authorized Official	B. Title of Authorized Official	C. Date
Darrin Bodner	Executive Deputy Secretary for Admin. & Mgmt.	03/22/2022

For the U.S. Environmental Protection Agency

I have reviewed the information provided by the applicant/recipient and hereby certify that the applicant/recipient has submitted all preaward compliance information required by 40 C.F.R. Parts 5 and 7; that based on the information submitted, this application satisfies the preaward provisions of 40 C.F.R. Parts 5 and 7; and that the applicant has given assurance that it will fully comply with all applicable civil rights statures and EPA regulations.

A. *Signature of Authorized EPA Official	B. Title of Authorized Official	C. Date

*** See Instructions**

Instructions for EPA FORM 4700-4 (Rev. 06/2014)

General. Recipients of Federal financial assistance from the U.S. Environmental Protection Agency must comply with the following statutes and regulations.
Title VI of the Civil Rights Acts of 1964 provides that no person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance. The Act goes on to explain that the statute shall not be construed to authorize action with respect to any employment practice of any employer, employment agency, or labor organization (except where the primary objective of the Federal financial assistance is to provide employment). Section 13 of the 1972 Amendments to the Federal Water Pollution Control Act provides that no person in the United States shall on the ground of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under the Federal Water Pollution Control Act, as amended. Employment discrimination on the basis of sex is prohibited in all such programs or activities. Section 504 of the Rehabilitation Act of 1973 provides that no otherwise qualified individual with a disability in the United States shall solely by reason of disability be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance. Employment discrimination on the basis of disability is prohibited in all such programs or activities. The Age Discrimination Act of 1975 provides that no person on the basis of age shall be excluded from participation under any program or activity receiving Federal financial assistance. Employment discrimination is not covered. Age discrimination in employment is prohibited by the Age Discrimination in Employment Act administered by the Equal Employment Opportunity Commission. Title IX of the Education Amendments of 1972 provides that no person in the United States on the basis of sex shall be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance. Employment discrimination on the basis of sex is prohibited in all such education programs or activities. Note: an education program or activity is not limited to only those conducted by a formal institution. 40 C.F.R. Part 5 implements Title IX of the Education Amendments of 1972. 40 C.F.R. Part 7 implements Title VI of the Civil Rights Act of 1964, Section 13 of the 1972 Amendments to the Federal Water Pollution Control Act, and Section 504 of The Rehabilitation Act of 1973. The Executive Order 13166 (E.O. 13166) entitled; "Improving Access to Services for Persons with Limited English Proficiency" requires Federal agencies work to ensure that recipients of Federal financial assistance provide meaningful access to their LEP applicants and beneficiaries.

Items “Applicant” means any entity that files an application or unsolicited proposal or otherwise requests EPA assistance. 40 C.F.R. §§ 5.105, 7.25. “Recipient” means any entity, other than applicant, which will actually receive EPA assistance. 40 C.F.R. §§ 5.105, 7.25. “Civil rights lawsuits and administrative complaints” means any lawsuit or administrative complaint alleging discrimination on the basis of race, color, national origin, sex, age, or disability pending or decided against the applicant and/or entity which actually benefits from the grant, but excluding employment complaints not covered by 40 C.F.R. Parts 5 and 7. For example, if a city is the named applicant but the grant will actually benefit the Department of Sewage, civil rights lawsuits involving both the city and the Department of Sewage should be listed. “Civil rights compliance review” means any review assessing the applicant’s and/or recipient’s compliance with laws prohibiting discrimination on the basis of race, color, national origin, sex, age, or disability. Submit this form with the original and required copies of applications, requests for extensions, requests for increase of funds, etc. Updates of information are all that are required after the initial application submission. If any item is not relevant to the project for which assistance is requested, write “NA” for “Not Applicable.” In the event applicant is uncertain about how to answer any questions, EPA program officials should be contacted for clarification. * Note: Signature appears in the Approval Section of the EPA Comprehensive Administrative Review For Grants/Cooperative Agreements & Continuation/Supplemental Awards form.

Other Attachment File(s)

*** Mandatory Other Attachment Filename:** 1235-QA statement.docx

Add Mandatory Other Attachment | Delete Mandatory Other Attachment | View Mandatory Other Attachment

To add more "Other Attachment" attachments, please use the attachment buttons below.

Add Optional Other Attachment | Delete Optional Other Attachment | View Optional Other Attachment

Project Narrative File(s)

*** Mandatory Project Narrative File Filename:** 1234-Project Narrative.docx

Add Mandatory Project Narrative File | Delete Mandatory Project Narrative File | View Mandatory Project Narrative File

To add more Project Narrative File attachments, please use the attachment buttons below.

Add Optional Project Narrative File | Delete Optional Project Narrative File | View Optional Project Narrative File

BUDGET INFORMATION - Non-Construction Programs

OMB Number: 4040-0006
Expiration Date: 02/28/2022

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. Partnering with Allentown Communities to Characterize Ethylene Oxide and Other Volatile Air Toxics - FFY2023		$	$	$ 212,921.00	$ 24,254.00	$ 237,175.00
2. Partnering with Allentown Communities to Characterize Ethylene Oxide and Other Volatile Air Toxics - FFY2024				286,949.00		286,949.00
3.						
4.						
5. Totals		$	$	$ 499,870.00	$ 24,254.00	$ 524,124.00

Standard Form 424A (Rev. 7- 97)
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SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY (1) Partnering with Allentown Communities to Characterize Ethylene Oxide and Other Volatile Air Toxics - FFY2023	(2) Partnering with Allentown Communities to Characterize Ethylene Oxide and Other Volatile Air Toxics - FFY2024	(3)	(4)	Total (5)
a. Personnel	$ 11,408.00	$	$	$	$ 11,408.00
b. Fringe Benefits	7,837.00				7,837.00
c. Travel					
d. Equipment					
e. Supplies					
f. Contractual					
g. Construction					
h. Other	212,921.00	286,949.00			499,870.00
i. Total Direct Charges (sum of 6a-6h)	232,166.00	286,949.00			$ 519,115.00
j. Indirect Charges	5,009.00				$ 5,009.00
k. TOTALS (sum of 6i and 6j)	$ 237,175.00	$ 286,949.00	$	$	$ 524,124.00
7. Program Income	$	$	$	$	$

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SECTION C - NON-FEDERAL RESOURCES

