



HAMPTON
UNIVERSITY



LINKING ENVIRONMENTAL and ACADEMIC PROGRAMS
Air Quality Monitoring and Data Analysis, Environmental Results, Career Development,
and Stewardship

MEMORANDUM OF UNDERSTANDING

BETWEEN

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
MID-ATLANTIC REGION**

AND

NORFOLK STATE UNIVERSITY

AND

HAMPTON UNIVERSITY

AND

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

**MEMORANDUM OF UNDERSTANDING
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Purpose and Goals

The purpose and goal of this Memorandum of Understanding (MOU) is to strengthen the ties between the Mid-Atlantic Region of the Environmental Protection Agency (EPA), Norfolk State University (NSU), Hampton University (HU), and the Virginia Department of Environmental Quality (DEQ) hereinafter referred to as "the Partners," to enhance research, teaching, outreach, career development and stewardship in environmental sciences to promote:

- An increase in the number of minorities with careers in environmental science and environmental engineering.
- The improvement of Air Quality in the Communities of Southeastern Virginia.
- The understanding of air pollution causes and effects.
- Environmental stewardship ethic in students and residents of the community.
- Opportunities for research experiences for both high school and undergraduate students in the area of molecular environmental toxicology and environmental research.

Objectives

The objectives of this MOU are to:

1. Support and promote student recruitment, internships, career development and employment in the fields of environmental science and engineering.
2. Enhance faculty's professional development opportunities in environmental science and related fields.
3. Enhance public, private and non-profit partnerships for environmental initiatives and student career development.
4. Support air pollution reduction activities in the Hampton Roads area.
5. Provide mutual technical assistance in the areas of air emissions inventories, air quality monitoring data and new diesel technology.
6. Support the Center for Microgravity and Environmental Biology in the Department of Biology in the School of Science and Technology at Norfolk State University.
7. Support the Center for Atmospheric Sciences at Hampton University.

Implementation

Objective 1 - Support and promote student recruitment, internships, career development and employment in environmental science and related fields.

- NSU and HU will promote student participation in intern programs at EPA and DEQ and will coordinate with EPA and DEQ on the placement of students in these agencies.
- EPA, at its discretion, may provide opportunities where authorized by applicable law, regulation, and policy, and to the extent possible for intern positions for students.
- DEQ, to the extent most practicable, will provide NSU and HU students intern opportunities.
- NSU and HU will publicize these internship opportunities and provide the students with information about EPA and DEQ.
- EPA and DEQ intend to participate in NSU and HU job fairs.
- EPA and DEQ intend to participate in department seminars and workshops sponsored by NSU and HU for the purpose of generating interest, and creating a forum for publicizing the Partners' missions and messages.
- EPA may assist NSU and HU with upgrading its laboratory facilities and other technical resources through donations of surplus laboratory, computer and field equipment, where authorized and when available in accordance with applicable laws, policies, and regulations.
- NSU and HU may provide visiting faculty appointments to the Partners' scientific and technical staff on collaborative research efforts and related programs. EPA may grant visiting scientist status to NSU and HU faculty at their analytical facilities, such as the Environmental Science Center in Fort Meade, MD where authorized and when available
- NSU and HU will deliver the following services directly to students:
 - Job readiness skills training
 - Career education, exposure information, and counseling
 - Orientation to post-secondary education and training options
 - Development of employment opportunities
 - Job placement
 - Counseling for working students
 - Upward Bound Program for high school students in the Hampton Roads area

- NSU will provide the other Partners with access to students enrolled in the School of Science and Technology for the purpose of informing the students of post-secondary education and career opportunities, specifically relating to environmental science and technology.
- HU will provide the other Partners with access to students enrolled in the School of Science, Department of Atmospheric and Planetary Sciences for the purpose of informing the students of post-secondary education and career opportunities, specifically relating to environmental science and technology.
- NSU will coordinate the School of Science and Technology meetings with the relevant Partners for the purpose of strengthening the environmental curriculum at NSU.
- HU will coordinate the School of Science, Department of Atmospheric and Planetary Sciences meetings with the relevant Partners for the purpose of strengthening the environmental curriculum at HU.
- DEQ will coordinate with NSU and their Upward Bound Program to provide student participants with environmental science-based field and laboratory training and hands-on experience at the School of Science and Technology.
- The Partners, where authorized and when available, intend to support and participate in education and training programs by:
 - Hosting mock interviews
 - Hosting field trips/tours
 - Participating in career days
 - Providing staff development and training for faculty
 - Attending awards assemblies
 - Providing classroom speakers

Objective 2 - Enhance faculty professional development in environmental science and related fields.

