Health Physics News

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In This Issue

The Birth of the HPS: A Look Back

Spending Time with the Pioneers—Part II

Mary Walchuk

It seems that just about every health physicist looks to a role model from the early days of health physics for inspiration. The response to our January story on spending time with the pioneers of the field was so interesting and such a success that we decided to continue with it this month. We held another poll and received the following answers to our question:

If you could travel back in time to the early days of the Health Physics Society (late 1950s, early 1960s) which prominent health physicist would you most like to spend time with and why?

Sandy Perle

Chair, Standards Committee; Past President, Southern California Chapter; Past Chair, Electronic Media Committee; Senior Vice President, Technical Operations, Global Dosimetry Solutions, Inc.

One individual who has had the most profound impact on my career

was Dr. John Cameron, who perfected the use of thermoluminescent dosimetry (TLD) for commercial use, after Professor Farrington Daniels invented it in 1954. While I had the pleasure of knowing John during his latter years, communicating with him on many topics of mutual interest and acting as a "sounding board" for many of his ideas, I would have liked to have known John while he conducted his research leading to TLD use as a primary dosimeter, replacing film technology for those individuals working in more complex radiation work environments. I first learned of John and his work while a graduate student in 1970 with his book *Thermoluminescent Dosimetry*. At the time the program was focused on medical physics and I had no idea that TLD would become a primary focus of my career in the years to come, including running the dosimetry program at Florida Power and Light Company, providing TLD dosimetry for our four nuclear reactors, and ultimately at ICN Worldwide Dosimetry and now Global Dosimetry Solutions.

In addition to John's work with TLD, he had many other views, many debated within the industry, including his recommendation for the unit called BERT, to explain radiation dose to the public, and his recommendation for increased dose

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From the President

There is no time like the present to take action regarding the potential shortage of health physicists in the next 10 to 15 years. In 2004, the Health Physics Society (HPS) Human Capital Crisis Task Force, chaired by Kevin Nelson, performed a study of the number of radiation protection professionals in the United States and what the potential needs would be during the coming years due to retirement of our seasoned professionals. The report also focused attention on the fact that the health physics academic programs, as well as interest in science and engineering college programs in general, are dwindling, even though rapid growth in science and engineering occupations are projected to rise over the next decade.

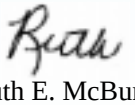
So, what is the Society doing and what can we do to address pipeline issues in the health physics profession? Currently, the primary focus on all fronts is to address education, research, and recruitment needs. As an update, here are some of the activities in which the Society has had an impact and others being planned:

Congressional activities—The Energy Policy Act of 2005, signed into law by the President on 8 August 2005, includes health physics as a scientific discipline that is authorized to be eligible for Department of Energy (DOE) university support in the form of fellowships and scholarships. It also authorizes the Nuclear Regulatory Commission (NRC) to award scholarships to undergraduate students and fellowships to graduate students in critical skill areas related to its regulatory mission. Through our Government Relations Program, we are following up with key congressional staffers to encourage the funding of these provisions through the appropriation process.

Agency and organizational activities—In addition to health physics fellowships and scholarships that have been made available through DOE and NRC, the Environmental Protection Agency's Science to Achieve Results (STAR) fellowship program has been expanded to include health physics. The first fellowship for a health physics major was granted in 2005. We are also coordinating with other organizations to reach out to high school and college students with information about the field of health physics and educational and career opportunities. In August, Keith Dinger, Ray Guilmette, and I visited Gerry Wheeler at the National Science Teachers Association (NSTA). He provided us with contacts in NSTA to look into the inclusion of the HPS Web page on career information in their "SciLinks" program, which provides Web links to science textbook publishers to include in the textbooks for the appropriate subject. HPS has also developed a student Web site (http://hps.org/students/) which was created to provide timely information to health physics students and potential students about educational opportunities and links to information about the profession.

New HPS ad hoc committee—In order to gather more information on human capital needs and to coordinate all of the activities needed to address the health physics manpower shortage for the future, I have appointed a new ad hoc committee, Health Physicists 2020, which is chaired by Wesley Bolch. Included on the committee are members representing several health physics career sectors and associated HPS committees that are providing some aspect of the activities that will be needed for this effort. The charge to the committee will be primarily to carry out some of the recommendations of the 2004 Task Force, including performing a needs assessment of radiation protection professionals not included in the initial survey, coordinating with National Registry of Radiation Protection Technologists for standardization or accreditation of technician-level training programs, exploring opportunities for funding of health physics academic programs and research, and providing outreach to high schools and colleges through information sharing regarding fellowships and scholarships, updating our career brochure, and developing presentations that can be provided by local chapter members at high school and college classes and science organization meetings.

The involvement of individual members at the local level will also be needed to make these efforts successful. I encourage you to become involved in keeping the profession going by interacting with local high schools and universities, being a mentor, or communicating with government leaders—it's time to build the future.



Ruth E. McBurney

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to stimulate an individual's immune system.

Those who knew John knew him for his keen sense of humor, his interest in publishing when he founded Medical Physics Publishing and, more recently, his idea for an online radiation museum where the public could come and interactively learn about the beneficial effects of exposure to radiation.

John had a significant effect on many, and he is surely missed.

Bill Field

Health Physics *Guest Associate Editor; Associate Professor, College of Public Health, Department of Occupational and Environmental Health, University of Iowa*

I feel profoundly fortunate to have met a few of the early pioneers, including K.Z. Morgan and J. Newell Stannard, but would have enjoyed spending additional time learning about their early experiences in the field. Two other pioneers I would have enjoyed spending time with would be Merril Eisenbud and Wade Patterson, who both died within a few months of each other in 1997. The range of Merril's scientific accomplishments and experiences are legendary. Two areas of my own research endeavor involve the health effects of beryllium and radon. Merril was one of the first people to perform studies examining the risk posed by beryllium exposure and by his own accounts was likely the first person to have made radon measurements on the Colorado plateau. He was also one of the early pioneers in the United States to apply epidemiologic methods to the disciplines of industrial hygiene and health physics.

I also never met Wade Patterson, who is generally considered the first accelerator health physicist, in person, but I had the pleasure to get to know him briefly from a distance prior to his sudden illness in 1997 through extended emails and telephone discussions on topics like the validity of the Linear No-Threshold Theory and the "ecologic fallacy." We even touched on how he almost rejected my first submission to a scientific journal 17 years earlier when he served as the editor of the *Health Physics* Journal. Wade and I had planned to meet at the Health Physics Society meeting in 1998 for dinner to discuss the "conservative" modeling of risk estimates, but unfortunately we never had that opportunity. His sincere desire to understand the scientific foundations of another scientist's view left a lasting impression. I feel honored to have known him, even if it was briefly.

Eric Abelquist

Board of Directors; Elda E. Anderson Awardee; Director of Radiological Safety, Assessment, and Training, Oak Ridge Associated Universities

I would have liked to spend time with Dr. Merril Eisenbud, President of the HPS in 1965 (which coincidentally is when my history begins). Much of the work we perform today in decommissioning radioactively contaminated sites relates to the transport of radioactivity in the environment. Dr. Eisenbud wrote the authoritative textbook on environmental radioactivity in 1963 and subsequently published three more editions, the latest one in 1997.

This book has long held a prominent place on the bookshelves of health physicists involved with the environmental aspects of our field. Many of us take for granted the warp-speed RESRAD calculations of receptor dose from environmental pathways. How often do we think about all the number crunching and environmental dynamics involved in the determination of dose from various pathways? Grab a pencil and pad of paper, and your calculator, and start with direct radiation exposure, now inhalation of particulates and radon, and finish with ingestion of plant foods, meat, milk, aquatic foods, water, and soil. You might be a while. We certainly owe a debt of gratitude to Dr. Eisenbud's pioneering work in environmental radioactivity and transport mechanisms that helped build the foundation of environmental pathway analyses performed today at D&D sites.

Alex Boerner

HPS History Committee Archivist and Past Chairman; Health Physics and Technical Projects Manager, Oak Ridge Associated Universities

Boy, what a tough question! I promise to eventually pick one individual, but I'm going to take this opportunity to say that I would have liked to have been involved in the "early days" with three particular health physicists who have assisted me so much in my career here at ORAU. Those gentlemen are Roger Cloutier, Jim Berger, and Jack Beck. Back then it wasn't ORAU—it was "ORINS," short for the "Oak Ridge Institute for Nuclear Studies." These gentlemen are definitely class individuals. Not to slight the west coast, I suspect I would have very

much enjoyed working with Ron Kathren, my HPS history article coauthor and a remarkable (and funny) human being. All right, so who gets the nod? Because of my interest in environmental health physics, I would have appreciated time spent with Merril Eisenbud. By all accounts, Dr. Eisenbud was admired on multiple fronts and left us with a wonderful and extensive scientific legacy regarding environmental radioactivity, its potential hazards, fallout from nuclear weapons testing, and many other areas too numerous to name here. What an opportunity it would have been to work with this radiation protection giant!