(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e)TOTALS
8. Partnering with Allentown Communities to Characterize Ethylene Oxide and Other Volatile Air Toxics - FFY2023	$ 24,254.00	$ 0.00	$ 0.00	$ 24,254.00
9. Partnering with Allentown Communities to Characterize Ethylene Oxide and Other Volatile Air Toxics - FFY2024	0.00	0.00	0.00	0.00
10.				
11.				
12. TOTAL (sum of lines 8-11)	$ 24,254.00	$ 0.00	$ 0.00	$ 24,254.00

SECTION D - FORECASTED CASH NEEDS

	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	$ 212,921.00	$ 53,230.00	$ 53,230.00	$ 53,230.00	$ 53,231.00
14. Non-Federal	$				
15. TOTAL (sum of lines 13 and 14)	$ 212,921.00	$ 53,230.00	$ 53,230.00	$ 53,230.00	$ 53,231.00

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT

(a) Grant Program	FUTURE FUNDING PERIODS (YEARS)			
	(b)First	(c) Second	(d) Third	(e) Fourth
16. Partnering with Allentown Communities to Characterize Ethylene Oxide and Other Volatile Air Toxics - FFY2023	$	$	$	$
17. Partnering with Allentown Communities to Characterize Ethylene Oxide and Other Volatile Air Toxics - FFY2024	286,949.00			
18.				
19.				
20. TOTAL (sum of lines 16 - 19)	$ 286,949.00	$	$	$

SECTION F - OTHER BUDGET INFORMATION

21. Direct Charges: $519,115.00

22. Indirect Charges: $5,009

23. Remarks: Indirect rate of 26.03% approved for PA DEP effective 7/1/2022.

OMB Number: 4040-0004
Expiration Date: 12/31/2022

Application for Federal Assistance SF-424

* 1. Type of Submission:	* 2. Type of Application:	* If Revision, select appropriate letter(s):
☐ Preapplication	☒ New	
☒ Application	☐ Continuation	* Other (Specify):
☐ Changed/Corrected Application	☐ Revision	

* 3. Date Received:	4. Applicant Identifier:
03/22/2022	

5a. Federal Entity Identifier:	5b. Federal Award Identifier:

State Use Only:

6. Date Received by State:	7. State Application Identifier:

8. APPLICANT INFORMATION:

* a. Legal Name: PA Department of Environmental Protection

* b. Employer/Taxpayer Identification Number (EIN/TIN):	* c. Organizational DUNS:
23-2632825	1356688870000

d. Address:

* Street1:	400 Market Street
Street2:	PO Box 2063
* City:	Harrisburg
County/Parish:	
* State:	PA: Pennsylvania
Province:	
* Country:	USA: UNITED STATES
* Zip / Postal Code:	17101-2301

e. Organizational Unit:

Department Name:	Division Name:
Environmental Protection	Bureau of Air Quality

f. Name and contact information of person to be contacted on matters involving this application:

Prefix:	Dr.	* First Name:	Min
Middle Name:			
* Last Name:	Zhong		
Suffix:			

Title: Air Quality Program Specialist

Organizational Affiliation:
Bureau of Air Quality

* Telephone Number:	717-772-4022	Fax Number:	717-772-3415

* Email: mzhong@pa.gov

Application for Federal Assistance SF-424

*** 9. Type of Applicant 1: Select Applicant Type:**

A: State Government

Type of Applicant 2: Select Applicant Type:

Type of Applicant 3: Select Applicant Type:

* Other (specify):

*** 10. Name of Federal Agency:**

Environmental Protection Agency

11. Catalog of Federal Domestic Assistance Number:

66.034

CFDA Title:

Surveys, Studies, Research, Investigations, Demonstrations, and Special Purpose Activities Relating to the Clean Air Act

*** 12. Funding Opportunity Number:**

EPA-OAR-OAQPS-22-01

* Title:

Enhanced Air Quality Monitoring for Communities

13. Competition Identification Number:

Title:

14. Areas Affected by Project (Cities, Counties, States, etc.):

Add Attachment | Delete Attachment | View Attachment

*** 15. Descriptive Title of Applicant's Project:**

Partnering with Allentown Communities to Characterize Ethylene Oxide and Other Volatile Air Toxics

Attach supporting documents as specified in agency instructions.

Add Attachments | Delete Attachments | View Attachments

Application for Federal Assistance SF-424

16. Congressional Districts Of:

* a. Applicant PA-10 * b. Program/Project PA-07

Attach an additional list of Program/Project Congressional Districts if needed.

Add Attachment | Delete Attachment | View Attachment

17. Proposed Project:

* a. Start Date: 11/01/2022 * b. End Date: 04/30/2024

18. Estimated Funding ($):

* a. Federal	499,870.00
* b. Applicant	24,254.00
* c. State	0.00
* d. Local	0.00
* e. Other	0.00
* f. Program Income	0.00
* g. TOTAL	524,124.00

*** 19. Is Application Subject to Review By State Under Executive Order 12372 Process?**

☒ a. This application was made available to the State under the Executive Order 12372 Process for review on 03/15/2022.

☐ b. Program is subject to E.O. 12372 but has not been selected by the State for review.

☐ c. Program is not covered by E.O. 12372.

*** 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes," provide explanation in attachment.)**

☐ Yes ☒ No

If "Yes", provide explanation and attach

Add Attachment | Delete Attachment | View Attachment

21. *By signing this application, I certify (1) to the statements contained in the list of certifications and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances** and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 218, Section 1001)**

☒ ** I AGREE

** The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

Authorized Representative:

Prefix: Mr. * First Name: Darrin

Middle Name:

* Last Name: Bodner

Suffix:

* Title: Executive Deputy Secretary for Admin. & Mgmt.

* Telephone Number: 717-772-5964 Fax Number: 717-783-7244

* Email: RA-EPFISCALGRANTS@pa.gov

* Signature of Authorized Representative: Darrin Bodner * Date Signed: 03/22/2022

Office of Research and Sponsored Programs
526 Brodhead Avenue, 23B
Bethlehem, PA 18015-3008
T: (610) 758-3021 | F: (610) 758-5994
inors@lehigh.edu

March 8, 2022

Pennsylvania Department of Environmental Protection
Bureau of Air Quality
P.O. Box 8468
Harrisburg, PA 17105-8468

RE: Letter of Commitment – Enhanced Air Quality Monitoring for Communities (EPA-OAR-OAQPS-22-01)

Lehigh UEI: E13MDBKHLDB5

Please accept this Letter as Lehigh University's commitment to participate in and accept a subcontract from the PA Department of Environmental Protection for the effort defined in the Scope of Work and Project Description of the proposal. The appropriate programmatic and administrative personnel at Lehigh are prepared to establish the required sub-recipient agreement consistent with Pennsylvania Department of Environmental Protection and Lehigh policies.

