HPS Health Physics News
-what's new and what's news in health physics-
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In This Issue

Fried by Fukushima
Misunderstanding, Misinformation, and Misapprehension
What HPS Can Do

Mary Walchuk and Linnea Wahl, CHP

In the three years since the 11 March 2011 Japanese earthquake and tsunami, media outlets of all kinds have been kept busy disseminating information about the Fukushima Daiichi nuclear power plant accident that occurred as a result.

In the past year, much of this information has actually been misinformation. Here are some examples:

- "There would be some 200,000 extra cancers in roughly 10 million population in the 200 km radius of the site [Fukushima] in the next 10 years, and 400,000 over 50 years." Christopher Busby, RT network, 20 August 2013
- "The fate of the earth is at stake here and the whole world must be watching every move at that site [Fukushima] from now on. With 11,000 fuel rods scattered around the place, as a ceaseless flow of contaminated water poisoning [sic] our oceans, our very survival is on the line." Helen Caldicott, YouTube, 7 October 2013
- "The west coast of North America is being absolutely fried with nuclear radiation from Fukushima." Michael Snyder, Underground Health website, 20 October 2013
- "I have seen a paper which says that if in fact the fourth plant goes under in an earthquake and those rods are exposed, it's bye-bye Japan and everybody on the west coast of North America should evacuate." David Suzuki, *The Huffington Post B.C.*, 4 November 2013
- If you live near a nuclear plant in the USA . . . you should run away." Christopher Busby, nuclear-news, 18 November 2013
- "The problem we face at Fukushima is absolutely huge—I may leave West Coast during this attempt to remove nuclear fuel." Dr. Stephen Hosea, ENE News, 24 November 2013
- "Navy Sailors Have Radiation Sickness After Japan Rescue." Laura Italiano and Kerry Murtha, *New York Post*, 22 December 2013
- "News Flash—Urgent . . . Persons residing on the west coast of North America should IMMEDIATELY begin preparing for another possible onslaught of dangerous atmospheric radiation from the Fukushima nuclear disaster site in Japan." Turner Radio Network, 28 December 2013

This is just a sampling of misinformation spreading, especially over the Internet. Many Health Physics Society (HPS) members have been involved in working against this spread and in providing accurate information about the Fukushima accident. In this issue of *Health Physics News*, we present some of these efforts. Kathryn Higley, Robert Gale, and Eric Goldin share their thoughts about the problem of misinformation and what can be done to counteract it. Joel Cehn provides facts about Fukushima that he compiled for the HPS website "Ask the Experts" (ATE) feature. Andy Karam offers his perspective of journalism after Fukushima. Health physics student Britt Edquist reports on the Fukushima Ambassadors Program attended by students from the Colorado State University student branch of the HPS Rocky Mountain Chapter.

Fukushima Misinformation: What Do We Do?

Have you noticed misinformation about the impacts of Fukushima in the media over the last year?

Higley: Yes, but I think that the reputable media are working to be more accurate.

Gale: I've seen extraordinary amounts of misinformation on every aspect of Fukushima, especially adverse health effects such as increases in thyroid cancer and leukemias.

Goldin: Yes, there has been a lot of both hyperbole and simple dishonesty. The Internet has all kinds of crazy stuff.

What are some examples?

Higley: I have seen statements such as Fukushima releases are contributing to starfish wasting along the California coastline and are causing ulcerated sores in polar bears and killing birds in Alaska.

Gale: I was interviewed regarding a group of Navy personnel who think their radiation exposure on a U.S. carrier has resulted in crippling illnesses and birth defects. I debated Helen Caldicott, who claimed 1 million cancer deaths, and I rebutted an article claiming an instantaneous increase in U.S. mortality rates post-Fukushima.

The "fringe" media has actually listed over 30 Fukushima "impacts" that in fact have no link to radioactivity.

Goldin: I recently read that starfish are dying at an alarming rate due to Fukushima-related radioactivity in the oceans. When I contacted the study author, I found he never attributed any of the starfish wasting disease to radioactivity. Another example is the story about contaminated fish along the West Coast due to Fukushima releases. The "fringe" media has actually listed over 30 Fukushima "impacts" that in fact have no link to radioactivity.