Howard Dickson

Past President, AAHP; Elda E. Anderson Awardee; Past Treasurer, HPS; Vice President, EG&G

I was fortunate enough to have arrived in Oak Ridge in the mid-1960s while many of the pioneers in our profession were still quite active paving the way for us and defining what the quaint term "health physics" really meant. My exposure to such great leaders as K.Z. Morgan, Myron Fair, John Auxier, Walter Snyder, Jim Hart, Roger Cloutier, and Don Jacobs makes it difficult to choose only one prominent health physicist. They all strongly influenced my career. However, the one who was the most intriguing and the one that I wished I could have spent more time with was Jim Hart. Jim had such a reputation for being a wheeler-dealer (in the most respective connotation) moving force that I wish I could have worked with him longer and more intimately. I wanted to learn how he won friends and influenced people so profoundly. Although we know that health physics is a blending of scientific and technical disciplines, who would have realized in those early days just how important the legal aspects would become. Clearly Jim had that vision and passed his legal perspective on to the health physicists whose lives he touched, and that was a great many! I witnessed Jim's star rising as he demonstrated leadership daily not only in Oak Ridge, but throughout the profession. Unfortunately, we never realized the full measure of his potential contributions because he died soon after becoming HPS president. I only wish I could have absorbed more of his wisdom and demeanor before his passing.

Scott O. Schwahn

President, Eastern Idaho Chapter HPS; Performance Evaluation Program Administrator, Department of Energy Laboratory Accreditation Program

If I were to go back to "the early days," I would like to spend time with Wade Patterson, Ralph Thomas, and Geoffrey Stapleton. These men were pioneers in accelerator health physics. In my limited interactions with them, I quickly found out bits about them that would have me digging for more. Wade, despite his prominence in accelerator health physics and in the Society, was always approachable. I also admire the way he never turned down an interesting opportunity and worked his way from construction laborer at Berkeley's Rad Lab to Health Physics Group Leader. Ralph has developed a reputation for being soft-spoken and outspoken at the same time and is truly a poet at heart. A glance at any of his writing reveals his eclectic nature. I would like to have seen what shapes such a man. I worked with Geoffrey at Jefferson Lab in Newport News. Also a man of varied interests, what most impressed me was that he parameterized nearly everything. He wanted to make calculations quick and simple for anyone to use. He was able to theorize with the best of them, but preferred to keep it simple when the case permitted.

Glenn Sturchio

HPS Program Committee; Elda E. Anderson Awardee; Manager, Radiation Safety & Hazardous Waste Management, Mayo Clinic

Going back to the early days of the Society, I would have liked to spend some time with John Auxier. There are three reasons for my choice. First, he was heavily involved in establishing *Health Physics* as the official journal of the Society. The journal helped to establish the Society as a unique scientific organization (and profession) in a landscape populated by industrial hygiene, occupational safety, and others. Second, although he was involved in research, he never forgot the needs of the practicing health physicist. Lastly, I would have liked to work with him on the efforts to determine radiation doses to survivors of nuclear weapons—blowing things up and making measurements. Sounds like fun.

Linda Sewell

ATE Editor, Nuclear Power; HPS Rules Committee Member;Dosimetry Supervisor, Diablo Canyon Power Plant

So who would I most like to meet? That's an interesting question. I feel very lucky to have had the

opportunity to meet and speak with so many of our "founding fathers and mothers." The annual HPS meetings are tremendous opportunities for this. If you were there, who can forget that impromptu Q and A by Dr. Teller at the Columbus HPS meeting? He held a crowd of 300 HPs spellbound for over two hours. I've learned much from so many, but to go back in time, that would be quite the opportunity. If we expand that date range a bit I would love to be a fly on the wall during the Manhattan Project days at Los Alamos. But I still haven't answered the question. I'll pick two names, one I have met and one I never did. I'd like to spend time with Elda Anderson and learn more about her. Female health physicists are lucky in that we have a number of great female role models—how many science fields can say that—but Dr. Anderson is someone I would like to meet and learn from. The second person is Dr. K.Z. Morgan and I want to discuss one primary issue—What made you change your views about radiation protection so dramatically?

Mark Rudin

Past Chair, Academic Education Committee; Senior Associate Vice President for Research Services, University of Nevada, Las Vegas

I really wish I could have been a fly on the wall at the Ohio State University Health Physics Conference in June of 1955 and sat in on many of the side meetings that took place during that event. I'm sure there was plenty of excitement in the air as they worked together to form the Health Physics Society!!! Although it would have been great to talk with all of the individuals who attended that original meeting, I guess I would have really liked to spend some extended time with Elda Anderson. Dr. Anderson was a world-class researcher and a very strong proponent of education. However, I have come to learn that she was also a valued and trusted colleague among her peers. Many of the technical skills and, perhaps more importantly, people skills I believe I could have learned from Dr. Anderson would prove to be invaluable in my current job.

Mary L. Birch

Past Chair, ABHP; Past Chair, ABHP Panel of Examiners; ES&H Manager for Duke Cogema Stone & Webster, LLC

Although probably more likely to be recognized as a medical physicist, if I could travel back to the early 60s, the health physicist who I would want to spend more time with would be John R. Cameron. There are two reasons: one was his innovation and the other was his willingness to share his knowledge.

In the early 60s, he was conducting research on thermoluminescence and its use for dosimetry. I recall the "light show" that introduced me to thermoluminescence, where he demonstrated the various materials that thermoluminesced, and then the patient explanation of its use for dosimetry.

The research started by Farrington Daniels and used by Dr. Cameron for dosimetry has made a significant impact on the field of health physics. He, along with Nagalingam Suntharalingam and Gordon Kenney, wrote *Thermoluminescent Dosimetry* (University of Wisconsin Press, 1968), one of the first books on thermoluminescence. When I was one of his students in the late 60s, he was working on the measurement of bone density using photon absorption, a technique now used routinely to detect osteoporosis. These are just a couple of examples of his innovation.

Dr. Cameron was a very caring person who always took the time to explain whatever you might have a question about. He taught by experience. He was a strong advocate for radiation protection and recognized early that medical radiation exposures would be a significant impact to the public. As a result, he worked to ensure quality control and accurate measurement of radiation exposures in medical practice.

Matt Arno

Treasurer, North Texas Chapter HPS; Vice President, Foxfire Scientific

If I could travel back in time, I would like to spend time with Herb Parker. I admire his work as a "down in the trenches" health physicist, especially during his tenure at Hanford. At the time, the field of health physics was still getting established. New radiation-measurement techniques were being developed rapidly, and new exposure-pathway concerns were arising frequently, including environmental and off-site concerns. Herbert Parker was at the forefront of identifying these pathways, reacting to them, developing measurement techniques to assess their impact, and implementing controls. All of us who have come afterwards into the field of health physics owe him a debt of

gratitude for the work he did. I think it would be exciting to have been present in those days and see Herbert Parker at work.

Vashek Vylet

Past President, Accelerator Section; Past President, North Carolina HPS; Associate Editor, Health Physics *Journal; Associate Director, Radiation Safety, Duke University*

I would like to meet and get to know Dr. Frank Herbert Attix. The basis of my health physics training behind the "iron curtain" was a three-volume compendium by Attix, Roesch, and Tochilin. Due to the unfavorable currency exchange rate, our department could afford only one copy that was shared by professors and students alike. Most of my early knowledge about radiation detectors and dosimetry came from that compendium. Since I started teaching courses on radiation physics and radiation detectors at Duke University, I became intimately familiar with a later book by Dr. Attix on radiological physics and radiation dosimetry. I gather from the text that Dr. Attix was a very insightful and meticulous individual. The only picture I saw of him was that of a bearded man wearing a serious expression in a group photo from a symposium. I would love to hear one of his lectures and his answers to student questions; I wonder what kind of man and teacher he was. Perhaps I will meet a former student of his one day to find out.

Joseph Guido

Secretary, Cincinnati Radiation Society; Senior Health Physicist, MJW Corporation, currently working on dose reconstruction for the EEOICPA program.

I would have liked to have been present with Dr. Lauriston S. Taylor during the formative years of the NCRP. Browsing through *Organization for Radiation Protection: The Operations of the ICRP and NCRP 1928–1974* (published by the DOE as DOE/TIC-10124), one finds a fascinating history of the health physics issues which confronted the pioneers of our profession. I am truly amazed by the comprehensive nature of the discussions and issues that were raised as these early pioneers confronted issues that were emerging at a pace that is probably unequaled until that time. Given the opportunity to listen in at these early NCRP meetings would provide a renewed respect for the true calling of our profession that is balancing the need for working with radioactive materials and radiation sources with the protection of those exposed.

Patrick C. Glisson

Past President, Bluegrass Chapter HPS; Health Physicist Technologist, University of Louisville, Radiation Safety Office

If given the chance to go back and meet with one of the "past" greats I would have to say it would be J. Robert Oppenheimer. When I was a child I remember being fascinated with him and his involvement in the Manhattan Project. To me it would be interesting to be able to talk with him as he is so closely connected with many of the great, good, or bad, depending on your viewpoint, events of the 20th century. Having grown up in the shadow of the results of the Manhattan Project, from what it did to the political world to bring radiation and health physics to the public eye, he has always been someone of great interest to me.