This effort will be under the direction of Dr. Hyunok Choi. The anticipated period of performance is 11/1/2022 through 4/30/2024; with a budget totaling $499,870. Copies of the sub-recipient budget and justification are attached.

Thank you for the opportunity to collaborate with you on this important project. If you require additional information or assistance in finalizing this proposal, please contact me at ell313@lehigh.edu.

Sincerely,

Ellen Liebenow
Contract & Grant Specialist

Attachment

X. If the applicant/recipient is an education program or activity, or has 15 or more employees, has it designated an employee to coordinate its compliance with 40 C.F.R. Parts 5 and 7? Provide the name, title, position, mailing address, e-mail address, fax number, and telephone number of the designated coordinator.

Deborah Laughman, Human Resources Manager
Commonwealth of Pennsylvania
Office of Administration
Conservation and Environment Delivery Center
Rachel Carson State Office Building
400 Market Street
Harrisburg, PA 17110
Phone: 717-787-1065
Fax: 717-783-4159
dlaughman@pa.gov

XI. If the applicant/recipient is an education program or activity, or has 15 or more employees, has it adopted grievance procedures that assure the prompt and fair resolution of complaints that allege a violation of 40 C.F.R. Parts 5 and 7? Provide a legal citation or Internet address for, or a copy of, the procedures.

The Department of Environmental Protection will investigate and resolve any complaint made by a member of the public that alleges a violation of 40 C.F.R. Parts 5 and 7 by using the same procedures for investigating and resolving internal discrimination complaints as described in Management Directive 410.10 Amended.

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CENTENNIAL SCHOOL | LEHIGH UNIVERSITY

Julie B. Fogt, Ed.D.
Director
juf2@lehigh.edu

College of Education
2196 Avenue C
Bethlehem, PA 18017-2183
Tel: (610)266-6500 ex: 204 | Fax: (610)266-7126
www.lehigh.edu/centennial

March 16, 2022

Dear Drs. Holland, Choi, and Zhong:

I am writing in support of your proposed research that would monitor air quality and assess if air toxics are a problem in Allentown. I understand, if grant funded, the project would involve sampling air captured in suspended canisters over the span of a year in various locations around Allentown, such as at Centennial School. The canisters would be accessed every 6 days for lab analysis. As Director of the Centennial School, I share your desire for clean and safe air quality by examining potential air toxics and pollutants in our area. Given our recent conversation about the scope of the project and level of participation requested, I endorse this valuable research and have no concerns at this time. Given the paucity of current research on air quality in our area, your study will greatly contribute to the body of literature on examining air toxics.

I welcome the opportunity to work with you, other Lehigh colleagues, and individuals representing the PA Department of Environmental Protection on this important research project and look forward to you receiving funding to move to the next step. Please do not hesitate to contact me should you have additional questions or concerns.

Sincerely,

Julie B. Fogt, Ed.D.
Director

MATT TUERK
MAYOR

435 Hamilton Street
Allentown PA 18101

OFFICE 610.437.7546 **EMAIL** Matt.Tuerk@allentownpa.gov

March 14, 2022

Dr. Min Zhong
Pennsylvania Department of Environmental Protection
PO Box 8468
Harrisburg, PA 17105-8468

Dear Dr. Zhong,

This letter is to express the City of Allentown's support for a proposed project to be conducted by the Pennsylvania Department of Environmental Protection (PADEP) in partnership with Lehigh University to conduct volatile air toxics measurements for communities in and near Allentown's east side neighborhoods. This project is consistent with the City's increasing focus on social justice, including environmental justice, as many of the communities in Allentown's east side are comprised of low-income people of color who are more vulnerable to adverse environmental impacts than others in our city.

We understand that the objectives of the proposed project are to: 1) characterize ambient concentration of volatile air toxics in neighborhoods and near sources; 2) identify likely sources and community health concerns; and 3) work with the local community to sustain ongoing engagement in monitoring and activities that diminish health risks from air pollution. We are committed to supporting these objectives by assisting with building community awareness of, and engagement in, monitoring air pollution and activities that can minimize exposure to air pollution.

We sincerely thank the PADEP for seeking funding from the Environmental Protection Agency for this important project for the City of Allentown.

Sincerely,

Matt Tuerk
Mayor, City of Allentown

BioSketch for Dr. Hasshan Batts

Hasshan is a prison survivor, healer, son, father, grandfather, brother, husband, and friend. In addition, Hasshan is a Community Epidemiologist, community based participatory researcher, leading expert on Trauma Informed Care, Reentry and Community engagement and dynamic motivational speaker.

Hasshan is the Founder and President of the Prison Survivors Network, Executive Director of the Promise Neighborhoods of the Lehigh Valley, adjunct professor, Lehigh University post-doctoral Research fellow, Rider-Pool Collective Impact fellow, Practitioners Research and Scholarship Institute Writing fellow, distinguished Robert Wood Johnson Culture of Health Leader, Pennsylvania Commissioner on the Governors' Advisory Commission on African American Affairs, member of the Pennsylvania Reentry Council, founding member of The Society for the Healing and Study of Historical Trauma, founding board member of the NE Pennsylvania Chapter of the National Association of Black Social Workers and board member of Resurrected Community Development Corporation and Penn State Extension.

Hasshan holds a joint MSW from North Carolina A&T and The University of North Carolina at Greensboro, a post graduate certificate in Global Health and Doctorate in Health Sciences from Nova Southeastern University in Florida.

DETAILED COMMUNITY INVOLVEMENT PLAN for three segments: (1) Outreach, (2) Information Exchange & Relationship Building, and (3) Coordinated Action

Outcomes below are color-coded by the following EPA objectives as stated in RFP Section B:

- Leverage existing air quality monitoring expertise;
- Expand use of community monitoring advisory groups and other approaches that give the community a voice in the monitoring of their air quality;
- Build a foundation of trusting relationships and enhanced understanding from which sustainable solutions to community air pollution problems can be found.