- EPA, at its discretion, may provide summer Faculty Fellowship opportunities to NSU and HU faculty in order to work with their technical staff and to gain first-hand knowledge and experience in various air quality activities.
- EPA, at its discretion, through the Intergovernmental Personnel Act (IPA) program may provide experts to work with NSU and HU faculty in developing programs in teaching, research and engagement in air quality areas.

- The Partners intend to work with NSU and HU to arrange short-term, intensive orientation workshops for NSU and HU faculty on environmental issues, particularly including those related to air quality.
- EPA and DEQ may collaborate with NSU and HU in order to provide staff development workshops, seminars, and training.

Objective 3 - Enhance public, private and non-profit partnerships for environmental initiatives and student career development.

The Partners intend to work with government sponsored and other volunteer organizations, such as the Retired and Senior Volunteer Program (RSVP), Volunteers in Service to America (VISTA), and the Upward Bound Program to enhance environmental stewardship, outreach, monitoring and training opportunities in the Hampton Roads area of Virginia.

- NSU and HU will encourage and support its faculty and students to visit classrooms to speak to high school students.
- NSU will set up tours for K-12 students at the School of Science and Technology.
- HU will set up tours for K-12 students at the Center for Atmospheric Sciences.
- EPA and DEQ intend to work with NSU and HU to identify opportunities to develop research and related activities in the Hampton Roads area of Virginia.
- The Partners intend to support the development of research projects that incorporate science, education, and outreach components to identify the local sources of air pollution, characterize the ambient air quality, develop and use technical tools such as monitoring, and modeling, identify strategies to improve air quality, and develop educational material for compliance assistance to small businesses and the community.
- To the extent possible and where authorized, the Partners intend to collaborate in developing an environmental awareness educational kit and environmental awareness workshops for community/voluntary organizations, science and middle school teachers, and/or high school students.
- NSU and HU will act as facilitators for community outreach program activities under this MOU. These activities may include: teacher training, promotional materials, continuing education courses, outreach to schools, depository references/resources for local communities; and an on-going topical display on environmental and air issues in the Hampton Roads area of Virginia.

Objective 4 - Support air pollution reduction activities in the Hampton Roads area of Virginia.

- Partners intend to identify volunteer strategies to improve air quality, and develop educational material for compliance assistance to small businesses and the community.
- Partners intend to collaborate to develop methodologies in evaluating benefits of diesel retrofit technology.
- Partners intend to collaborate to identify local sources of air pollution and characterize local ambient air quality by using emission estimation techniques and monitoring data.

Objective 5 - Provide mutual technical assistance in the areas of air emissions inventories, air quality monitoring data and new diesel technology.

The focus of CMEB has been environmental biology research. The CMEB will assist the Partners by providing:

- Air pollution information for the daily Air Quality index.
- Health advisories.
- "Ozone Action Day" alerts.

The CMEB will develop research projects that evaluate air quality and assessment methods for evaluating the air quality benefits – and tradeoffs – of using renewable diesel and biofuels.

Objective 6 – Support the Center for Microgravity and Environmental Biology in the Department of Biology in the School of Science and Technology at Norfolk State University

The CMEB has been used to promote research and train students in environmental science issues. The CMEB was established in 2002 in the Department of Biology using funding from the National Aeronautics and Space Administration (NASA) Glenn. The CMEB has received additional funding from the National Science foundation and the National Institutes of Health. To date, the CMEB has trained 40 undergraduate students and two graduate students. The Center focuses on basic research and the ethical, social and legal implications of science. Research activities include projects that focus on environmental toxicology, molecular environmental studies, water quality, biochemistry, optics, proteomics, and genomics.