What is your response when people ask about these reports that contain misinformation?

Higley: I remind them that there are thousands of miles of open ocean between us and the coast of Japan and, therefore, a lot of dilution is taking place. If these environmental events are not occurring in Japan, they're certainly not going to be happening here in the United States. While we can measure the Fukushima-derived radionuclides in some marine species that traveled through the plume and traveled to the West Coast (for example, tuna), the levels that we detect are similar to, if not somewhat lower than, the levels of naturally occurring radionuclides already in the tissues of these animals. I also remind people that everything is radioactive to some degree or another and that, as a result of this natural radiation field, our cellular systems have developed strategies for dealing with the damage caused by radiation. And finally, I let them know that natural radioactivity is not intrinsically better for us than artificial radioactivity.

Gale: I try to discuss data and biological plausibility after showing sympathy.

Goldin: Most folks will listen and accept a reasonable explanation about the situation in Japan and the real environmental impacts. A vital element is to be able to point to real science or at least to resources that describe effects but do not attribute them to radiation or radioactive releases.

Why is it important to let people know there is misinformation being disseminated in the media?

Higley: Because people are scared, and it is having both psychological and economic impacts.

Gale: I don't think this is a solution. What we need to do is to get correct facts out.

Goldin: If misinformation is not countered, many people will assume that it is correct. Once the distortions are out there, it is very difficult to gain enough attention to refute them.

What can individual health physicists do to correct misinformation about Fukushima?

Higley: Be honest about the severity of the accident; don't downplay the risks, but put things in context.

Gale: Don't speak about Fukushima. Speak about radiation, using Fukushima as an example. And do it in schools and public lectures. Immediately after an accident is NOT the time for a lesson in radiation biology. We need to do it in advance.

Goldin: Speaking to students and the public at open venues is a valuable contribution. You only need to keep involved in your local community and those opportunities will come up.The key is to be honest and credible and recognize that much of your audience has been heavily influenced by popular-culture representations of what radiation is and, often, they are afraid of it.

(Editor's note: Also see Member's Point of View by Brant Ulsh in this newsletter.)

What can the HPS do to correct misinformation about Fukushima?

Higley: Continue to be an honest broker about the facts and the risks.

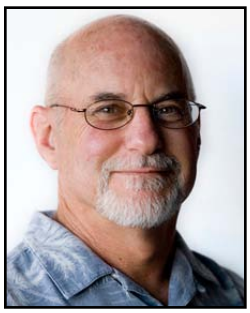
Gale: Buy 300 million copies of the book I wrote with Eric Lax, *Radiation: What You Need to Know*, and send one to every American. Eric and I will donate all proceeds to a radiation physics course for Dr. Caldicott.

(Editor's note: Dr. Gale provided numerous free copies of his book for the HPS Web Operations book drawing at the 2013 HPS Annual Meeting.)

Goldin: The Society serves an essential role by providing accurate information via the website, referrals to other credible information sources, and answers through "Ask the Experts."

Kathryn Higley is a professor and head of the Department of Nuclear Engineering and Radiation Health Physics at Oregon State University. This department is known for its large-scale thermal hydraulics test facilities and the spin out of NuScale Power, a company whose small modular reactor design recently won a $425 million dollar grant from the U.S. Department of Energy. She is a certified health physicist, and she conducts research in environmental transport and uptake of radionuclides, including evaluation of Fukushima-derived radionuclides on marine and terrestrial organisms. She has participated in nuclear emergency response activities for several decades and is a member of International Commission on Radiological Protection Committee 5, protection of the environment. Since the early days of the accident, Higley has fielded questions by local, national, and international media (as well as the general public) regarding the impact of the Fukushima releases. Last year, at the request of Tokyo Electric Power Company, she toured the Fukushima site and observed decontamination activities there and in the exclusion zone.

Robert Gale, MD, is visiting professor of hematology at the Centre for Haematology, Division of Experimental Medicine, Department of Medicine, Imperial College London in the United Kingdom. He went to Japan immediately after the accident, was a consultant to the prime minister's office, and addressed the National Diet of Japan on several occasions. He spent much of the first two years after the Fukushima accident in Japan and wrote a book (with Eric Lax) on Chernobyl, Fukushima, and other accidents (*Radiation: What You Need to Know*, A. Knopf, NY, 2013).