OUTREACH (approx. months 1-6)

Goals	Tasks & Activities	Outcomes
PNLV staff develop air pollution knowledge and begin to plan how air pollution information and training can be integrated into existing PNLV program areas.	PIs work with PNLV staff to train, plan, coordinate and schedule outreach to institutions, organizations, and groups.	PNLV staff attains basic knowledge of air pollution and comfort explaining air pollution data to community members their programs serve.
Establish connections to leaders at institutions that may have an interest in data and learning opportunities related to air pollution monitoring Explain project and opportunities for involvement to institutional stakeholders and group leaders Collaborate with interested parties on ways to bring monitoring data to patients, students, residents, members, etc., based on general understanding of the needs and interests of these groups of people they serve.	Outreach to institutions, organizations, and groups: local hospitals' community health departments (e.g. St. Luke's, LVHN, Sacred Heart), schools (in AASD), community organizations (e.g. CACLV), churches (e.g. Resurrected Life Community Church), community groups (e.g. Cohesion). This would be a joint undertaking of project PIs (BH/HC) and PNLV staff member(s).	List of contacts in local institutions, organizations, and groups that are interested in working with PNLV and LU to disseminate information and engage members, patients, constituents, etc. in learning activities and strategies to reduce risk of exposure to air toxics. Establish rapport with institutional and community leaders, and develop basic understanding of how air monitoring data relates to the needs and interests of people these institutions/leaders serve.

INFORMATION EXCHANGE & RELATIONSHIP BUILDING (approx. months 6-12)

Goals	Tasks & Activities	Outcomes
Communicate preliminary monitoring results about nature and extent of air toxics problem to stakeholder organizations and community leaders. Collaborate with leaders on plans and strategies for engaging community members in	Develop accessible explanation of preliminary monitoring data to share with interested stakeholders identified during OUTREACH component of plan.	Dissemination of preliminary air monitoring information/data to people who live, work, play, and otherwise spend time in Allentown. Identification of particular groups and people that want to be involved or play a leadership role in COORDINATED ACTION component of plan.

discussion about air pollution and risk reduction strategies. Implement plans and strategies relevant to groups that PNLV serves. Identify concerns and suggestions from community members and stakeholders that can inform ongoing monitoring (e.g. locations or particular groups of people that are of special concern for risk of exposure).	PNLV shares air monitoring data in neighborhood/small group meetings, and otherwise incorporates information into existing programming such as *Lunch & Learn* sessions. Incorporate community feedback and responses to air monitoring data into monitoring plans and COORDINATED ACTION component of plan.	Adaptation of monitoring plan in response to community concerns and reactions to monitoring data. Development of risk reduction strategies based on dialogue about concerns with community members and community/institutional leaders. Develop (1) understanding of primary concerns and needs that can inform COORDINATED ACTION component of plan, and (2) plan for addressing community concerns through COORDINATED ACTION component of plan.
Develop capacity for effective communication of information about local air pollution problems with affected groups of people and institutional and community stakeholders.	Collaborate with stakeholders to refine presentation of information, tools, and strategies for ongoing engagement of community around data air toxics monitoring and risk reduction strategies.	Creation of effective and sharable materials, tools, and strategies for engaging different constituencies about air pollution and how to reduce exposure through behavioral change and participation in decision-processes (e.g. EPA rule-making, city and regional planning processes) and other relevant activities (e.g. public health assessments).

COORDINATED ACTION (approx. months 12-18)

Goals	**Activity/Task**	**Outcomes**
Formalize leadership and community oversight body to play an ongoing role in bringing community voice to decisions affecting air quality in Allentown and the broader Lehigh Valley.	Create Community Monitoring Advisory Group by inviting members, and collectively writing rules and procedures to structure Advisory Group activities.	Community Monitoring Advisory Group formally established. Rules and procedures for Advisory Group written and made public. Public presence for the advisory group created through announcement and location on PNLV website.
Partner with local authorities (e.g. EAC, LVPC) to establish processes for bringing community concerns about air quality to bear on local/regional government	Engage community members in activities that help institutionalize processes requiring local authorities to consult the Community Monitoring Advisory Group in local government decisions that determine air pollution exposure.	Local government bodies commit to processes for soliciting input from Community Monitoring Advisory Group in their regular decision process about projects and activities that will affect local air quality.

decisions affecting air quality.		
Establish public knowledge of a virtual location for information on air pollution, including information about how to contact and engage with Community Monitoring Advisory Group regarding concerns about air quality and actions/strategies to address air quality problems and exposures.	Create and enhance public presence for Advisory Group through radio opportunities, social media, news media, and promotion of a webpage (housed at LU's COH) for providing information about air quality and about how to contact Community Monitoring Advisory Group (through PNLV).	Bring public awareness to air quality issues and opportunities for learning and involvement. Provide virtual hub for stakeholders and citizens to exchange information and coordinate action to address air quality problems and share information about risk reduction strategies. Provide virtual location for faculty, stakeholders, and Community Monitoring Advisory Group to post data on air quality and opportunities for engagement in decisions and strategies that can diminish exposure to air pollution.
Institutionalize community expertise and oversight of air quality by incorporating training on air quality into existing PNLV programming.	Incorporate air quality training into health, wellness, and leadership programs at PNLV such as the Clean & Safe Neighborhood Initiative, the Public Health Awareness Campaign, and the Climate Core Program.	Sustain community representation and voice in Community Monitoring Advisory Group over time. Generate ongoing awareness and action to improve air quality through PNLV programs.
Provide data on air toxics exposure to stakeholders/citizens and engage them in opportunities to participate in decision-making processes and risk reduction strategies that can diminish their exposure to air pollution. Create, purchase, and distribute air quality swag.	Share data from complete air quality monitoring study and work with institutional leaders to develop strategies for risk reduction that can be shared with the groups they serve (patients, students, community members, etc.) Organize and create opportunities for citizens to (1) participate in actions that can strengthen air quality regulations (e.g. EPA rulemaking), and (2) influence local and state decisions that can minimize exposure to air pollution (local planning and decision processes).	Ease access to, and amplify citizens voices in, federal and local government decision-processes that determine exposure to air pollution. Bring citizens' concerns about air quality to bear on decisions that can diminish their own exposure to (and risk from) air pollution. Collaborate with government entities and local institutions on risk reduction strategies that can be incorporated into their normal operations and planning processes.

Quality Assurance Statement

1. Project organization

Pennsylvania Department of Environmental Protection (DEP) will administrate the award and provide quality assurance (QA) oversight for the project. DEP will contract with our partner, Lehigh University, to conduct this community air toxic monitoring study. Lehigh University and East Research Group Laboratory (ERG) have important roles in developing and implementing this study. ERG is the contract laboratory of EPA for TO-15 analysis. Thus, QA/QC of ERG is sufficient to meet EPA's requirements in laboratory analysis for the purpose of this study. Dr. Hyunok Choi from Lehigh University has extensive experience in measuring and analyzing ambient air toxics, especially polycyclic aromatic hydrocarbons (PAHs). Her group will develop a full quality assurance project plan for EPA approval if funded. Table 1 shows the responsibilities of each position.