Objective 7 - Support the Center for Atmospheric Sciences at Hampton University

The Center for Atmospheric Sciences (CAS), in the Department of Physics, has a three-fold focus of closely related objectives: education; fundamental research; and, outreach to the public, university, and K-12 communities. The center supports the nation's programs in atmospheric and earth radiation sciences and related technologies. CAS works closely with the nearby NASA Langley Research Center (LaRC). CAS is housed in its own buildings with supporting laboratory space on the HU campus. Some cooperative programs are conducted at LaRC, as well as at other institutions. Developments in remote sensing technology are closely linked to the HU Research Center for Optical Physics (RCOP).

The Center for Atmospheric Sciences' goals are to:

- Establish a center of excellence in atmospheric and space sciences at HU to enhance and complement NASA, NOAA, NSF and DOD research.
- Establish HU faculty, curriculum and programs leading to advanced degrees in atmospheric sciences.
- Conduct fundamental research in atmospheric and Earth radiation sciences.
- Establish innovative approaches for educational and public outreach.

Institutional Profiles

United States Environmental Protection Agency

In addition to its regulatory and enforcement functions, EPA is an environmental science agency responsible for conducting environmental research and providing support to the academic environmental research community. Pursuant to CAA 103(a), EPA is authorized to encourage and cooperate with entities to promote the coordination and acceleration of research, investigations, and studies related to the causes, effects, extent, prevention and control of air pollution. It is under that authority that EPA intends to participate in the activities outlined in this MOU. In carrying out its mission, EPA has created opportunities for young researchers and students to prepare and enter into environmentally-related careers. EPA began a sustained effort in 1981 to increase the involvement and participation of scientists and researchers in minority institutions in the Agency's environmental and scientific programs. In responding to these needs, EPA has established a number of partnerships and cooperative ventures with several minority academic institutions.

Norfolk State University

Norfolk State College was founded in 1935. The College, brought to life in the midst of the Great Depression, provided a setting in which the youth of the region could give expressions to their hopes and aspirations. At this founding, it was named the Norfolk Unit of Virginia Union University. In 1942, the College became the independent Norfolk Polytechnic College, and two years later an Act of the Virginia Legislature mandated that it become a part of Virginia State College.

The College was able to pursue an expanded mission with even greater emphasis in 1956 when another Act of the Legislature enabled the institution to offer its first Bachelor's degree. In 1969, the College was separated from Virginia State College and became fully independent. Subsequent legislative acts designated the institution as a university and authorized the granting of graduate degrees. In 1979, university status was attained.

Today, the University is proud to be one of the largest predominantly black institutions in the nation. Furthermore, it is committed to pursuing its vital role of serving the people of the Hampton Roads area.

Norfolk State University (NSU) is a public, state-supported institution in Norfolk, Virginia, which was voted the number one city in the South for 1998 by Money Magazine. The University is organized into five schools: Business and Entrepreneurship, Education, Liberal Arts, Science and Technology, and Social Work. The School of Science and Technology (SST) has over 1,700 students and presently comprises almost 25% of the University's total student enrollment. Undergraduate students can select from a wide array of courses in nine academic departments: Allied Health, Biology, Chemistry, Computer Science, Engineering, Mathematics, Nursing, Physics, and Technology.

The School of Science and Technology has played a pivotal role in the University's seventy-three year history. Faculty contributions in research, grantsmanship, service, and mentoring are exceptional. Graduates are securing outstanding jobs and are earning advanced degrees in record numbers. The School currently houses two of the University's centers of excellence - CMR (Center for Materials Research) and IIAR (Institute for Information Assurance Research) - along with numerous accredited programs. The University has demonstrated a strong commitment to the sciences and health professions through a significant investment of University resources in undergraduate educational programs, research facilities, and scholarships. Moreover, science and technology has been identified as one of NSU's top institutional priorities.