Eric Goldin is retired and works occasionally in a consulting capacity. During his 32 years of nuclear power radiation safety work, he was fortunate to be able to act as an "ambassador" to speak to tour groups, students, and interested members of the public along with an occasional elected official. Additionally, he volunteered to speak as a guest at classes in nearby schools and participate in activities such as street fairs. While associated with the local community college, Goldin was one of several instructors who hosted an open forum on Fukushima around the first anniversary of the accident. The forum had a standing-room-only crowd and plenty of dissenting viewpoints, but overall it was a great success.

Fukushima Facts 2014

Joel Cehn, CHP, ATE Topic Editor for Nuclear Power, Devices, and Accidents

The 2011 Tohoku earthquake and resulting tsunami wreaked havoc on Japan. It also resulted in the largest nuclear disaster since Chernobyl when the tsunami damaged the Fukushima Daiichi Nuclear Power Plant. Radioactive particles were released into the atmosphere and ocean, which effectively closed local Japanese fisheries.

Rather unfortunately, it has also led to some recent wild speculation on the widespread dangers of Fukushima radiation. Posts with titles like "Holy Fukushima—Radiation From Japan Is Already Killing North Americans" keep popping up on the Internet. These are thin on facts and create more heat than light. But they do certainly grab our attention.

For example, the videos and news out of California and Missouri claim that high levels of radiation were detected. What they mean is "higher" levels of ambient radiation. Higher than what? Well, higher than measured elsewhere. Here's the bottom line: natural levels vary a lot. I can see large variations around my own neighborhood. Tenfold differences are not unusual. This is due to a lot of factors, including ground cover, building materials, minerals in the soil, and even weather conditions.

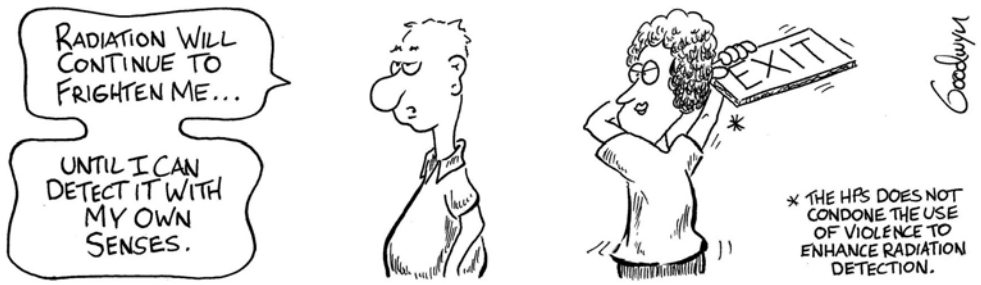
While there were terrible things that happened around Japan's Fukushima power plant, Alaska, Hawaii, and the West Coast aren't in any danger.

What Was Released Into the Ocean?

The fuel rods in the Fukushima power plant partially melted and radioactive material was released into the ocean. To a lesser extent, radioactive particles were also released into the air and were absorbed by the ocean when particles rained down upon it. These two pathways introduced mostly ^{134}Cs, ^{137}Cs, ^{131}I, and ^{90}Sr into the area surrounding the power plant. Only two of those remain today (^{137}Cs and ^{90}Sr), due to the nature of radioactivity.

There aren't accurate estimates of how much of each of these radionuclides was released into the ocean, but the current estimates are above Three-Mile Island levels and below Chernobyl levels. How much will reach the U.S. West Coast? Answer: not much—certainly not enough to increase radiation levels five- or tenfold. Claims of such increases are the tip-off that facts are being sacrificed for attention. The good news is that factual information is available to those interested. The ATE feature on the HPS website is a good place to start.