Table1: Positions and responsibilities

Name	Position	Affiliation	Responsibility
Dr. Hyunok Choi	QA manager	Lehigh U	developing, reviewing, and overseeing implementation of QA/AC procedures, reviewing reports
TBD*	Air quality research scientist	Lehigh U	conducting monitoring, performing QA/AC checks, data analysis, development of reports
TBD*	Lab service manager	ERG Lab	monthly data validation, reporting
Dr. Min Zhong	Project coordinator	DEP	reviewing reports, coordinating reports submission with EPA and Lehigh University

*The specified personnel for these two positions will be determined if awarded.

2. Data quality objectives

The QA objective is to collect sufficient and accurate 24-hour integrated data for ethylene oxide and other volatile air toxics that are suitable for source apportionment and risk assessment.

3. Data quality indicators and acceptance criteria

Acceptance criteria are designed to evaluate and control each stage of the measurement process. The data quality indicators and acceptance criteria for ethylene oxide and volatile air toxic samples are listed below.

- Precision: the percent difference between two collocated samples is less than 30%
- Bias: measurement error should be less than 3 times method detection limit
- Representativeness: sampling will occur in 1-in-6 days frequency, from midnight-to-midnight local time, over 24 ± 1 hours.
- Completeness: at least 75% of all 24-hour integrated data be collected during the sampling period

- Sensitivity: method detection limited for TO-15 method based on ERG Lab's quality assurance project plan

Table 2 outlines the acceptance criteria for field canister checks, collection activities, and sample receipt. The acceptance criteria for sample analysis using TO-15 with a GC/MS, canister cleaning and testing will follow ERG Lab's quality assurance project plan. Data will be considered of sufficient quantity and quality if all the acceptance criteria are met.

Table 2: Data validation table.

Parameter	Acceptance criteria
Field measurement checks	
canister	canister must be used within 30 days from final evacuation
	pressure before sampling: vacuum ≤ 28 inHg
	leak rate ≤ 1 inHg over 5 minutes
Collection activities	
Sampling frequency	one sample every six days
trip blank	once per two months
collocated sample	once a month
Sample receipt	
chain-of-custody	each canister must be labeled with chain-of-custody form
sample holding time	analysis within 30 days after collection
canister check	pressure before lab analysis: vacuum ≤ 3 inHg

Lehigh University Budget Justification

Lehigh University budget

Budget item	EPA funding
Lehigh U Personnel	
PI: Hyunok Choi, 16.5% .16 FTE x 1.5 mo year @ $121,870/year	$15,386
Co-PI: Breena Holland, 16.5% .16 FTE x 1.5 mo year @ $102,280/year	$15,323
Postdoctoral Research Associate, 63% .63 FTE x 7.5 mo year@$53,760/year	$67,200
Fringe-30.8% of salary	$30,156
TOTAL PERSONNEL (INCLUDING FRINGE)	$128,065
Local mileage/driving (sampling site)	
TOTAL TAVEL	$2,765
Field sampling supplies	$1,000
TOTAL SUPPLIES	$1,000
Contractual	
Lab analysis of canister samples with TO-15 by ERG, including canisters and shipping (86 samples for ethylene oxide @$242/sample, 170 samples for air toxics @$554/sample, timer & probes rental $100/month/set)	$122,592
Community outreach – Promise Neighborhood of the Lehigh Valley	$75,000
TOTAL CONTRACTUAL	$197,592
TOTAL DIRECT COST	$329,422
Total indirect cost base	$279,422
TOTAL INDIRECT COST (61% of total indirect cost)	$170,448
TOTAL COST	**$499,870**

Senior Personnel

Funds are requested for the Principal Investigator, Prof. Hyunok Choi, Ph.D. at 0.16 FTE total for the project period. Prof. Choi is the Director for the Institute of Children's Environmental Precision Health and an Associate Professor in the Department of Community & Population Health in the College of Health at Lehigh University (LU). Lehigh faculty are a 9.0 month appointment where the salary is based on current FY22 salary rates as determined by the University, with a 3% increase in year two. As the corresponding key personnel at LU, she will serve as the coordinator between the research teams at LU and other teams. She will organize regular meetings with Principal Investigators for PA DEP (Dr. Zhong), LU (Dr. Holland), local schools, and community organizations (Dr. Hasshan Bhatts) to ensure high productivity and timely completion of the project. She will supervise a postdoctoral research associate to determine the quality of volatile air toxics data from Eastern Research Group. Together with Drs. Zhong and Holland, Dr. Choi will contribute to planning the air monitoring campaign, troubleshooting, analyzing the data, preparing manuscripts and scientific presentations at local meetings.

She will be responsible for meeting all three objectives in collaboration with Drs. Min Zhong and Breena Holland. She will also oversee the quality control of other statistical analyses, including spatial modeling of air pollutant data. She will collaborate with Dr. Zhong in setting up and maintaining a database (which will be housed at Lehigh University). Together with Drs. Zhong and Holland, Dr. Choi will estimate the relative contribution of multiple sources on population exposure to Ethylene Oxide, raise awareness for both criteria and volatile air toxics, conduct educational activities for community members, and help them develop strategies to lower personal exposure to volatile air toxics.

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Funds are requested for the Co-Principal Investigator, Prof. Breena Holland, Ph.D. at .16 FTE total for the project period. Prof. Holland is an Associate Professor in the Department of Political Science in the College of Arts & Sciences at Lehigh University. Lehigh faculty are a 9.0 month appointment where the salary is based on current FY22 salary rates as determined by the University, with a 3% increase in year two. She will be responsible for working with our partnering community organization, Promise Neighborhoods of the Lehigh Valley (PNLV), to carry out the detailed community engagement plan. She will organize the initial training for PNLV staff members and ensure that PNLV has access to scientific and medical health expertise at LU throughout the project, as needed for their work with community members. Dr. Holland will also organize and attend all meetings with local institutions (schools, hospitals, churches) during the initial Outreach stage of the community engagement plan, and she will organize and prepare the materials for meeting with these organizations during the Sharing Information and Relationship Building stage of the plan. She will be responsible for documenting meetings and public responses to information about volatile air toxics in Allentown, and for devising risk reduction strategies in collaboration with health, medical, and community experts.