If you have enjoyed "Spending Time with the Pioneers" and wish you could add your thoughts, please email us (hpsnews@frontiernet.net) and let us know with whom you would like to spend time (200 words). We will print responses in future newsletters as we continue to receive them.

Editorial

Filling the Gaps in Our Radiological/Nuclear Terrorist Response Capability

Mark L. Maiello

The November 2005 issue of *Health Physics* is an excellent edition for those involved in homeland security. An article therein (Remick 2005) presents a good summary of the current functions of the myriad military and federal government radiological/nuclear disaster response assets.

The fact that one can count at least 17 organizations with some response capability (Figure 1) is something worthy of consideration.

If you're the type whose glass is half full you might consider all these organizations as a superb repertoire of valuable expertise and equipment that we can mobilize when required. If your glass is half empty, you may be wondering if all of them can dovetail effectively if the need arises.

In the aftermath of Hurricane Katrina, the benchmark by which all disaster relief in the future may be judged, we have come to realize that federal and local governments, as well as private organizations, can make serious errors when or if they attempt to act. One hopes that the post-radiological, and especially a post-nuclear, accident situation will be treated more effectively.

The 9/11 Commission has written that the detonation of a nuclear or radiological bomb poses the greatest threat to the United States (Francis 2005). I think they mean greatest relative to other weapons of mass destruction (WMD) and I think the emphasis is, or should be, on the nuclear, not the radiological, bomb. Commission member Timothy Roemer stated, "We need better practicing of these [nuclear attack response] plans, we need better

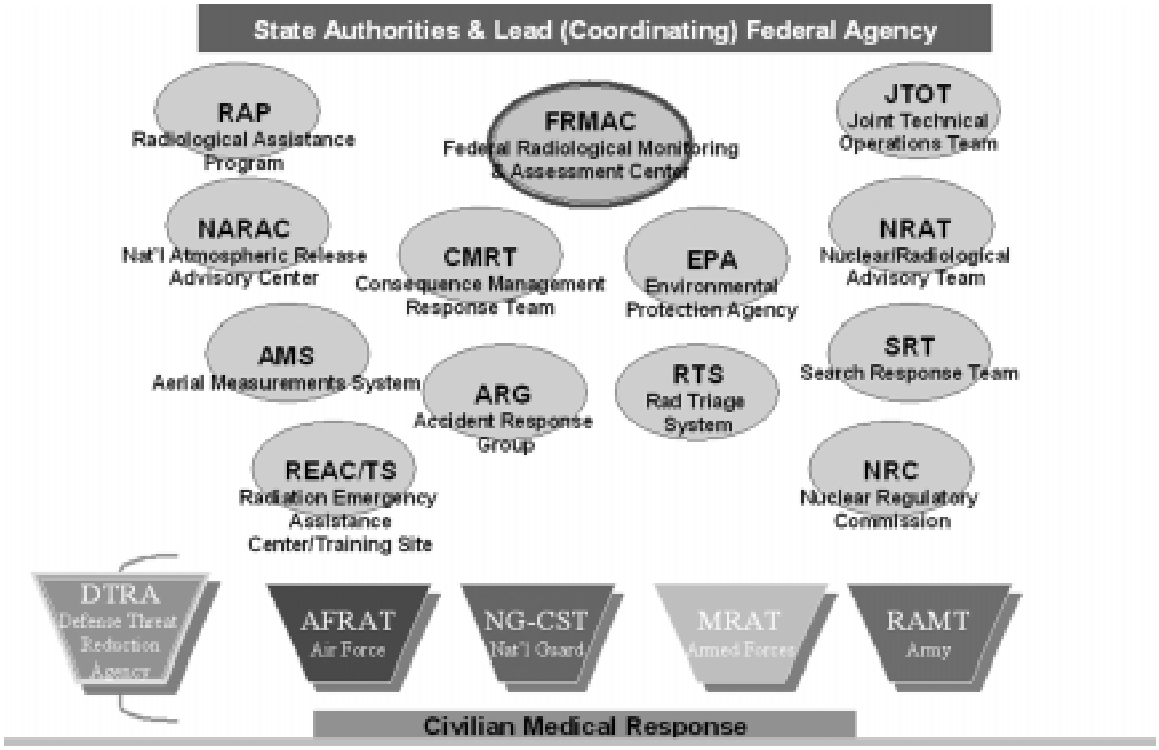

Figure 1: Major United States Civilian and Military Radiological Response Programs
Most programs are DOE/National Nuclear Security Administration assets. Military assets may contribute as needed or operate on strictly military crises. Also included for completeness is an indication of the Civilian Medical Response. The NRC responds to incidents involving its licensees and those of agreement states. The EPA participates during the crises and afterwards when remediation is in effect.

plans, we need simulations of these plans." Let's, for the moment, assume that we can respond as effectively as Roemer wants.

The November 2005 issue of *Health Physics* also contains an article on the status of the civilian medical response (Mettler 2005). This picture is not rosy. Lack of knowledge about radioactivity by emergency room personnel, fear of contaminated patients, lack of radiological detection equipment, and lack of emergency room staff relative to the surge of patients (real and the "anxious all right") all point to a very weak link in the response chain. So, even if we can rescue nuclear casualties and get them to hospital, we probably won't be able to handle their medical care as well as we would like . . . at least according to one author.

A true critique of our present federal and military response assets is probably not prudent to publish especially since military organizations are among the assets. A good analysis of the Top Officials (TOPOFF) drills 1 and 2, which are as near a critique as the public can find about WMD response by federal and state entities, was written recently (Erickson and Barratt 2004). The conclusions of this paper are in brief:

- Response organizations can have difficulty communicating to each other due to improperly functioning communications networks.
- Chaos reigns during catastrophes, causing great difficulties coordinating the response of multiple agencies.
- The medical response to the surge of patients and worried well is, at present, inadequate.

Two of these TOPOFF criticisms deal with the problem of coordinating multiple agencies. The third points towards a serious deficit concerning the civilian medical response.

It's a given that homeland security in general and radiological/nuclear threat response in particular is on a learning curve (though some federal and military radiological assets have been in business for decades). I'm sure (and I hope) that individually, each asset is a top-notch organization capable of fulfilling its stated mission.

Question one is, given the myriad response assets currently in place, are we allocating enough funds to allow all or most of them to practice coordinating in the field under the simulated chaos, stress, and pressure of a post dirty bomb or nuclear weapon accident situation? The other question is what can we do with our hospitals and their staffs? How can we eliminate radiological fear (an ageless question!) among members of the hospital staff and get them to handle, to the extent possible, the influx of wounded and worried well?

Can it be what former New York City Mayor Rudy Giuliani (Maiello 2005) and 9/11 Commissioner Timothy Roemer advocate? Could it be as simple as practice, practice, practice?

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"When I painted this symbol, all the other guys ran screaming out of the cave."

Member's Point of View

Bad Science in Service of a Bad Hypothesis

Theodore Rockwell
Chevy Chase, Maryland

In the interview of some BEIR VII authors in your September 2005 issue, your interviewer asked, "Were you surprised that there was no convincing evidence to move away from LNT?" Not surprisingly, BRER (Board on Radiation Effects Research) Director Evan Douple answered, "No, I wasn't surprised." Radiation protectionists have been dodging the evidence for decades.

You might have asked, what about the many letters published in this newsletter after NCRP-136 (NCRP 2001), challenging the validity of using LNT (linear no-threshold) at low doses? And Andy Karam's poll last July,* where only 12 out of 130 replies worldwide favored LNT. And position statements of the Health Physics Society and the American Nuclear Society that "there is insufficient scientific evidence to support the use of the LNT in the projection of health effects of low-level radiation." And the strong denunciation of the practice by the French Academy of Medicine in December 2001—"These procedures are without any scientific validity"—followed by the recent unprecedented unanimous report by the French Academies of Medicine and of Science (Aurengo et al. 2005), which not only condemned the use of LNT and collective dose at low levels, but also specifically repudiated the individual supportive arguments used in their defense in BEIR VII. And the 15 July 2005 letter from the DOE (Department of Energy) Director of Science to the president of the National Academy of Sciences expressing the concern of "many of us in the science community" on BEIR VII's support of LNT, collective dose, and reliance on A-bomb data.

Ted Rockwell, cofounder of the engineering firm MPR Associates Inc., and Radiation, Science & Health, Inc., and author of *The Rickover Effect* and *Creating the New World*

There is also the "Wingspread Conference" of 1-3 August 1997 that concluded "leading US and international scientific experts agreed in an historic accord that an increase in cancer has not been observed at radiation exposures below 10,000 millirem." NCRP-121 (NCRP 1995), discussing the question of low-dose radiation causing cancer, stated (p. 45), "Few experimental studies and essentially no human data can be said to prove, or even provide direct support for the concept." NCRP-136 (NCRP 2001) declares (p. 6), "It is important to note that the rates of cancer in most populations exposed to low-level radiation have not been found to be detectably increased, and in most cases the rates have appeared to be decreased." Hugh Henry of Oak Ridge National Laboratory summarized the data in the authoritative *Journal of the American Medical Association* (Henry 1961); "The preponderance of data better supports the hypothesis that low chronic exposures result in an increased longevity . . . a well-recognized phenomenon." And Radiation, Science & Health, Inc., (http://cnts.wpi.edu/rsh/about/brochure.html) submitted several hundred papers to the committee including the 1982 *Health Physics* paper by T.D. Luckey (Luckey 1982), with 230 scientific references. These data and conclusions go back over 100 years.