Graduate programs in Science and Technology have increased substantially with the introduction of the Master's Degree in Computer Science, Electronics Engineering, and Optical Engineering. These programs and a new Ph.D. in Materials Science and Engineering complement the existing Master's Degree program in Materials Science and very strong undergraduate programs in related disciplines.

The Center for Materials Research (CMR) conducts cutting edge research in well-equipped facilities in areas of crystal growth and nanotechnology, polymer processing, thin film deposition, nonlinear optics and laser design, optical spectroscopy, and magnetic resonance. CMR faculty members are energetic researchers dedicated to furthering knowledge in their respective disciplines. They focus on research problems of fundamental and practical importance in photonics and spin electronics, and make substantive efforts to cooperate with other universities, industry, and government laboratories.

The Center for Microgravity and Environmental Biology (CMEB) was created in 2002 in the Department of Biology using funds from NASA Glenn. In 2004 the CMEB offered its first NASA graduate fellowship with emphasis in Plant Biology. In 2003, the CMEB offered a collaborative REU summer research experience with Elizabeth City State University. The original focus of CMEB was to study microgravity responses in plants but with the addition of new faculty hires the emphasis has moved to a broader understanding of environmental and health science research. Although the research focus has changed, CMEB has continued to provide outreach and student development opportunities for undergraduate and K-2 students. In addition to participation on research projects, students are provided opportunities to attend and present at scientific meetings and interact with biologists who represent a broad range of specialties.

The Department of Biology at Norfolk State University has established a Center for Environmental Biology (CEB). The CEB serves as a comprehensive research and educational resources dedicated to the promotion of learning through outreach and service. The Center provides laboratory research experiences in plant biochemistry, pathology, physiology, toxicology, and molecular biology for NSU undergraduate and graduates student. The objective is to stimulate and motivate promising young scientists to pursue careers in research.

Hampton University

Hampton University, a dynamic, progressive institution of higher education, is a privately-endowed, non-profit, non-sectarian, co-educational, historically black university. It is located in southeastern Virginia and boasts one of the loveliest campuses in the nation, with a picturesque waterfront and historic buildings and landmarks. Hampton University has grown into a comprehensive university providing a broad range of technical, liberal arts, pre-professional, professional, and graduate degree programs. Cultural and athletic events are offered for enrichment, and to promote a sense of community for both students and faculty.

Hampton University is a community of learners and educators. It is a place that challenges the intellect and nurtures the spirit; broadens the outlook and expands opportunities. A place where you can meet people from a diversity of backgrounds and establish friendships that last a lifetime. HU's strong roots reach deep into the history of this nation and the African-American experience.

Hampton University is a place that values scholarship, talents and achievement. It is also a place that values character. It is a place that believes in integrity, honesty, respect for oneself, respect for others, decency, dignity, responsibility and fairness. It believes in providing an "Education for Life" to the whole person.

The Department of Atmospheric and Planetary Sciences is a new academic unit, formed in 2006/2007, offering graduate education leading to the M.S. and Ph. D. degrees, and supporting Hampton University's undergraduates with courses and a baccalaureate minor. The new department will serve the needs of a greater number of students by expanding the range of offerings in a flexible course of study that accommodates students with different academic backgrounds. The department builds upon the success of its research center, the Center for Atmospheric Science (CAS), which was previously part of the Department of Physics.

The department and CAS have a three-fold focus of closely related objectives: education; fundamental research; and outreach to the public, university, and K-12 communities. The center supports the nation's programs in atmospheric and Earth radiation sciences, planetary and space sciences, and related technologies. It works closely with the nearby NASA Langley Research Center (LaRC), and many other governmental and private partners. CAS is housed in its own buildings on campus with supporting laboratory space at HU. Some cooperative programs are conducted at LaRC, as well as at other institutions. The Center for Atmospheric Sciences' goals are to:

- Establish a center of excellence in atmospheric and planetary sciences at HU to enhance and complement NASA, NOAA, NSF and DOD research.
- Establish HU faculty, curriculum and programs leading to advanced degrees in atmospheric sciences and planetary sciences.
- Conduct fundamental research in atmospheric and planetary sciences.
- Establish innovative approaches for educational and public outreach.