Joel Cehn is a physicist who discovered health physics when he landed a job at a nuclear power plant after graduate school. There he measured radiation levels in the plant's environs to assess its environmental impact. In 1993, after the Chernobyl accident, he was part of a medical mission to the Ukraine. He has also worked on environmental remediation projects in the United States and abroad. Currently, he consults on radiation safety to various clients, including property owners, research laboratories, and a veterinary clinic. He lives by the Pacific Ocean in Cambria, California.



The Lighter Side of Health Physics

Journalism After Fukushima

Andy Karam, CHP

We have now seen three years of media coverage on the Fukushima accident—some good, some bad, and some ugly. The good coverage, though rare, is gratifying; it's nice to see that some journalists are able to avoid drama in favor of a more nuanced approach to the issue. I love these stories because I can read them without my blood pressure elevating too much—although I have to say that I'm so used to poking holes in bad stories that the good stories sometimes leave me feeling as though I'm not reading carefully enough.

The bad stories are usually predictably bad—these are the stories where the reporters give in to common misconceptions about radiation and nuclear energy and, instead of trying to understand the issue, simply repeat everyone else's talking points in the context of the new story. Bad journalism, for example, will report on studies that claim American infant mortality rates are increasing—without reporting that these "studies" were performed by groups with long-standing antinuclear records and without trying to find knowledgeable scientists or physicians to give a second opinion. Bad journalism is irritating but understandable—it's driven more by intellectual laziness than anything else.

What upsets me the most is the final category—the ugly journalism. This is where writers have an agenda they are trying to support, where they cherry-pick information or quotes that support their agenda, and where they make up or distort information to further support their agenda. While the majority of Fukushima-related information is either good or bad, what we hear the most is the ugly journalism—and this is amplified when it's picked up by possibly well-intentioned, but lazy, bad journalists.

Ugly journalism—whether in the form of blogs, OpEd pieces, talk radio (yes, I'm using the term "journalism" loosely), slanted reports, or whatever—does nothing to advance the debate on an issue; its purpose is only to advance the agenda of those who engage in it and, as such, it retards public debate.

There are only two explanations I can think of to explain the most egregious errors of fact that are made: either the journalists don't understand the underlying science (in which case, they're writing from the standpoint of ignorance) or they are purposely misrepresenting what they know (in which case, they are lying). I suppose there's a third category as well—those who are arrogant and condescending enough to think that their perusal of slanted web pages and what "feels right" to them makes them as expert as those who have spent decades developing a genuine expertise.

What these all have in common is that the journalists are making a deliberate choice to ignore (or to misrepresent) the science in order to make whatever point they are aiming for. In the case of Fukushima, to use a tragedy that killed so many thousands and then to lie about it simply to advance a political agenda is despicable.

When I was in Sendai a month after the earthquake and tsunami I couldn't believe the devastation I saw, and when I was in Fukushima and the village of Iitate the next day, I noticed that radiation levels, while elevated, were hardly deadly. I found myself resenting the fact that the world's journalists (good, bad, and ugly) were concentrating their stories on the one thing that wasn't going to kill anyone. This continues to bother me.

Andrew Karam works as radiation safety officer and scientist for the New York City Police Department's Counterterrorism Division. His duties include helping to select and make the best use of radiation detection instruments, assisting with a variety of counterterrorism deployments for major events, developing and presenting training on various aspects of radiation safety and radiological counterterrorism, and developing written reference materials.

CSU Student Branch Attends Fukushima Ambassadors Program

Britt Edquist

In January 2014, five health physics graduate students from the Colorado State University (CSU) student branch of the Health Physics Society Rocky Mountain Chapter attended the Fukushima Ambassadors Program. This two-week program, sponsored by Fukushima University in Japan's Fukushima Prefecture, provides students with the opportunity for hands-on learning about the physical, financial, and social consequences of the Tōhoku earthquake, tsunami, and subsequent nuclear accident.

Figure 1. Sign announcing dose rate in decontaminated area of Fukushima City

The 11 March 2011 Tōhoku tsunami devastated the Pacific coastline of Japan and triggered a nuclear accident at the Fukushima Daiichi plant. The effects of the nuclear accident were not constrained to Japan's coastline. Although only a portion of the Fukushima Prefecture was contaminated by the release of radioactive material, the entire prefecture realized the disaster through the influx of refugees from the area immediately surrounding the nuclear plant, the exodus of many younger residents from the prefecture in general, and the financial effects caused by prejudice against, and stigma on, local products and tourism.