Only one of BEIR VII's 700+ pages directly discusses the subject of the report: How does a living organism respond to low-dose radiation? The rest of the material is either peripheral or irrelevant, such as high dose or high dose-rate, or irradiation of cells unsupported by a living immune system. When asked by *Health Physics News*, "What newer epidemiological data were pivotal to the committee's recommendations?" Ethel Gilbert replied that the atomic bomb data "were the principal data used in developing BEIR VII risk estimates." It's inexcusable that with hundreds of millions of cases of chronic exposure from medical therapy, occupational exposure, high-background locations, and accidental mass exposures in Taiwan and Russia we still look to poorly known exposures with dose rates many orders of magnitude higher, whose situation was complicated by neutrons and war conditions totally different from situations of interest.

BEIR committees and NCRP/ICRP (National Council on Radiation Protection and Measurements/International Commission on Radiological Protection) boast of their widespread peer review. Indeed, many competent organizations and individuals have put considerable effort into providing comments. Yet many commenters are ready to

testify that their contributions of substantial evidence refuting LNT at low levels have been totally ignored.

Such repeated practice in the radiation protection field raises the question of whether it is time for one or more formal charges of scientific misconduct. This term has been defined and successfully prosecuted in connection with several recent charges of misconduct in biomedical research. It is not a criminal charge and is not tried in the justice system. It is a scientific issue, tried and judged by scientists in the defendant's institution. The key issues to be proved are fabrication or distortion of data and selection and omission of data for the purpose of supporting a preferred conclusion—exactly the concerns raised (but not dealt with) in radiation protection. If only one such case were to be publicly demonstrated and prosecuted, it would send clear warning to other scientists that they might in the future find themselves far more publicly accountable than they had previously assumed. Such a conclusion could have a widely beneficial effect.

Footnote

*An informal questionnaire conducted through the RadSafe listserv and reported to RadSafe by Andrew Karam on 28 July 2005.

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Agency News

NRC News

submitted by Cynthia G. Jones, PhD
Senior Technical Advisor for Nuclear Security
US Nuclear Regulatory Commission
Health Physics News *Correspondent*

NRC Considers Changes to Regulations on Products Containing Radioactive Material

The Nuclear Regulatory Commission (NRC) is considering amending its regulations to improve, update, and clarify its requirements for the possession and use of products containing radioactive material. The changes would better ensure future protection of public health and safety, make licensing more effective and efficient, and reduce unnecessary regulatory burden.

The Commission has authority under the Atomic Energy Act to issue both general and specific licenses for the use of byproduct material. Exemptions from licensing may be issued for beneficial uses of licensed material, where the exemption will not constitute an unreasonable risk. Commission regulations currently have 15 exemptions from licensing for byproduct material. Examples include watches and smoke detectors containing certain amounts and types of radioactive material.

The proposed improvements and updates to the exemptions include the following changes: (1) Transfers of products and materials to persons exempt from licensing would have to be reported by the next 31 January date. Currently such reports are required only once every five years. (2) Exempt amounts of radioactive material could not be bundled together into one product if it would create a radiation level above what was anticipated in authorizing the exempt use. (3) Extraneous provisions of the regulations would be removed by deleting exemptions for products that are no longer being distributed. These products include automobile lock illuminators, balances of precision, automobile shift quadrants, marine compasses, thermostat dials and pointers, spark gap irradiators, and resins containing ^{46}Sc for sand consolidation in oil wells. However, in the unlikely event that someone still possesses any of these products, the rule would not change the regulatory status of any such products previously distributed under the regulations in effect at that time. (4) The proposed rule would establish a specific exemption from licensing requirements for smoke detectors containing only specified small amounts of ^{241}Am. This would help reduce the regulatory burden and fees for persons applying for licenses to distribute smoke detectors.

In addition to these changes for exempt distribution licenses, the NRC proposes to make two changes to the requirements involving general

(Agency continued on page 11)

Inside the Beltway

David Connolly
Washington Representative
Capitol Associates, Inc.

Increasingly in the month of December each year, we are presented with all sorts of "lists" that chronicle the high and low points of the previous 11 months. Whether it is the best movies, worst moments in sports, or a list of famous people who have passed on, we are forced to take stock of the events of the year. Washington is no exception to this trend and, in fact, may be partially responsible for it since the end of the year brings an end to the congressional cycle, prompting an analysis of its activities.

If you were to do a man-on-the-street interview around the country on the question of what the Congress had accomplished in 2005, you would probably get the answer "Not Much!" Upon further examination, the person would tell you that the Members of Congress were so busy yelling at each other about issues such as the Iraq war, Katrina, the Supreme Court, social security, and the legal troubles of Republican representatives that they did not do anything else all year but point fingers at each other. A closer examination of the record, however, reveals a different story. In fact, an argument could be made that the first session of the 109th Congress was one of the more productive ones in recent memory.

As I have said before, the path of legislation is a long and winding one. In 2005, this extended path ended for at least three comprehensive bills: bankruptcy reform, class action litigation, and energy policy. I have written throughout this year about the Energy Bill so I will only comment that not only did this bill become law but the debate set the stage for a continuing review of the energy policy of this country in the next few years. Coupled with the enormous legislative effort it takes the Congress to review and pass a budget each year that appropriates funds for running the government, 2005 can only be described as a productive year. In addition, when you consider the congressional activity that was expended in the aftermath of the hurricanes and the governmental response to these disasters, along with the confirmation of a new Chief Justice of the Supreme Court, this turned out to be a banner year for the Congress.

In truth, the end of this article leaves me with a humbling surprise. When I started thinking about it, I was the "man in the street" with the opinion that Congress did not do much. Yet a close examination of the record reveals just the opposite conclusion: the noisy congressional machinery of 2005 produced a large number of finished products that needed to be completed. Did they complete all their tasks? No. Is there work left over to be completed next year? Yes. However, when Congress finally did adjourn in late December, the members went home after completing a very commendable term. The end of the year leaves me with two distinct good feelings: as a taxpayer, I truly believe I got my money's worth out of the Congress and as a citizen, I still have a tremendous amount of respect for the amount of effort our congressional people put forth on behalf of their constituents and countrymen.

(Agency continued from page 10)

licenses. A general license grants authority to a person for certain activities involving nuclear material and is effective without the filing of an application with the NRC or the issuance of a license to a particular person.

Under the proposed changes, general licensees with devices containing certain types and amounts of radioactive material would no longer have to notify the NRC immediately in case of a loss or theft. However, they would have to notify the NRC within 30 days, unless the device has been recovered. The devices covered by this change present limited risk.

The proposed changes would also clarify the steps general licensees must take if they wish to transfer a product to a specifically licensed status.

The proposed rule was published 4 January in the *Federal Register*. Interested persons are invited to submit written comments by 20 March. The comments should be mailed to the Secretary, US Nuclear Regulatory Commission, Washington, DC 20555-0001, Attention: Rulemakings and Adjudications Staff, or emailed to SECY@nrc.gov. Comments may also be submitted via the NRC's rulemaking Web site at http://ruleforum.llnl.gov/.

HPS Standards Corner

ANSI N13 Seeks Section Chairs

Tracy Ikenberry, CHP

American National Standards Institute (ANSI) Accredited Standards Committee N13 on Radiation Protection is seeking interested and qualified individuals to fill the positions of Environmental Section Chair and External Dosimetry Section Chair. Section chair duties include:

- Provide direction, assistance, and encouragement to individual standard Working Group chairs in their preparation of draft standards.
- Periodically review Working Group progress and notify the N13 Administrative Committee when issues arise.
- Participate in N13 section chair conference calls and meetings.
- Perform the final technical review of draft standards and provide comments to the Working Group chair; on behalf of the Working Group, submit the draft standard to the N13 Administrative Committee for a vote of the committee members.
- Prepare annual and semiannual reports on section activities.

Section chairs must be members of the Health Physics Society (HPS). The term is three years, renewable on agreement between the section chair and the N13 chair.

Interested candidates should have demonstrated experience and technical expertise in the section technical area. Candidates should realize there is an important administrative function and responsibility to this position. Visit https://hps.org/membersonly/committees/standards/n13.html or http://hps.org/hpssc/index.html for information on HPS standards activities, including those of ANSI Accredited Standards Committee N13.

Interested individuals should send a statement of interest and résumé or curriculum vitae to N13 Vice Chair Tracy Ikenberry at ikenberry@moellerinc.com.

New HPS Officers

Congratulations to the newly elected officers of the Health Physics Society:

President-elect:
Kevin L. Nelson

Secretary-elect:
Kathryn H. Pryor

Board of Directors:
Nolan E. Hertel
Michael Lewandowski
Ali A. Simpkins

These officers will begin their terms in June 2006.

