

FACULTY

Timothy A. DeVal, CHP, Ph.D. Nuclear Engineering, Toshiba Professor, Environmental health physics, environmental risk assessment, nuclear forensics.

Brian A. Powell, Ph.D. Environmental Engineering and Science, Fjeld Professor, Radionuclide fate and transport, actinide geochemistry, environmental chemistry.

Lindsay C. Shuller-Nickles, Ph.D. Materials Science and Engineering, Associate Professor, Environmental mineralogy, actinide geochemistry, computational materials science.

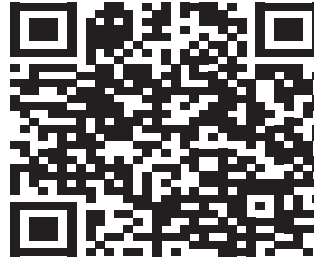
Nicole E. Martinez, CHP, Ph.D. Radiological Health Sciences, Associate Professor, Radioecology, environmental risk assessment, health physics.

ASSISTANTSHIPS



Teaching and Research Assistantships are available internally and through sponsored research from organizations such as the Dept. of Energy, and Nuclear Regulatory Commission. Current and former students have also held external research fellowships from:

- DOE Nuclear Energy University Program Fellowships
- NSF Graduate Student Fellowships
- DOE/NNSA Office of Science Programs



What can you expect from the EHP program?

- Diverse research opportunities
- in a supportive/collaborative environment
- where diversity & equity are valued.



Clemson University has a student branch of the Health Physics Society that is affiliated with the Savannah River Chapter

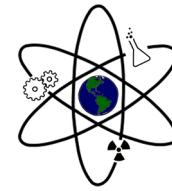
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**Environmental Engineering
and Earth Sciences**
Clemson University

ENVIRONMENTAL HEALTH PHYSICS

FOCUS AREA



Department of
**ENVIRONMENTAL ENGINEERING
AND EARTH SCIENCES**
Clemson University



Environmental Engineering and Earth Sciences, Clemson University

Environmental Health Physics Focus Area

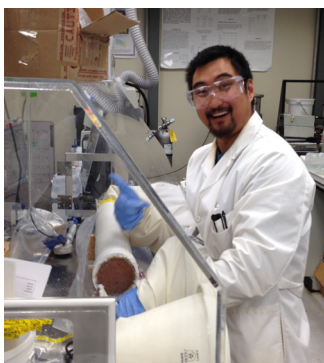
The Environmental Health Physics (EHP) focus area is fully integrated within the Environmental Engineering and Earth Sciences Department. This arrangement provides coursework and expertise in important complementary areas such as contaminant transport in the environment, environmental chemistry, process engineering, hydrogeology, and geochemistry. Alumni of this program are employed by environmental consulting firms, the Department of Energy and its contractors, the Nuclear Regulatory Commission, nuclear utilities, and regulatory agencies.

The Environmental Health Physics focus area encompasses the environmental aspects of nuclear technologies. The EHP focus area emphasizes the fundamentals, integrating radiological science with environmental engineering science of both natural and anthropogenic radioactivity. EHP students are provided the knowledge, skills, and abilities necessary for solving a wide range of problems in nuclear environmental engineering and science. The Environmental Health Physics program (accredited by the Applied and Natural Science Accreditation Commission of ABET, <https://www.abet.org> under the General Criteria and the Health Physics and Similarly Named Programs Program Criteria) emphasizes radiation protection, radiation detection and measurements, risk assessment, and radioactive waste management. Students may also pursue a Ph.D. in Environmental Engineering and Earth Sciences while following the EHP educational and research pursuits.

The EHP program maintains multiple research laboratories including a teaching laboratory, a low-level counting laboratory for environmental samples, a radiation detection and measurement laboratory, a radiochemical separation laboratory, and two additional radiochemistry laboratories equipped for working with sealed and unsealed sources. These laboratories total up to approximately 5000 ft² of space and operate under our broad scope radioactive materials license to safely handle radioisotopes ranging from ³H to ²⁵²Cf. The NEES laboratories contain an array of standard gas and solid-state detectors and pulse processing instrumentation for both routine and specialized applications. Faculty and students working within the NEES program are active participants in the university wide Center for Nuclear Environmental Engineering Sciences and Radioactive Waste Management (NEESRWM: <https://www.clemson.edu/neesrwm/>).

RESEARCH AREAS

- Radioactive waste treatment & management
- Risk assessment
- Detector and measurement techniques developed for radioactivity in the environment
- Radioecology
- Transport and fate of radionuclides in the environment
- Fission product and actinide biogeochemistry
- Fundamental and applied actinide chemistry
- Chemical aspects of environmental restoration, spent nuclear fuel processing, materials deposition, and isotope production
- Molecular modeling of nuclear fuels, nuclear waste forms, and mineral surfaces relevant to the fate and transport of radionuclides in the environment



NUCLEAR COURSES

Below is a list of nuclear courses that are taught in the department. For additional information on the Environmental Health Physics curriculum go to www.clemson.edu/cecas/departments/ees/academics/gradprog/ehp.html.

EES 6100 Environmental Radiation Protection: Fundamental principles of radiological health and radiation safety.

EES 6140 Radioecology: Introduction to interactions and effects of radiation and radioactivity in the environment.

EES 8110 Ionizing Radiation Detection and Measurement: Laboratory experiments in radiation detection, radiation interactions, and health physics.

EES 8120 Environmental Nuclear Engineering: Nuclear fuel cycle and the principles and practice in the disposal of radioactive waste.

EES 8130 Environmental Radioactivity Measurement: Laboratory and field exercises in the measurement of radioactivity and radiation in the environment.

EES 8150 Radiobiology: Basic principles associated with the biological responses of human beings to radiation from sub-cellular to population scales.

EES 8160 Nuclear Forensics: Principles and practice surrounding the collection, analysis, and evaluation of special nuclear material from pre- and post-detonation of a nuclear weapon.

EES 8180 Nuclear Culture: Evaluation of different representations of radioactivity and nuclear energy in relevant societal, ethical, and historical contexts.

EES 8420 Actinide Chemistry: Chemical and physical aspects of actinides in the environment, chemistry of the nuclear fuel cycle and waste treatment.

EES 8800 Environmental Risk Assessment: Principles and practice of calculating the human health risk associated with the release of contaminants to the environment.

EES 8830 Advanced Topics in Health Physics: Overview and indepth discussion of topics covered on the Certified Health Physics Exam, Part I.