As one of the five CSU students who participated in the program, I saw firsthand the devastation caused by the disasters as well as the efforts to decontaminate, rebuild, and move forward. In areas affected by radioactive contamination, there are constant reminders of the nuclear accident as well as the decontamination efforts. Signs announcing area dose rates can be found in public spaces where the soil and foliage have been decontaminated (Figure 1). In public areas such as parks and schools, real-time meters with digital dose-rate displays can be found. For many of the people of Fukushima, the terms "activity," "becquerel," and "sievert" were completely unknown before the nuclear accident; now, however, these terms can be found in parks, on food labels, and on the evening news when the weather and dose rates are read side by side.

Figure 2. Temporary storage for radioactive waste from the decontamination of Kawauchi village. The waste is stored in impermeable bags that are stacked and covered to prevent sunlight from degrading the bags.

Many of the decontamination efforts are conducted by local governments and individuals. The primary decontamination strategy for land is to remove the top several centimeters of soil and to prune trees and bushes. Decontaminated soil and debris are commonly stored on-site near residences and businesses in bundles under tarps. Some cities, such as Kawauchi Village, have created areas for temporarily storing the radioactive waste (Figure 2). The waste primarily consists of radioactively contaminated soil, foliage, and filters produced when roads, sidewalks, and gutters are power washed. The storage site in Figure 2 has a lifetime of five years; however, plans for a long-term storage site for residential and municipal radioactive waste are still unclear.

Fukushima Prefecture is roughly the size of Connecticut and is a very diverse area including coastal, farming, and mountainous regions. The stigma

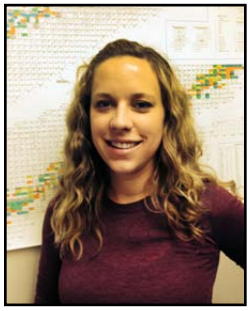
associated with the nuclear accident in Fukushima Prefecture has resulted in serious financial hardships. This stigma is unfounded, as many regions in the prefecture were not contaminated, and for those that were, there are many controls in place to ensure the safety of the products and people.

Figure 3. Banks of scintillators used to count radiation levels in produce, milk, and meat from Fukushima City. Testing is free for residents' food from private gardens.

The Japanese government has set the safe, allowable level of radioactivity in foods at 100 Bq kg^{-1} (editor's note: this is below U.S. and most international standards). All foods produced in the contaminated regions of the Fukushima Prefecture are tested in laboratory facilities (Figure 3). The activity concentration can commonly be found on displays or labels of foods sold in local farmers markets. Although all foods sold are well within the allowable level, foods from the Fukushima Prefecture (including areas that were never contaminated) are severely undervalued or are not purchased in other prefectures or international markets.

Furthermore, the tourism industry across the prefecture has been adversely affected. Many mountain ski towns, unaffected by radioactive contamination, are faced with the stigma associated with the Fukushima Prefecture and have incurred significant financial losses. Areas with minimal contamination that relied on the tourism industry are even worse off. The effects of the loss of jobs associated with tourism, food production, and sales are exacerbated as refugees displaced by the tsunami or nuclear accident move to nearby communities seeking work.

The harm caused by the Tōhoku earthquake, the tsunami, and the subsequent nuclear accident is immense. The cost of the cleanup and recovery from the nuclear disaster alone likely can never be calculated accurately when the social consequences are also considered. Though the Fukushima Prefecture may never fully recover from the disasters, the people of Fukushima showed us CSU students that they have hope and the determination necessary to rebuild.



Britt Edquist is a student at Colorado State University in the health physics master's program. She has served as president of the Student Branch of the Rocky Mountain Chapter of the Health Physics Society. Her thesis work is based on research conducted during her internship last summer with Duke Energy, titled "Electronic Dosimeter and Thermoluminescent Dosimeter Correlation Study at Catawba Nuclear Station." Britt will be graduating May 2014 and is actively seeking employment as a health physicist.