Biographical sketches and photos of these new officers will be presented in the next issue of *Health Physics News.*

New Books Available from IAEA

The International Atomic Energy Association (IAEA) announces the publication of:

- *Standard Format and Content for Safety Related Decommissioning Documents; Safety Reports Series No. 45*—STI/PUB/1214, 64 pp.; 0 figures; 2005, ISBN 92-0-113204-2, English. 22.00 Euro.
- *Applying Radiation Safety Standards in Nuclear Medicine; Safety Reports Series No. 40*—STI/PUB/1207, 124 pp.; 0 figures; 2005, ISBN 92-0-111104-5, English. 28.00 Euro.
- *Nuclear Security: Global Directions for the Future, Proceedings of an International Conference held in London, 16-18 March 2005; Proceedings Series*—STI/PUB/1232, 2005, ISBN 92-0-105905-1, English. 82.00 Euro.
- *Disposal Options for Disused Radioactive Sources; Technical Reports Series No. 436*—STI/DOC/010/436, 51 pp.; 14 figures; 2005, ISBN 92-0-100305-6, English. 27.00 Euro.
- *Environmental Contamination from Uranium Production Facilities and their Remediation, Proceedings of an International Workshop, Lisbon, Portugal, February 2004; Proceedings Series*—STI/PUB/1228, 262 pp.; 64 figures; 2005, ISBN 92-0-104305-8, English. 80.00 Euro.

For additional information, or to order a book, please contact sales.publications@iaea.org fax: +43 1 2600 29302 / tel.: +43 1 2600 22529 / http://www.iaea.org/books.

Committee Activities

Nominating Committee

Paul S. Rohwer, Chair

Call for Officer Nominations for 2007

The **Nominating Committee** is calling for nominees for the next Health Physics Society (HPS) election. The ballot positions to be filled are **President-elect**, **Treasurer-elect**, and **three members of the Board of Directors**. These officers, to be elected in late 2006, will take office during the 2007 HPS Annual Meeting.

Any member of the HPS may make a nomination; however, the nomination is stronger with chapter president, section president, and HPS committee chair recommendations or endorsements. The nomination must include a biographical sketch describing the nominee's applicable training, experience, and past activities as well as an explanation of why the person is being nominated. It is recommended that nominees for President-elect have previous Board experience. In making a nomination, please determine that the individual is willing to be considered as a nominee and will serve in office if elected.

A detailed description of the nomination process can be found in the Operations Section in the Members Only area of the Web site (https://hps.org/membersonly/operations/officernomination.html).

Nominations should be emailed to Paul Rohwer, chair of the Nominating Committee, at paulsandyr@ aol.com, faxed to Paul at 865-425-0234, or mailed to Paul at 989 West Outer Drive, Oak Ridge, TN 37830 no later than **1 March 2006**.

Program Committee

Elizabeth Brackett, Program Committee Chair
Matt McFee, Program Committee Member

Chapter and School Histories Sought for HPS 2006 Annual Meeting

If you've been reading the newsletter, you know that the Health Physics Society (HPS) is in the midst of celebrating its 50th anniversary. The celebration began with the 50th Annual Meeting in Spokane this past July and will end with the June 2006 meeting to be held in Providence. The HPS chapters are an integral part of the Society, and the Program Committee invites each chapter to share in the celebration by presenting posters for a special display of individual chapter histories in the poster session. We also want to acknowledge and celebrate the history of the educational institutions that have provided the trained professionals that made our profession possible, and we invite the programs to present posters documenting their histories. We encourage each participating organization to send a representative to set up and discuss the poster but, in cases where that isn't possible, the Program Committee will set up displays for any chapter or educational program willing to provide them. A number of chapters have already responded enthusiastically, and we would be thrilled to get 100% participation.

Liz Brackett and Matt McFee

Abstracts for these special posters will not be required; the only deliverable (other than the poster for the meeting) will be a commitment by 30 April 2006 (note this is later than previously requested). Display areas are 4´ x 8´ or 4´ x 4´. The posters may be drawings, pictures, text, artifacts, or some combination of these or some other creative format. The Program Committee will be forwarding guidelines and recommendations for the posters to all who respond.

Chapters, please contact Liz Brackett at ebrackett@oraucoc.org or 860-872-2137 to register your participation in this session.

Educational Programs, please contact Matt McFee at mmcfee@oraucoc.org or 513-758-1601.

Thank you in advance for your involvement!

Chapter News

Eastern Idaho Chapter

Scott O. Schwahn, CHP

EICHPS Holds Social Meeting

On Thursday, 2 December 2005, the Eastern Idaho Chapter of the Health Physics Society (EICHPS) held a social meeting in Idaho Falls. Generous sponsorship was provided by Canberra, Landauer®, Ortec®, and Thermo Electron Corporation. The social event was intended primarily as a means for bringing members together in a casual atmosphere, as well as to increase active membership. Heavy hors d'oeuvres and drinks were served, all complimentary to members signing up for the 2006 membership year. It was noted by more than one guest that this event was an incredible bargain—a $25 value for the price of a $10 membership. The meeting brought together 23 members and one guest—attendance was a bit lower than expected primarily due to inclement weather.

Photographs of the event, a rough schedule of upcoming meetings, membership forms, and other resources may be found on the new EICHPS Web site (http://www.hpschapters.org/eichps/).

Idaho State University students Vakho Makarashvili, Nino Chelidze, and Maya Keller with EICHPS Treasurer Larry Burke (third from the left)

South Texas Chapter

Jim R. Sharp and Stacy Krieger

STC-HPS Fall Meeting Highlights Affiliates, Industrial Uses, and Security

The South Texas Chapter of the Health Physics Society (STC-HPS) held its Fall Meeting and Affiliates Fair on Saturday, 10 September 2005, in Galveston, Texas. Total attendance of the meeting was 106. The Executive Council met on the previous evening to conduct the business of the chapter.

Saturday began at 8:00 a.m.with registration, vendor exhibits, and a continental breakfast. President-elect Jim R. Sharp, standing in for President Ken Krieger, opened the general meeting by welcoming everyone. His welcome was followed with the Affiliates' Presentations by Ortec-Advanced Measurement Technology, Thermo-Electron RM&P, Global Dosimetry Systems, and Canberra Industries. After a 30-minute break for refreshments and professional networking between members and vendors, Alpha Neutronics, Suntrac Services, and Iso-Tex Diagnostics continued the meeting with their presentations.

After lunch, guest speaker Frank "Fritz" C. Sturz, Senior Safeguards Technical Analyst for the Nuclear Regulatory Commission (NRC), gave a presentation on "Enhancing the Safety and Security of Radioactive Materials." Sturz provided background on NRC's initiative to enhance the security of radioactive material and outlined additional security measures and increased controls to be implemented by licensees possessing nuclides in quantities of concern. Members can review his presentation on the STC-HPS Web site (http://www.stc-hps.org/presentations/safety/EnhanceSafety.pdf).

STC-HPS was honored to recognize Phillip Pierce, winner of a

STC Student Assistance Chair Linda Morris congratulates science fair winner Phillip Pierce.

Special Award presented jointly by the North and South Texas Chapters of the HPS at the 2005 ExxonMobil® Texas Science and Engineering Fair, which was held in San Antonio this year. Phillip's project, "Radioactive Lantern Mantles," evaluated the beta and gamma radiation dose rates at different distances from lantern mantles containing ^{232}Th by using a Geiger counter. Phillip used the measured dose rates to calculate the dose to a camper from a hypothetical exposure to a lantern mantle carried in a pocket for 11 hours. He concluded that there is potential radiation exposure from thorium-containing lantern mantles and, although one can take measures to reduce exposure to the radiation from the thorium, the nonradiation yttrium lantern mantles should be used to minimize the potential radiation exposure. Phillip, a freshman at Henrietta High School near Wichita Falls, accompanied by his parents Jeff and Kathy Pierce, was presented with a plaque and a check for $750.

Following this presentation, there were vendor presentations by Quantum Technical Services, Owens Scientific, and Ludlum Measurements.

After a short break, Jim R. Sharp conducted the chapter business meeting followed by the presentation of the door prizes donated by affiliate members displaying their products and services at the meeting.

Buckeye Chapter

Dennis Clum, CHP

Left to right, Bela Kovach, Past Chapter President Bill Thomas, Chapter Treasurer Tina Amstein, HPS President Brian Dodd, Chapter President Dennis Clum, and Executive Council Members Rick Myser, Craig Jensen, and Joe Jacobsen

These past few months, the Buckeye Chapter hosted three chapter meetings. In September, Brian Dodd gave an interesting talk about the International Atomic Energy Agency (IAEA) and orphaned radiological sources at the Ohio State University (OSU) Faculty Club, the site of the original Health Physics Society meeting. The event was well attended and the first meeting that we have had at the Faculty Club in many years. We are most appreciative of the time Dodd spent in preparing his presentation and in fielding the many questions about the IAEA and potential sources for radiological terrorism.