Virginia Department of Environmental Quality

The Department of Environmental Quality (DEQ) is dedicated to protecting Virginia's environment and promoting the health and well-being of the citizens of the Commonwealth. We accomplish this by planning and implementing environmental programs and by resolving issues efficiently, openly, fairly, and consistently.

On behalf of the State Air Pollution Control Board, DEQ's Division of Air Quality is responsible for carrying out the mandates of the Virginia Air Pollution Control Law, as well as meeting Virginia's federal obligations under the Clean Air Act.

The objective of the Air Quality Division is to protect and enhance public health and the environment by controlling present and future sources of air pollution. The division ensures the safety and quality of the air in Virginia by monitoring and analyzing air quality data, regulating sources of air pollution, and working with local, state and federal agencies to plan and implement strategies to protect Virginia's air quality.

The Commonwealth air quality programs develop and implement regulations, policy, and guidance, and pursue necessary enforcement actions, to assure the provisions of the Virginia Air Pollution Control Law and the Commonwealth's responsibilities under the federal Clean Air Act (CAA) are met.

The Air Quality Division's core responsibilities include: 1) developing and implementing programs designed to ensure that Virginia meets national ambient air quality standards; 2) regulating the emission of air pollutants from industries and facilities by issuing and ensuring compliance with permits that set limits that are protective of public health; 3) monitoring Virginia's air quality; 4) investigating complaints and violations of Virginia's air quality laws; and, 5) developing state rules governing air quality standards.

General Provisions

- EPA Financial Limitation Provision
 - As required by the Antideficiency Act, 31 USC 1341 and 1342, all commitments made by EPA in this MOU are subject to the availability of appropriated funds. Nothing in this MOU, in and of itself, obligates EPA to expend appropriations or to enter into any contract, assistance agreement, interagency agreement, or incur other financial obligations that would be inconsistent with Agency budget priorities. The partners to this agreement agree not to submit a claim for compensation for services rendered to EPA in connection with any activities they carry out in furtherance of this MOU. This MOU does not exempt the partners from EPA policies governing competition for assistance agreements. Any transaction involving reimbursement or contribution of funds between the parties to this MOU will be handled in accordance with applicable laws, regulations, and procedures under separate written agreements
- Publications
 - The parties agree that any copyrightable subject matter, including but not limited to journal articles, training, educational or informational material or software, created jointly by the parties from the activities conducted under this MOU may be copyrighted by any of the non-federal partners to this MOU. All such non-federal partners hereby grant to the US EPA a royalty-free nonexclusive, irrevocable right to reproduce, distribute, make derivative works, and publish or perform the works publicly, or to authorize others to do

the same on its behalf. The provisions of this clause shall survive any termination to this agreement.

- Consultation and evaluation
 - There will be periodic consultation, as deemed necessary, between the Partners to facilitate execution of the program.
- No Private Right Of Action
 - This MOU does not create any right or benefit, substantive or procedural, enforceable by law or equity, by persons who are not party to this agreement, against any partner to this agreement, their officers or employees, or any other person. This MOU does not direct or apply to any person outside of the partners listed herein.

Commencement, Renewal, Amendment, Termination and Communication

- This MOU is to take effect upon the signature of the parties.
- This agreement will remain in effect for a period of five (5) years, with the option of renewal and will be reviewed yearly from the effective date of this agreement with the understanding that it may be revised by mutual consultation and written consent of the Partners.
- Amendments to the agreement may be initiated by any Partner and may be made with the written consent of all Partners. Requests for amendments may be made through an exchange of letters.
- Any issues not mentioned in this MOU may be resolved through mutual agreement among the designated liaison officers with the approval of their respective Partner Institution Official.
- Any party may terminate its participation in this MOU at any time by providing written notice to the other parties at least 60 days in advance of the desired termination date.

Signed:



Donald S. Welsh
Regional Administrator
United States Environmental Protection Agency
Mid-Atlantic Region

7/16/2008
DATE



Carolyn W. Meyers, Ph.D.
President
Norfolk State University

07.16.08
DATE



William R. Harvey, Ph.D.
President
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7/16/2008
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