Understanding the Atom Booklets Available Online

The Department of Energy Office of Scientific and Technical Information Office (OSTI) has made the historical U.S. Atomic Energy Commission *Understanding the Atom* series of booklets available on OSTI's OpenNet website. The series is from the late 1960s, when Glenn T. Seaborg was chair of the Atomic Energy Commission. The introduction to the series states:

> Nuclear energy is playing a vital role in the life of every man, woman, and child in the United States today. In the years ahead it will affect increasingly all the peoples of the earth. It is essential that all Americans gain an understanding of this vital force if they are to discharge thoughtfully their responsibilities as citizens and if they are to realize fully the myriad benefits that nuclear energy offers them.

From the President

What's New for the 59th HPS Annual Meeting 13–17 July 2014, Baltimore, Maryland

Darrell R. Fisher, HPS Fellow, President

- End-of-meeting highlights (Ron Kathren)
- Exhibitors' opening lunch with radiation effects debate
- Student quiz bowl

In his highly acclaimed guide to young scientists, *Winning the Games Scientists Play* (New York: Plenum Press; 1982), author Carl J. Sindermann[1] describes the professional society annual meeting as a compelling opportunity to stay informed and up to date on the latest developments in the field. But he also points out the most important reason to attend: "Meeting attendance enables personal interaction with friends, peers, and authorities." He continues, ". . . the meeting, then, should be considered as primarily a social event—a pleasant interlude with colleagues, away from the laboratory and the classroom."

Of course, the foundation of the annual meeting must always be the scientific program, topical workshops, continuing education lectures, and professional enrichment courses. But the total meeting experience—together with vendor services and equipment exhibits, posters, committee interactions, the banquet, food breaks and mixers, and social events—provides an ideal opportunity for personal contacts, face-to-face discussions, networking, job placement, and professional development.

Refreshment breaks at our February midyear topical meeting in Baton Rouge included smoked salmon lox, deli meat slices, and grilled vegetables with condiments.

The Health Physics Society (HPS) works hard to ensure a valuable annual meeting experience for both members and guests. Evidence of this hard work will be abundant at the 2014 HPS Annual Meeting, which will be held 13–17 July in Baltimore, Maryland.

For a mere pittance ($1.60), you may take the light rail directly from baggage claim at the Baltimore Washington International Airport to the Inner Harbor (Camden Yards and convention center). Personally, I prefer the light rail to the more expensive taxicab or shuttle.

Baltimore's Inner Harbor, with its breathtaking skyline and picturesque waterfront, represents an attractive tourist destination and one of the most photographed city centers in America. Hotels, the convention center, restaurants, shops, museums, and other historical sites and attractions at the waterfront are all located within a relatively convenient walking distance. Opposite the convention center is the Camden Yards baseball field, home to the Baltimore Orioles. Nearby, the Orioles Hall of Fame exhibit, the Sports Legends Museum, and the Babe Ruth Birthplace and Museum provide additional attractions for sports enthusiasts. The Baltimore Orioles will be playing the New York Yankees at Camden Yards on Saturday afternoon, 12 July, and Sunday evening, 13 July, so plan ahead if you'd like to include a baseball game. Read more about Baltimore activities in this newsletter.

This year, the meeting won't end before the highlights presentation. When planning your departure, please remember that we will feature something new and exciting in this year's technical program (that you will definitely not want to miss) at the end of the meeting on Thursday about noontime: a summary overview of the technical and scientific highlights of the annual meeting. Typically the

[1]Harvard-educated oceanographer and former director of the Sandy Hook Marine Laboratory (now called the James J. Howard Marine Sciences Laboratory) in New Jersey.

annual meeting winds down on Thursday morning as people drift away in many directions. This year, HPS Past President Ron Kathren will summarize the most important lessons presented at the meeting. Scientific nuggets and slides from presentations will be featured. Humorous but insightful, Ron will review which speakers made the most impact and what we learned and should remember as we return to our offices and laboratories. To take advantage of this first-time experience, your airline departures should not be scheduled before 2:30 p.m. on Thursday.