Our November chapter meeting featured two speakers on the same topic: "Uranium Prospecting: Past and Present." Carl Willis, a graduate student in nuclear engineering at OSU who has spent his past few summers interning in New Mexico, talked about his modern-day experiences in uranium prospecting and shared an impressive collection of photographs and geological samples from Utah and New Mexico. Bela Kovach talked about uranium prospecting from the 1940s and 1950s. While still in high school, Bela started prospecting for uranium in 1949. During that time, uranium was still confidential to most of the world and consequently there was very limited information available about radioactivity and Geiger counters. Transistors were yet to be invented and to maintain a reliable Geiger counter required a lot of ingenuity and luck. At the time, very few mineralogists were knowledgeable about uranium-bearing minerals and prospecting was a learning experience in the fast lane. Bela talked about the basics of uranium prospecting as it developed half a century ago. Bela was joined by his grandson Sebastian who assembled the presentation in PowerPoint.

Bela and Sebastian Kovach with a small GM counter

In January, Darryl Walden and Steve Rosner hosted a tour of the Ohio Emergency Management Agency's (OEMA) Emergency Operations Center and Radiological Dose Assessment Operations. The OEMA Emergency Operations Center routinely participates in nuclear power plant exercises as well as being activated in emergencies such as tornados and floods.

Notes

HPS Annual Meeting 2006 – Visit Providence!

Tara Medich

The New England Chapter of the Health Physics Society (NECHPS) is pleased to be the host chapter for the 2006 Annual Meeting of the Health Physics Society to be held in Providence, Rhode Island, 25-29 June. This meeting will be the culmination of the 50th anniversary year of the Society.

In addition to the many technical sessions that will be held, NECHPS is organizing social tours that will showcase Providence and New England's finest attractions. The host hotel, the Westin Providence, is in the heart of the city and within easy walking distance to many points of interest, for those of you who like to take things at your leisure.

The summer brings many opportunities for fun in New England, and it is difficult to choose among them! The social tours will touch on the highlights of the area. Tours of historic Providence will showcase the important people, places, and events that have made Providence "The Renaissance City." No trip to Rhode Island is complete without traveling to Newport—America's First Resort. The splendor and grandeur of the Gilded Age will take your breath away!

A trip to Boston is also in the lineup. Guided tours will take you through history back to the American Revolution and the fight for freedom that began here. There will be plenty of time to explore both the old and new in Boston; the city was once considered by Oliver Wendell Holmes to be "the hub of the universe."

These are just a few of the items on the itinerary—keep reading next month for more news or visit our Web site (http://hps.org/newsandevents/meetings/meeting5.html) for more information. See you in Providence!

2006 NCRP Annual Meeting on "Chernobyl at Twenty"

Thomas S. Tenforde, President NCRP

On 3-4 April 2006 the National Council on Radiation Protection and Measurements (NCRP) will hold its 2006 Annual Meeting on the topic "Chernobyl at Twenty." The primary objective of this meeting, being held on the 20th anniversary of the Chernobyl accident, will be to provide a comprehensive review and analysis of the effects on human health and the environment of the worst nuclear power accident in history. Speakers will also discuss the lessons learned from the Chernobyl accident and new developments in the design of safer nuclear power reactors and more effective responses to nuclear accidents. Twenty-one invited speakers and five session chairs, including 14 scientists from nations outside the United States, will provide their analysis and perspectives on the following topics: (1) Environmental Impacts and Mitigation of Residual Radiation, (2) Dosimetry and Health Effects in Emergency Responders and Cleanup Workers, (3) Population Exposures and Health Effects, (4) Lessons Learned from Chernobyl, and (5) International Perspectives on the Future of Nuclear Science, Technology, and Power Sources. The meeting will conclude with a summary of highlights of these five sessions by the chairpersons.

The meeting agenda, abstracts of presentations, online registration, and hotel reservation forms can be found on the NCRP Web site at http://NCRPonline.org. The meeting will be held at the Crystal City Marriott, 1999 Jefferson Davis Highway, in Arlington, Virginia. Preregistration for the meeting at the NCRP Web site is encouraged. There is no registration fee for the meeting.

Two highlights of the meeting will be the Third Annual Warren K. Sinclair Keynote Address by Dr. Mikhail Balonov of the International Atomic Energy Agency, who will speak on "Retrospective Analysis of Impacts of the Chernobyl Accident," and the Thirtieth Lauriston S. Taylor Lecture on Radiation Protection and Measurements by Dr. Robert L. Brent of the Alfred I. duPont Institute Hospital for Children, who will speak on "Fifty Years of Scientific Investigation: The Importance of Scholarship and the Influence of Politics and Controversy." These presentations will be given on 3 April at 8:15 a.m. and 5:00 p.m., respectively.

University Wins $2.3 Million Grant to Train Prospective Radiation Protection Workers

The US Department of Labor (DOL) is awarding a $2.3 million grant to the University of Missouri in response to the energy industry's need for well-trained radiation protection technicians.

The grant is part of $14 million the DOL has allocated to train workers in several states—Kentucky, Pennsylvania, Utah, West Virginia, and Wyoming—for careers in a variety of energy-industry sectors, including coal, oil, and natural gas. This funding is part of larger investments made to support the nation's energy work force under the president's High-Growth Job Training Initiative, a strategic plan to prepare workers for jobs in expanding industries.

"It's good to be able to have the support to address this important need for the industry," said William Miller, Health Physics Society member and faculty member in the Nuclear Science and Engineering Institute at the University of Missouri-Columbia. "It helps to ensure the safe use of nuclear materials, both for nuclear industry workers and for the public. This funding was the result of a collaborative effort among many partners (including the Nuclear Science and Engineering Institute at Missouri University, Linn State Technical College and its Advanced Technology Center, Ameren's Callaway Nuclear Power Plant, the Nuclear Energy Institute, the Institute of Nuclear Power Operations, and our four partner utilities and associated technical schools). This partnership was responsible for our success in receiving this funding. It will enable us to make an impact on the need for radiation technician education and training to insure the safe utilization of radiation for society."


William Miller

The University of Missouri and its partners from the nuclear sector will establish a Center of Excellence for Radiation Protection Technology Education and Training. The center will develop an associate of applied science degree in nuclear technology program that will be disseminated to a network of community colleges throughout the country.

"A pipeline of skilled radiation protection technicians will be crucial to the nuclear energy sector's growth," said Emily Stover DeRocco, assistant secretary of labor for employment and training. "The program the University of Missouri is developing with its private-sector partners will prepare up to 200 workers throughout the country for jobs in this critical field."

Radiation protection technicians play an essential role in keeping radiation levels safe inside nuclear power plants. Studies show that up to 57 percent of these technical workers will retire within the next five years, according to DOL.

The DOL grant is the result of a nearly two-year effort in conjunction with numerous other organizations and member companies, including several companies and universities that also are partners on the grant—AmerenUE, AREVA, Arizona Public Service Co., Bartlett Services Inc., Central Virginia Community College, Linn State Technical College, Southern California Edison, TXU, and University of Missouri.

AIHA Sponsoring Full-Day Symposium

The St. Louis Section of the American Industrial Hygiene Association (AIHA) is sponsoring a full-day symposium that will address a variety of current issues in ionizing and nonionizing radiation. The symposium will be held Friday, 3 March 2006, at the Sheraton West Port Hotel in St. Louis, Missouri.

Presentation subject matter will include topics on radiological risk assessment, laser safety, EMF/RF hazard evaluation, radiation dose reconstruction, radiological site remediation, and radioactive waste management.

Application is being made to the American Board of Health Physics and AIHA for certification maintenance credit for attendees.

Make your reservations early!

For more information contact Conference Coordinator Dan Hoffman, 314-604-3414 or email deh11054@sbcglobal.net.

HEALTH PHYSICS SOCIETY

CONTINUED FEDERAL AND STATE ACTION IS NEEDED FOR BETTER CONTROL OF RADIOACTIVE SOURCES

POSITION STATEMENT OF THE HEALTH PHYSICS SOCIETY*

Adopted: January 2006

Contact: Richard J. Burk, Jr.
Executive Secretary
Health Physics Society
Telephone: 703-790-1745
Fax: 703-790-2672
Email: HPS@BurkInc.com
http://www.hps.org

The Health Physics Society (HPS) believes that security of vulnerable[1] and orphan[2] sources, both domestic and international, is a radiation safety issue of high priority needing additional state and national attention. Many disused[3] sources are also vulnerable and to that extent are included in this statement.

The HPS Position Statement *State and Federal Action Is Needed for Better Control of Orphan Sources* (HPS 2002) conveyed the Society's view that the orphan-source problem was a radiation safety issue of high priority. Although publication of the position statement followed the events of September 11, 2001, the document was primarily drafted prior to that date so it did not focus on the potential for malevolent use of radioactive sources. With concerns about the increased malevolent use[4] of radioactive sources emerging as a possible threat, the enhancement of orphan-source controls as advocated in the April 2002 position statement has become a subset of the security controls needed for all vulnerable sources.