Other Personnel

Support is requested for one (1) Postdoctoral Research Fellow at .63 FTE for the project period. The postdoctoral research associate will be responsible for the day-to-day operation of the project and interact with all co-investigators, including PA DEP, Promise Neighborhood of the Lehigh Valley (PNLV), and Lehigh University, undergraduate research fellows. The postdoctoral research associate will also build, integrate, clean a central database (15 calendar months, years 1 and 2). Specifically, data from Eastern Research Group will be integrated into ArcGIS Pro (ESRI Co.) along with US census data for the environmental justice target region. He or she will check for errors prepare the dataset for statistical analysis as needed. He/she will also generate routine reports for tracking project flow and participants on a weekly and bi-weekly basis. He/she will assist with manuscript preparation with all co-investigators. He/she will also perform statistical analyses and prepare datasets needed for presentations, publications, collaborators, and student projects.

Fringe Benefits

Fringe benefits are direct-charged as a percentage of salaries and wages at rates set by a DOD/ONR Audit Office Negotiation Agreement. The Agreement dated June 16, 2021, includes a benefit rate of 30.8% for full-time employees, including Postdoctoral Research Associates. The negotiated rate has been used for personnel in this proposed budget.

Travel, Domestic

Funds are requested to offset the cost of local travel to the five air monitoring sites in Allentown, Pennsylvania for maintenance and for gathering air quality samples. Current Mileage Rate is calculated as $0.512 per mile.

Project Year	Purpose of Travel	No. of monitoring sites	Distance (round Trip)	No. of weeks	No. of trips/ week	Mileage rate	Yearly sum
Year 1	Site Maintenance and sample collection	5 / Allentown, Pennsylvania	10 miles	39	2	$0.512	$1,997
Year 2	Site Maintenance and sample collection	5 / Allentown, Pennsylvania	10 miles	26	2	$0.512	$768
Grand Total				**65**			**$2,765**

Other Direct Costs

Contractual Costs

A contract will be set up with Eastern Research Group, Inc. (ERG) (Morrisville, NC) for the sampling and analysis of air samples collected from five sites in Allentown, Pennsylvania for $25,000 in Year 1 and $97, 592 in Year 2. Quotes are included with this proposal and include materials/supplies and shipping of samples.

Detailed breakdown of the charges of the sample rental, analysis, and shipping charges are shown in the table below.

	No. of site	No. of sample	unit price	Subtotal price	Time / probes per month	# month	Subtotal
EtO only	4	80	$242	$19,360	$100	4	$1,600
Collocated EtO sampler	1	4	$242	$968	$100	4	$400
Field blank(bimonthly)	1	2	$242	$484	$100	2	$200
All air toxics (2 community sites, 1-in-6 for each site)	2	122	$554	$67,588	$100	12	$2,400
All air toxics (background, 1-in-12)	1	30	$554	$16,620	$100	12	$1,200
Collocated sampler (once a month)	1	12	$554	$6,648	$100	12	$1,200
Field blank (bimonthly)	1	6	$554	$3,324	$100	6	$600
Subtotal		164		$114,992			$7,600
Total samples		256					$122,592

A subcontract will be set up with Promise Neighborhood of the Lehigh Valley for their work on the community engagement component of this project a total cost of $75,000. The PNVL salary ($45,360) will cover the salary ($25/hour) and benefits (26% of salary) of a PNLV staff member working 15 hour a week for the first 6 months, 25 hours a week for the second 6 months, and 20 hours a week in the third 6 months. The additional cost ($29,640) will go to overhead (12%), materials, administrative assistance, travel costs, office use, and honoraria. PNLV will be developing and implementing an air quality awareness and community engagement campaign structured around the volatile air toxics monitoring activities carried out in this project. They will be responsible for organizing and attending meetings with community institutions (churches), organizations (e.g. Cohesion, Community Action Committee of the Lehigh Valley), and residents served in PNLV's existing programs. They will provide the expertise and oversight needed to engage community members effectively in conversations about air quality, personal exposures, and risk reduction strategies. PNLV staff will also cultivate community engagement and leadership, and work with the Project PIs to institutionalize community oversight and voice in processes that determine community exposure to air pollution as detailed in the Coordinated Action part of the community engagement plan. They will help develop activities and materials for air quality learning and then incorporate those materials and activities into their existing programs, as appropriate. Finally, PNLV will be providing office space for meetings, will help design and produce materials for community awareness programs, such as t-shirts for participants, and may offer a small honorarium (up to $500) for community members who take a leadership role in program activities or who serve as a founding member of the Community Monitoring Advisory Group.

Indirect Costs

Facilities and Administrative (F & A) costs are direct-charged as a percentage of modified total direct costs (MTDC) at a rate of 61.0% as set by DOD/ONR Audit Office Negotiation Agreement dated July 1, 2020. Indirect costs are not charged on equipment items of $5,000 and greater, participant support costs, tuition remission, and subcontract charges over $25,000.

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Eastern Research Group
601 Keystone Park Drive
Suite 700
Morrisville, NC 27560