Following the opening plenary session, the exhibit opening with complimentary lunch will also feature something new: a scientific debate—"Is There a Safe Radiation Dose (and What Is It?)"—organized by Bill Morgan and Tony Brooks. This lively (and likely humorous) debate will take place in the exhibit hall as you enjoy free lunch and visit the vendor displays.

The Student Support Committee is also planning something new: a 1st Annual Health Physics Team Quiz Bowl. Teams representing health physics academic programs will compete and show us their best and brightest. How will students from your alma mater fare in the competition?

Most of all, enjoy the meeting! With all these many features, we hope that you will plan your summer vacation with the 59th HPS Annual Meeting in mind.

Call for Nominations for HPS Officers and Board

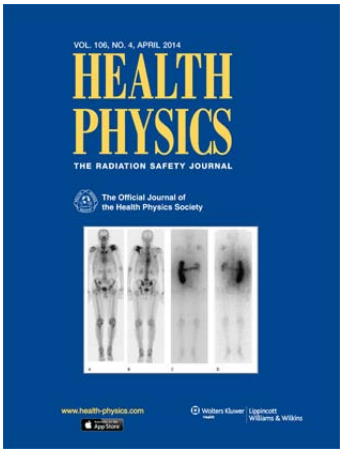
Ken Groves, HPS Fellow, Nominating Committee Chair

The deadline is approaching to submit your nominations for Health Physics Society officers. This year we are looking for nominations for President-elect, Treasurer-elect, and Board of Directors. Send your nominations by **1 May 2014** to Nominating Committee Chair Ken Groves directly via email: sevorgservices@yahoo.com. More information on the nomination process can be found at https://hps.org/membersonly/operations/officernomination.html.

UP AND COMING IN *HEALTH PHYSICS*

Look for these and many more articles in the April 2014 issue of *Health Physics*

— Now also available on your iPad —



"Analysis of Hematopoiesis Dynamics in Residents of Techa Riverside Villages Chronically Exposed to Nonuniform Radiation: Modeling Approach"
O.A. Smirnova, A.V. Akleyev, and G.P. Dimov

"A New Understanding of Multiple-Pulsed Laser-Induced Retinal Injury Thresholds"
David J. Lund and David H. Sliney

"Radiation Safety Considerations in Proton Aperture Disposal"
Priscilla K. Walker, Andrew C. Edwards, Indra J. Das, and Peter A.S. Johnstone

HPS Meetings

Socializing in Baltimore
2014 HPS Annual Meeting

Jack Patterson, CHP, 2014 HPS Annual Meeting Cochair

The 2014 Health Physics Society (HPS) Annual Meeting will be held 13–17 July in Baltimore, Maryland. If you have some free time during the meeting, Baltimore is a great place to relax and visit a wide assortment of attractions, all within a few blocks of the convention center. Two social tours are planned:

- A trip to Fort McHenry (nps.gov/fomc/index.htm) is planned for Monday, 14 July. This year is the 200th anniversary of the Battle of Baltimore during the War of 1812 and of the penning of our national anthem.
- A trip to Annapolis (visitannapolis.org), Maryland's capitol, is planned for Wednesday, 16 July. A short cruise of the historic Annapolis harbor and the U.S. Naval Academy will be followed by a general sightseeing tour of the city.

Orioles Baseball Schedule

If you are a baseball fan, home games at Orioles Park (http://baltimore.orioles.mlb.com/index.jsp?c_id=bal) are being played before the convention starts. Tickets are available through the HPS meeting reservation portal: https://aws.passkey.com/event/10915238/owner/61726/home.

- The Washington Nationals are playing on Thursday, 10 July, starting at 7:00 p.m.
- The New York Yankees are in town after that, playing Baltimore in the final series before the All-Star break. The game schedule is:
  - Friday, 11 July, game time 7:00 p.m.
  - Saturday, 12 July, game time 4:00 p.m.
  - Sunday 13 July, game time 8:00 p.m.

Because of these events, it is very important to reserve your hotel room through the HPS meeting block as soon as possible.

Inner Harbor Attractions

Within the Inner Harbor area, there are numerous family-friendly attractions that should not be missed, including:

- The National Aquarium.
- The Maryland Science Center.
- Historic ships, including the USS Constellation, the U.S. Coast Guard Cutter Taney, and the WWII submarine Torsk.
- Orioles Park at Camden Yards and the Sports Legends Museum.
- The Babe Ruth Birthplace Museum.
- The American Visionary Art Museum.

