



## HUMAN CAPITAL CRISIS IN RADIATION SAFETY

### POSITION STATEMENT OF THE HEALTH PHYSICS SOCIETY\*

HEALTH  
PHYSICS  
SOCIETY

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Radiation is used for many beneficial purposes to support this country's energy, medical, and security needs. Radiation safety (health physics) is one of the science and engineering disciplines in which a shortfall of sufficiently trained and educated individuals is projected in this country in the near future.

**The Health Physics Society advocates for a substantial financial commitment by the Congress and federal agencies to support education of scientists, technologists, engineers, and mathematicians (STEM<sup>1</sup>), STEM educators, research associated with these programs (including health physics), equipment and supplies for STEM teaching in secondary schools, and scholarships and financial support to colleges and universities in STEM. This support is needed to ensure an adequate supply of qualified scientists, technologists, engineers and mathematicians and, specifically, radiation safety professionals.**

Health physics is the scientific discipline responsible for protecting humans and their environment from the harmful effects of ionizing radiation while providing for its beneficial uses. Health physics requires fundamental abilities in mathematics, chemistry, physics, and biology, with specialized training in radiation physics, radiation detection and measurement, radiochemistry, radiobiology, and other subdisciplines.

Well-educated people in STEM and health physics are needed to meet growing needs in industry, government (Nuclear Regulatory Commission, Environmental Protection Agency, Department of Energy, etc.), medicine, and homeland security. For the United States to continue to be a world leader in science and technology, strong, healthy academic programs are needed to provide a meaningful succession of scientists, technologists, and engineers. This includes radiation safety professionals who work in our nation's energy, regulatory, security, and health care sectors.

<sup>1</sup>STEM Education Coalition. Available at: <http://www.stemmedcoalition.org>. Accessed 23 September 2013.

Twenty-four academic programs offer degrees in health physics (or a closely related field) at the undergraduate and/or graduate level (ORISE 2012). In health physics, the number of students graduating with bachelor's, master's, or doctorate degrees slowly increased from 2001 to 2007, followed by a decline through 2011 (ORISE 2012). Support for STEM research and teaching has historically come from the federal government, but this support has dwindled over the past decade. Federal support is needed because STEM education is in the national interest and promotes the common good and national security. In particular, federal support is needed for academic programs in health physics in order to attract, educate, and graduate the next generation of radiation safety professionals, retain and develop faculty, and provide for research into critical areas such as low-dose radiation bioeffects, environmental radiation protection, medical diagnostic and therapeutic application of radiation, and the next generation of nuclear power technology.

Furthermore, with expanding uses of radiation in diagnostic and therapeutic medical applications and the potential expansion of nuclear technology to meet the nation's future energy needs, it is clear to the radiation safety community that the current imbalance between supply and demand will significantly worsen in the near term, after which it will soon become untenable. The shortage of qualified radiation safety professionals will compromise the rigorous oversight necessary for the continued safe use of radiation for the benefit of the citizens of the United States.

Although the remaining health physics academic programs have the potential to expand and meet the current demand for graduates in health physics, this potential cannot be realized without rapid and substantial new support and investment by the federal government.

## *References*

Oak Ridge Institute for Science and Education. Health physics enrollments and degrees, 2011: Summary information. Science Education Programs, Oak Ridge Institute for Science and Education; 2012. Available at: <http://orise.orau.gov/files/sep/HP-Brief-71-2011-data.pdf>. Accessed 24 September 2013.

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\*The Health Physics Society is a nonprofit scientific professional organization whose mission is excellence in the science and practice of radiation safety. Since its formation in 1956, the Society has represented the largest radiation safety society in the world, with a membership that includes scientists, safety professionals, physicists, engineers, attorneys, and other professionals from academia, industry, medical institutions, state and federal government, the national laboratories, the military, and other organizations. Society activities include encouraging research in radiation science, developing standards, and disseminating radiation safety information. Society members are involved in understanding, evaluating, and controlling the potential risks from radiation relative to the benefits. Official position statements are prepared and adopted in accordance with standard policies and procedures of the Society. The Society may be contacted at 1313 Dolley Madison Blvd., Suite 402, McLean, VA 22101; phone: 703-790-1745; fax: 703-790-2672; email: [HPS@BurkInc.com](mailto:HPS@BurkInc.com).