The purpose of this position statement is to update and expand the scope of the April 2002 position statement to include, among other things, security of all vulnerable and orphan sources and to establish HPS positions and recommendations based on an HPS working group report, *Actions Needed to Better Secure Vulnerable Radioactive Sources: A Contemporary Report* (HPS 2005a). This position statement supersedes the April 2002 position statement regarding orphan-source control.

Since September 11, 2001, states, federal agencies, international organizations, and the US Congress have taken, and continue to take, significant actions, and they have implemented major improvements regarding the security of radioactive sources.[5] Therefore, these recommendations must be taken in the context of any actions that are taken following its issuance.

The specific HPS positions and recommendations for actions to better control vulnerable and orphan sources are given below.

Concerning recent actions to improve source security:

1. The HPS believes the Department of State should be commended for its leadership in successfully encouraging 77 International Atomic Energy Agency (IAEA) member states (as of September 2005) to commit to adopting the IAEA *Code of Conduct on the Safety and Security of Radioactive Sources (Code of Conduct).*
2. The HPS is concerned that very few countries (11 to date, including the United States and Canada) have so far committed to implementing the import/export provisions of the *Code of Conduct* by the end of 2005. The HPS believes the Department of State must continue to use all means possible to work with IAEA to get its member states to adopt and

implement the import/export controls and to prevent source transactions with countries that do not have proper source controls.

3. The HPS commends the Nuclear Regulatory Commission (NRC), Department of Energy (DOE), and Conference of Radiation Control Program Directors for their cooperative roles in supporting the establishment of the Off-Site Source Recovery Project (OSRP). In addition the HPS commends the NRC for revising rules for the import/export of radioactive materials and promulgating a proposed rule for a National Source Tracking System for certain sealed sources of concern.

4. The HPS supports the study of alternative technologies, as provided for by the *Energy Policy Act of 2005*, to reduce the use of radioactive materials when hazards and disposition are an issue and to provide a basis for statement 6 below.

Concerning a source prioritization system that underlies security measures both for national defense and security and for public health and safety:

5. The HPS supports the IAEA categorization system, but recognizes there is a need for other categorization levels for different purposes to support missions of the various federal agencies. The HPS believes that federal agencies must continue working together as they develop a consistent national regulatory framework that serves as the basis for a prioritization system that all agencies can use in achieving their respective goals and responsibilities.

Concerning future licensing of radioactive sources:

6. The HPS recommends that the federal and state regulatory agencies adopt as licensing policy a requirement that license applicants for a new use of a Category 1, 2, or 3 radioactive source[6] examine alternative technologies including, but not limited to, different source forms that are technically and economically feasible and whose alternative use would result in an equal or greater net benefit than from the use of the source.

7. The HPS recommends that a requirement be incorporated into the licensing process that an acquirer of Category 1, 2, or 3 sources must provide financial surety for disposal of the sources. This financial surety could be, for example, via an escrow account under NRC control with sufficient funds to cover government or third-party costs to dispose of the sources on the license with return of remaining funds to the purchaser upon disposition of all sources and termination of the license. The establishment of financial surety is consistent with the IAEA *Code of Conduct*.

Concerning source recovery:

8. The HPS believes congressional action is needed to authorize programs and appropriate sufficient funds on an ongoing basis to maintain a robust national capability for the recovery and disposition of vulnerable and orphan sources within the United States and abroad in order to assure the national defense and security and protection of public health and safety.

Concerning the NRC rule for import/export controls:

9. The HPS believes that the rule for import/export controls is generally consistent with the IAEA *Code of Conduct* and the supporting guidance and that the rule will have a very significant and positive impact on the control of international transfers of radioactive sources.

Concerning the implementation of the provisions for reclassification of naturally occurring radioactive materials (NORM) contained in the Energy Policy Act of 2005:

10. The HPS believes the NRC, in addressing the definition of discrete sources of NORM, should make a definition that addresses to the maximum extent allowed by the Energy Policy Act the need to establish uniform radiation protection standards to protect both public health and safety and national security, in accordance with the joint position of the HPS and the Organization of Agreement States, as described in their statement *Congressional Action Is Needed to Ensure Uniform Safety and Security for Certain Radioactive Materials* (HPS/OAS 2005).

Concerning the NRC proposed rule for a National Source Tracking System:

11. The HPS recommends that, because of the potential for unacceptable personal injury, economic, or social consequences from a mismanaged or poorly secured individual Category 3 source, the NRC should be consistent with the approach of the IAEA and consider that Category 3 sources warrant inclusion in the tracking system, unless an analysis can demonstrate that the large number of such sources and the economic cost for tracking them would be overly

burdensome. If the analysis demonstrates that the inclusion of all Category 3 sources is not justified on an economic basis, an evaluation should be performed as to how aggregate quantities of Category 3 sources that roll up to Category 1 or 2 thresholds can be identified and included in the tracking system or to identify if there are alternatives other than an "all or nothing" approach. For example, the analysis might identify some types of Category 3 sources that could be excluded while others should appropriately be included in the tracking system or may identify alternatives to the National Source Tracking System that accomplish the same results for these sources. The analysis and inclusion/exclusion of Category 3 sources should not interfere with the timely implementation of the tracking system for Category 1 and 2 sources.

Concerning transportation of vulnerable sources:

12. The HPS recommends that special form testing records be maintained in perpetuity and made available online by manufacturers registering their special form testing records with the Department of Transportation (DOT) in a manner that will not identify potential vulnerabilities of the packaging.
13. The HPS recommends that DOT extend the authorization for continued domestic use of the specification containers 20WC and 6M as necessary to provide sufficient time for design, testing, and approval of replacement containers with adequate internal volume, gross weights, and cost based on requests for an extension from potential applicants for certification. HPS further recommends that NRC expedite the review and approval process for updated replacement containers.

Concerning waste-disposal options for sources:

14. The HPS recommends that Congress take action to ensure accessible and safe options are available for disposing of all radioactive sources, but especially the higher-category (1-3) sources and orphan sources. If implemented, the recommendations in the HPS Position Statement *Low-Level Radioactive Waste Management Needs a Complete and Coordinated Overhaul* (HPS 2005b) will improve the effectiveness and efficiency of recovering and disposing of such sources.
15. The HPS recommends that federal and state agencies, in conjunction with radiation safety organizations like the HPS and other professional and trade organizations, develop and implement programs to better inform all entities that possess radioactive sources about available options for source disposition. In particular, this educational effort should be directed toward licensees who have had little contact with federal and state regulators and have minimal radiation safety programs.

Concerning international cooperation in recovery and security of vulnerable sources:

16. The HPS recommends that the Administration establish and implement a national policy aimed at recovering vulnerable and orphan sources of US origin that currently reside outside of US borders instead of the current efforts that involve approval of the recovery of individual sources on a case-by-case basis.

Footnotes:

[1] Vulnerable source: A vulnerable radioactive source is one which is currently under regulatory control, but for which the control is insufficient to provide assurance of long-term safety and security. A vulnerable source is one that could relatively easily become orphaned or be involved in a malevolent incident. This includes disused sources for which the licensee has few or no options for, or is incapable of providing for, the safe disposition of the material. This definition is based on the definition of a vulnerable source in IAEA TECDOC 1388 (February 2004). Similar terms used by other agencies include "sources of concern" or "potentially high-risk sources."

[2] Orphan source: An orphan source is a radioactive source which is not under regulatory control, either because it has never been under regulatory control or because it has been abandoned, lost, misplaced, stolen, or transferred without proper authorization.

[3] Disused source: A disused source is a radioactive source which is no longer used, and is not intended to be used, for the practice for which an authorization has been granted.

[4] Some examples of past malevolent uses of radioactive materials are the intentional irradiation of a boy by his father with a well-logging source in Texas in February 1974, the intentional contamination of a water cooler and an internal contamination of a researcher at the National Institutes of Health in June 1995, a suspected, but unproven, intentional internal

contamination of a researcher at the Massachusetts Institute of Technology in August 1995, and the placement of a radioactive source in Izmailovsky Park, Moscow, in November 1995 by Chechen rebels. It is noted the first three examples were not perpetrated as a terrorist action.

[5] Major developments in radioactive source security include the following:
• Issuance of a major revision to the International Atomic Energy Agency's (IAEA) *Code of Conduct on the Safety and Security of Radioactive Sources (Code of Conduct)* and supporting guidance relating to the safety and security of sealed sources.
• Establishment of a Nuclear Regulatory Commission (NRC) - Department of Energy (DOE) RDD working group and development of their report.
• Issuance of an NRC rule that implements the IAEA *Code of Conduct* provisions and guidance on the export and import of radioactive materials.
• Issuance of orders by the NRC requiring safety and security enhancements for panoramic irradiators, transport of radioactive materials, and the manufacturing and distribution of sources.
• Actions by the NRC and the Agreement States to develop an inventory of certain radioactive sources currently possessed by licensees.
• Publication of an NRC proposed rule to create a national tracking system for certain radioactive sources.
• Establishment of an NRC and Agreement State working group to develop increased controls for all licensees possessing Category 1 and 2 sources.
• Restructuring of the Off-Site Source Recovery Project by the DOE with support from the Congress.
• Drafting by the Department of Homeland Security (DHS) of a nuclear sector-specific plan covering protection of nuclear reactors, radioactive materials, and radioactive waste (as input to the National Infrastructure Protection Plan).
• Establishment within DHS of the Domestic Nuclear Detection Office.
• Enactment of the Energy Policy Act of 2005, containing specific provisions for radioactive source protection.