Combined 2021 VOC MDL - Compendium Method TO-15

Target Compounds	ppbv	µg/m^3	Target Compounds	ppbv	µg/m^3
1,1,1-Trichloroethane	0.00718	0.0393	Dibromochloromethane	0.0143	0.122
1,1,2,2-Tetrachloroethane	0.0158	0.109	Dichlorodifluoromethane	0.0244	0.121
1,1,2-Trichloroethane	0.0108	0.0591	Dichloromethane	0.103	0.359
1,1-Dichloroethane	0.00710	0.0288	Dichlorotetrafluoroethane	0.00699	0.0490
1,1-Dichloroethene	0.00873	0.0347	Ethyl Acrylate	0.0129	0.0529
1,2,4-Trichlorobenzene	0.0686	0.510	Ethyl tert-Butyl Ether	0.0100	0.0417
1,2,4-Trimethylbenzene	0.0129	0.0635	Ethylbenzene	0.00948	0.0412
1,2-Dibromoethane	0.0154	0.119	Ethylene Oxide	0.0261	0.0471
1,2-Dichloroethane	0.00724	0.0294	Hexachloro-1,3-Butadiene	0.0188	0.201
1,2-Dichloropropane	0.00848	0.0393	m,p-Xylene	0.0192	0.0835
1,3,5-Trimethylbenzene	0.0150	0.0739	m-Dichlorobenzene	0.0158	0.0952
1,3-Butadiene	0.0165	0.0366	Methyl Isobutyl Ketone	0.00752	0.0309
Acetonitrile	0.0525	0.0883	Methyl Methacrylate	0.0347	0.142
Acetylene	0.110	0.117	Methyl tert-Butyl Ether	0.00920	0.0332
Acrolein	0.102	0.234	*n*-Octane	0.00817	0.0382
Acrylonitrile	0.0171	0.0372	*o*-Dichlorobenzene	0.0165	0.0994
Benzene	0.0117	0.0375	*o*-Xylene	0.0128	0.0557
Bromochloromethane	0.0114	0.0604	*p*-Dichlorobenzene	0.0150	0.0904
Bromodichloromethane	0.00933	0.0626	Propylene *	0.130	0.224
Bromoform	0.0136	0.141	Styrene	0.0164	0.0700
Bromomethane	0.0101	0.0393	*tert*-Amyl Methyl Ether	0.0144	0.0603
Carbon Disulfide	0.0190	0.0593	Tetrachloroethylene	0.0184	0.125
Carbon Tetrachloride	0.0111	0.0700	Toluene	0.0592	0.224
Chlorobenzene	0.0132	0.0609	*trans*-1,2-Dichloroethylene	0.00708	0.0281
Chloroethane	0.0106	0.0280	*trans*-1,3-Dichloropropene	0.0159	0.0723
Chloroform	0.00733	0.0359	Trichloroethylene	0.0146	0.0786
Chloromethane	0.0507	0.105	Trichlorofluoromethane	0.0138	0.0777
Chloroprene	0.0171	0.0621	Trichlorotrifluoroethane	0.0119	0.0914
cis-1,2-Dichloroethylene	0.0171	0.0679	Vinyl Chloride	0.00861	0.0221
cis-1,3-Dichloropropene	0.00773	0.0352			

* Potentially based on propane co-eluting with propylene

PROMISE NEIGHBORHOODS
OF THE LEHIGH VALLEY

March 3, 2022

Pennsylvania Dept. of Environmental Protection
Bureau of Air Quality
P.O. Box 8468
Harrisburg, PA 17105-8468

RE: Letter of Support
Promise Neighborhoods of the Lehigh Valley

As Director of *Promise Neighborhoods of the Lehigh Valley* (PNLV), I am pleased to submit this Letter of Support to the Pennsylvania Department of Environmental Protection's Enhanced Air Quality Monitoring for Communities grant proposal: Partnering with Allentown Communities to Characterize Ethylene Oxide and Other Volatile Air Toxics. Staff and board members at PNLV have been working closely with the project leaders at Lehigh University to develop a community engagement plan built around the monitoring of air toxics.

Founded in 2008, PNLV is a Black-led, anti-racist, liberation-based grassroots community organization that is led and staffed by neighborhood residents in Allentown, Pennsylvania. The mission of PNLV is to foster cooperation among residents within the Greater Lehigh Valley to create safe, healthy, vibrant, inclusive neighborhoods, where children succeed in school and where adults and families thrive and want to live. This is accomplished through PNLV's unique network of stakeholders whose role in the community is to promote consistent public health messaging, delivered by trusted community messengers.

Initially, PNLV functioned as a traditional charity-based nonprofit with a cradle to career focus, a niche for cross-sector collaboration, and data-driven systems change. Under new leadership, PNLV continues its work in cradle to career programming and cross-sector collaboration, but its work is now informed by a commitment to increasing hope, sense of belonging and agency through relationship-building, community engagement, leadership development and community capacity building. This newly developed liberation-driven model postulates healing and helping through a community organizing model that promotes decolonization and radical transformation.

PNLV operates on the Radical Welcome and Engagement Restoration Model (RWERM)[1]. This model is employed in conjunction with data-driven programming. PNLV's ongoing collaboration with Lehigh University

[1] Radical Welcome Engagement and Restoration Model centers around six fundamental principles: (1) passionate invitation, (2) radical welcome (3) authentic sense of belonging, (4) co-created roles, (5) prioritization of social issues, and (6) individual and collective action.

for program design, research and evaluation has ensured continued commitment to effective and efficient programming. Ongoing evaluation using both qualitative and qualitative design is essential to ensure resources

are not wasted and programming is effective. PNLV is a champion in Community Based Participatory research (CBPR).

By employing these approaches, over the last 4 years, PNLV has lifted the voices of the most marginalized, ignored, overlooked, and silenced populations in Allentown through developing systems by which individuals, families and communities can interrogate and interrupt the politics of power, decision-making, funding, knowledge, and charity.

PNLV's existing programs and history of work with the communities in Allentown have enabled and fortified relationships that we believe will enhance the effectiveness of efforts to engage community members in understanding and reducing exposure air pollution, and in developing community expertise and leadership in monitoring and diminishing air toxics and other kinds of air pollution in the Lehigh Valley. PNLV has strong and trusting relationships with residents and can bring trust and responsiveness in project activities that involve engaging the communities it serves.

Environmental Justice is a critical to achieve a culture of health centered in equity across our community. Historically the voices, leadership and vision of racialized communities is excluded in the decision making process. I am excited to extend our partnership with Lehigh University and local municipalities to include addressing the greater burden of air pollution on the communities we represent and serve.

The present proposed project is aligned with PNLV's long-term work addressing health inequities and our current programs helping under-resourced communities in Allentown get through the medical, child-care, and economic challenges related to the COVID-19 pandemic. Our current efforts focus on healing and wellness through leadership development, violence prevention and reentry, racial justice and health equity, and community capacity building. Our health equity work has been recognized nationally for centering community context experts in contributing to policy, programming and the cannons of knowledge. We have been expanding our health equity work to address community justice through food justice and environmental justice through the development of an organic farm, food and wellness center, and environmental corp.

We are fully committed to developing programs in the areas of healthier food access and environmental justice. Our organization is central to bringing the community members together by increasing their awareness about air pollution, coordinating the efforts to better learn about the risks of air pollution exposure in the community, and developing strategies to better protect residents. By working closely with project leaders at Lehigh University, we hope to galvanize and spark a broader effort to raise awareness about air pollution, understand community needs and concerns, and develop risk reduction strategies, where possible.