[6] The IAEA *Code of Conduct* includes a system for categorizing radioactive sources based on their potential to cause harm to people. The system categorizes sources into five categories, 1 through 5, with 1 being the greatest risk and 5 being the lowest risk. Categories 1, 2, and 3 are all classified as "dangerous" sources.

References:

Health Physics Society. Position Statement "State and Federal Action Is Needed for Better Control of Orphan Sources," issued April 2002.

Health Physics Society and Organization of Agreement States. Position Statement "Congressional Action Is Needed to Ensure Uniform Safety and Security for Certain Radioactive Materials," issued January 2005. Available at: http://hps.org/documents/MaterialControl.pdf.

Health Physics Society. Report of a Working Group "Actions Needed to Better Secure Vulnerable Radioactive Sources: A Contemporary Report," issued 1 September 2005. Available at: http://hps.org/documents/SafeguardActionNeededVulnerableSources.Public.pdf.

Health Physics Society. Position Statement "Low-Level Radioactive Waste Management Needs a Complete and Coordinated Overhaul," issued September 2005. Available at: http://hps.org/documents/llrw.2005.pdf.

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* The Health Physics Society is a nonprofit scientific professional organization whose mission is to promote the practice of radiation safety. Since its formation in 1956, the Society has grown to approximately 6,000 scientists, physicians, engineers, lawyers, and other professionals representing academia, industry, government, national laboratories, the Department of Defense, 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.

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Clearing Debris from the Paper Trail

Regis Greenwood, AAHP Parliamentarian

Over the years, the Academy's trail of documentation has become tangled with once necessary/now outdated papers, redundant procedures, multiple formats, and other sins against the good order of paper lovers everywhere.

The Academy Executive Committee, at the strong urging of the president, has instituted a program to clear this debris from the paper trail.

Academy documents fall into a rather simple hierarchy headed by the Academy Charter. As this document is part of the incorporation papers, it is fairly well untouchable. This is followed by the By-laws of the American Academy of Health Physics. The By-laws are being reviewed to ensure that they are in accord with the Charter while providing sufficient flexibility to run the Academy. Making changes to this document requires that an amendment be approved by the Executive Committee and then submitted to the entire membership for balloting.

The next level of documents is the Standing Committee Charters. These authorize the committee and set forth the responsibilities of the committee. A charter is drafted by the committee and approved (with any necessary revisions) by the Executive Committee. At present not all committees have approved charters, and the existing charters are in several formats.

Following the committee charters are the Standard Operating Procedures (SOP). These exist to tell the various committees, the officers, and the general membership how to do the various things authorized in the higher-level documents. Presently we have 18 SOPs. We also have redundancy, multiple formats, more than one SOP with the same number, conflicts with the By-laws, and at least one phantom SOP (authorized in Executive Committee minutes, but nowhere to be found).

We have recently introduced the lowest-tier document, called "Good Things To Know about my job" (GTTK). Since most positions change annually, these documents are intended to pass on tips and reminders and other useful tidbits to the incoming person. The GTTK documents will be written and modified each year by the departing incumbent of each position.

An ad hoc committee has been appointed by the Academy president to review our documents and to remedy these situations. The chairman of this committee is Jim Bogard; other members are Ken Eger, Kyle Kleinhans, Gary Kephart, Brian Methé, and Frazier Bronson. They have been hard at work and by the time you read this, they will have presented to the Executive Committee their recommended changes to the By-laws, Charters, and SOPs. It is a big and important task.

Professional Development Committee

Chris Donahue, Chair

The purpose of the Professional Development Committee of the American Academy of Health Physics is to promote certification and recertification by the American Board of Health Physics (ABHP). The Committee work includes expanding and enhancing the professional standards for ABHP certification and recertification and encouraging and assisting diplomats in improving their knowledge and understanding of health physics principles and practices. In addition, the Committee publicizes the benefits of

ABHP certification to health physicists and fosters recognition and acceptance of the importance of ABHP certification by other allied professionals, employers of health physicists, and the general public. The Committee members also host the ABHP booth at the midyear and annual Health Physics Society meetings.

The Committee is finalizing work on a Standards of Qualifications/Practice (SQ/P) for Healthcare Radiation Safety Officers (RSO) that employers can use to set minimum qualifications for RSO applicants. The SQ/P can also be used to evaluate potential candidates for open RSO positions. Additionally, the Committee is also drafting a Guidance Document that health physicists could use if they are called as an "Expert Witness" during legal proceedings.

Christine Donahue is the current chair of the Professional Development Committee. Current members include Thomas Youngblood, Dave Bernhardt, Tosh Ushino, Kevin Buckley, and Jay Maisler. Jeff Kotsch and Cindy Bloom will join the Committee in 2006 and serve through 2008. If you are interested in becoming involved with this Committee through active participation or in support of a particular project, please contact current Committee Chair Christine Donahue (cadonahue@lbl.gov).

AAHP Session at HPS Spokane Meeting: "BEIR VII and Radiation Risk"

Tom Buhl, AAHP Past President

Since 1989, the American Academy of Health Physics has sponsored a session at the Health Physics Society annual meeting. The topic of this year's session was "BEIR VII and Radiation Risk." The well-attended session was held during the morning and afternoon of Tuesday, 12 July 2005, in Spokane.

The special sessions were instituted as a way for the AAHP to actively contribute to the annual meeting by presenting topics of general interest to health physicists. The AAHP is very grateful to the HPS for allowing it to host these sessions at the annual meeting.

The session this year focused on the results of the recently released BEIR VII report and the use of radiation risk estimates, including those of BEIR VII, in health physics. BEIR VII was developed by the Committee on the Biological Effects of Ionizing Radiation (BEIR Committee), under the auspices of the National Academies' Board on Radiation Effects Research[1] (BRER).

The morning session featured presentations on the BEIR VII report itself by Drs. Evan Douple (BRER director) (Richard Jostes, BRER, coauthor) on the BEIR VII process and the overall BRER program, James Cleaver (BEIR VII Committee vice chair) on the biology and genetics models used in BEIR VII, and Ethel Gilbert (BEIR VII Committee member) on the epidemiological information used in BEIR VII.

The afternoon session dealt with the use of radiation risk estimates in health physics. This included presentations by Bruce Napier (Pacific Northwest National Laboratory) on using the GENII computer code in estimating risk, Tony Brooks (Washington State University) on the risks of high-LET radiation, Jerry Puskin (US Environmental Protection Agency and the EPA's BEIR VII project manager) on the use of the BEIR VII results in EPA programs, and Tom Buhl (Los Alamos National Laboratory, retired) on the recent BRER committee report using radiation risk in evaluating implementation of the Radiation Exposure Compensation Act.

I would again like to thank the other speakers for their excellent presentations and participation in the session. A special thanks goes to Evan Douple for cochairing the session and arranging for the BEIR VII Committee members to make presentations.

[1] BRER and the Board on Radioactive Waste Management merged in April to form the Nuclear and Radiation Studies Board.

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Odds and Ends from the Historical Archives

Paul Frame

Pile On Light from the Oak Ridge Graphite Reactor

The Graphite Reactor at Oak Ridge National Laboratory, originally known as the X Pile* or Clinton Pile, operated from 4 November 1943 to 4 November 1963. Twenty years to the day. It was constructed to produce plutonium for the Manhattan Project. But after the war, in the late 1940s and 1950s, the reactor became the world's single largest source of radioisotopes for use in research, industry, and medicine.

The element promethium was discovered here. Just as Prometheus stole the fire from the gods, the element promethium was stolen from the fire of the reactor. As punishment for stealing the fire from Olympus, Zeus had Prometheus tied to a rock so that an eagle could come each day and eat out his liver. Afterwards, his liver would grow back so that Prometheus had to face the same punishment the next day. Perhaps there might also be a price for playing with the fire of a reactor. At least that was the thought of the woman whose idea it was to name the element promethium.

Between 1945 and 1950, Ernest Wollan and Clifford Shull developed the technique of neutron diffraction analysis using neutrons from the reactor. In 1994 Shull was awarded the Nobel Prize for this work, but it was too late for Ernest Wollan, the first person to use the title "Health Physicist." He died in the 1980s.

* Oak Ridge was Site X, Los Alamos was Site Y, and Hanford was Site W.

Upcoming Events

2006 HPS Summer School
"Medical Health Physics"
http://nechps.org/SS06/ss06.html
18-23 June 2006
Brown University
Providence, Rhode Island

51st Annual Meeting
of the Health Physics Society
http://hps.org/newsandevents/meetings/meeting5.html
25-29 June 2006
Westin Convention Center
Providence, Rhode Island

NCRP 2006 Annual Meeting
"Chernobyl at Twenty"
http://www.ncrponline.org/
3-4 April 2006
Crystal City Forum
Arlington, Virginia

HPS Web Site: http://www.hps.org

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