Staff and Board Members at PNLV already have working relationships with the project leaders at Lehigh University. I am an adjunct professor and post doctorate research fellow at Lehigh University, we have 2 collaborative health equity grants with Lehigh University faculty and Lehigh University is my fiscal sponsor of my prestigious Robert Wood Johnson Culture of Health award. In addition, Dr. Breena Holland has been working with some of our board members on environmental justice issues since 2012. She has also participated in some of current programing, such as our Being Black in America Equity Film Series, and she has served as a panelist alongside me in discussions about environmental justice organized by other institutions. We look forward to also working with Dr. Hyunok Choi, whose expertise on childhood health and environmental pollution is highly relevant to the populations we serve.

PROMISE NEIGHBORHOODS
OF THE LEHIGH VALLEY

To support the important work this community air monitoring project would undertake, I am committing to provide a staff member to work on this project at the cost of $25/hour according to the following schedule:

- Months 1-6: up to 15 hours per week
- Months 6-12: up to 25 hours per week
- Months 12-18: up to 20 hours per week

Thank you for considering this Enhanced Air Quality Monitoring for Communities proposal.

Sincerely,

Hasshan Batts

Hasshan Batts, DHSc, MSW.
Executive Director, Promise Neighborhoods of the Lehigh Valley
Post Doctoral Research Fellow, Lehigh University
1101 Hamilton St. Suite 102 Allentown PA 18101

Manifest for Grant Application # GRANT13578771

Grant Application XML file (total 1):

1. GrantApplication.xml. (size 30434 bytes)

Forms Included in Zip File(total 6):

1. Form ProjectNarrativeAttachments_1_2-V1.2.pdf (size 16002 bytes)

2. Form SF424_3_0-V3.0.pdf (size 24197 bytes)

3. Form SF424A-V1.0.pdf (size 23346 bytes)

4. Form EPA4700_4_3_0-V3.0.pdf (size 22833 bytes)

5. Form OtherNarrativeAttachments_1_2-V1.2.pdf (size 15892 bytes)

6. Form EPA_KeyContacts_2_0-V2.0.pdf (size 37448 bytes)

Attachments Included in Zip File (total 18):

1. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1245-Lehigh U Budget Justification.docx application/vnd.openxmlformats-officedocument.wordprocessingml.document (size 40213 bytes)

2. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1246-References.pdf application/pdf (size 545884 bytes)

3. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1238-Letter of Support_Allentown Mayor Tuerk .pdf application/pdf (size 79717 bytes)

4. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1249-Mgt Dir 410.10 -- Investigating Internal Complaints (05DEC12).pdf application/pdf (size 200451 bytes)

5. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1251-Letter of Support_Allentown EAC.pdf application/pdf (size 112988 bytes)

6. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1237-Letter of Support - PNLV.pdf application/pdf (size 780819 bytes)

7. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1236-Detailed Plan for Community Involvement.docx application/vnd.openxmlformats-officedocument.wordprocessingml.document (size 26777 bytes)

8. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1247-2021 DEP Nondiscrimination Policy Statement (13JUL21).pdf application/pdf (size 207732 bytes)

9. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1248-Attachment (EPA-CEP-01).pdf application/pdf (size 14208 bytes)

10. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1242-CV_HChoi_Lehigh U.pdf application/pdf (size 79224 bytes)

11. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1241-CV_Breena Holland_Lehigh U.pdf application/pdf (size 90104 bytes)

12. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1240-Letter of Support_Centennial School.pdf application/pdf (size 147922 bytes)

13. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1239-Letter of Support-LU.pdf application/pdf (size 91832 bytes)

14. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1244-Full list of TO-15 compounds.pdf application/pdf (size 17217 bytes)

15. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1243-Dr. Batts BioSketch_PNLV.docx application/vnd.openxmlformats-officedocument.wordprocessingml.document (size 19559 bytes)

16. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1250-CV_Min Zhong_PADEP.pdf application/pdf (size 333500 bytes)

17. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1235-QA statement.docx application/vnd.openxmlformats-officedocument.wordprocessingml.document (size 28380 bytes)

18. ProjectNarrativeAttachments_1_2 ProjectNarrativeAttachments_1_2-Attachments-1234-Project Narrative.docx application/vnd.openxmlformats-officedocument.wordprocessingml.document (size 2189441 bytes)

Pennsylvania Department of Environmental Protection March 21, 2022
Bureau of Air Quality
PO Box 8468
Harrisburg, PA 17105-8468
Attention: Dr. Min Zhong (mzhong@pa.gov)

Re: Letter of Support, Partnering with Promise Neighborhoods Lehigh Valley to Characterize Ethylene Oxide and Other Volatile Air Toxics in East Allentown

Dear Dr. Zhong,

This letter is to express the support of the Allentown Environmental Advisory Council for the PADEP's partnership with Lehigh University and Promise Neighborhoods Lehigh Valley to monitor volatile air toxics in Allentown, PA.

The Allentown EAC is a citizens' advisory council to the City of Allentown. Its purpose includes advising the City on environmental issues within the City of Allentown and promoting community environmental programs. The Allentown EAC has committed to advancing environmental justice in Allentown. In furtherance of that commitment, last year we formed a partnership with Promise Neighborhoods Lehigh Valley to establish a civilian climate corps in the City. The vision is for Corpsmembers to provide services that address environmental issues in Allentown's low-income communities while receiving workforce development and training from PNLV and other partners in the program.

Our support for the proposed air toxics monitoring project in the east side of Allentown is consistent with our commitment to environmental justice as many of the communities in Allentown's east side are comprised of low-income people of color (along with others of low income). Because we are already working to develop community capacity and expertise related to environmental issues in Allentown, we believe we are well positioned to also work with the local community to engage in ongoing monitoring and activities that diminish health risks related to volatile air toxics. Our connections to government and non-governmental institutions in Allentown can be used to help bring awareness to

any air toxics problems that are found, and to foster institutional participation, engagement, and training that may aid in diminishing people's exposure to harmful air pollution.

We sincerely thank the PADEP for seeking funding from the Environmental Protection Agency for this important project for the City of Allentown.

Very Truly Yours,
Arundhati (Tinku) Khanwalkar
Chair, Allentown EAC

Cc: Matthew Tuerk, Mayor, City of Allentown
Leonard Lightner, Chief Operating Officer, City of Allentown
Connor Corpora, Chief Executive Assistant, Mayor's Office
Vicki Kistler, Interim Director of Department of Community and Economic Development, City of Allentown
Michael Hanlon, City Clerk, City of Allentown
Hasshan Batts, Executive Director, Promise Neighborhoods of the Lehigh Valley
Julie Thomases, Board Member, Promise Neighborhoods of the Lehigh Valley
Breena Holland, Associate Professor, Lehigh University
Members of Allentown EAC

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