Nearby Attractions

A short bus ride on the city's free Circulator bus system will get you to other great attractions, including:

- The B&O Railroad Museum.
- Walters Art Museum.
- Port Discovery Children's Museum.

Take some time to research these attractions by visiting their websites or go to the Baltimore Visitor's Bureau at baltimore.org for more information.

More on the 2014 HPS Annual Meeting can be found at hps.org/meetings/meeting36.html.

Radiation Instruments—New Technology and Developments
HPS Professional Development School
Baltimore, Maryland, 10–11 July 2014

Ray Johnson, CHP, HPS Fellow and Past President

The Baltimore Washington Chapter of the Health Physics Society (HPS) is hosting a two-day professional development school (PDS) on radiation instruments. The school will be held Thursday and Friday, 10–11 July, just before the 2014 HPS Annual Meeting in Baltimore.

Since 11 September 2001, increasing concerns for national security have led radiation instrument manufacturers to develop many new and innovative instruments. While most health physicists are familiar with traditional ion chambers, Geiger counters, and sodium iodide detectors, a vast array of new instruments is now available.

This PDS will review new instrument designs, capabilities, and limitations and will provide opportunities for demonstration and side-by-side comparisons.

Portable Instruments
- Homeland security/first responders
- Medical and x ray
- Environmental site characterization
- Radiation/contamination surveys

Laboratory Instruments
- Gamma counters
- Liquid scintillation counting
- Area and portal monitors

Dosimetry
- Personnel monitoring
- Self-reading and alarming

Technical Issues
- Calibration and energy dependence
- New developments in progress
- How radiation instruments can be misleading
- Interpretation and defensibility of measurements
- Quality assurance/quality control

Instruction will be provided by well-known instrument experts and technical representatives from HPS affiliates who manufacture or distribute radiation instruments and are involved in design and development. Radioactive sources will be provided for instrument demonstrations. Many manufacturers will have tables to display their products and allow for hands-on demonstrations during the school.

We expect to have about 12–14 instrument manufacturer speakers and about 8 individual speakers with technical knowledge of instruments and development needs. We expect over 80 attendees in addition to affiliates. Attendees will include HPS members, certified health physicists, state and federal personnel, fire, police, and other homeland security personnel, as well as interested members from other societies, such as the American Nuclear Society and the American Industrial Hygiene Association.

The tuition for this school will be $450 and will include a Wednesday evening reception, a Thursday night out, lunches, and refreshments.

Academic Deans: Ray Johnson and Matthew Spierenburg

Administrative Dean: Sean Austin

Upcoming HPS Meetings

59th HPS Annual Meeting—Baltimore, Maryland, 13–17 July 2014

48th HPS Midyear Topical Meeting—Norfolk/Virginia Beach, Virginia, 1–4 February 2015

60th HPS Annual Meeting—Indianapolis, Indiana, 12–16 July 2015

61st HPS Annual Meeting—Spokane, Washington, 17–21 July 2016

For information on Health Physics Society meetings, visit the website at hps.org/meetings.

2014 Baton Rouge Professional Development School

Lorraine Day, Administrative Dean

The Baton Rouge PDS instructors and students

The Health Physics Society (HPS) professional development school (PDS) "Radiation Safety in Medicine" was held 12–15 February 2014 at the Lod Cook Conference Center, located on the beautiful Louisiana State University campus. The three-day school immediately followed the 2014 HPS Midyear Meeting in Baton Rouge, Louisiana. This PDS attracted participants from as far away as Germany and Canada and included 40 regular participants, six medical residents from the Mary Bird Perkins Cancer Center, and 21 graduate students, in addition to the faculty. Academic Dean Wayne Newhauser secured funding from Varian Medical Systems, which allowed more than 20 students to attend.

A total of 25 faculty members spoke on such various topics as radiation safety in space and the crossroads between research and current guidelines for radiation safety in medicine. Several speakers were from MD Anderson Cancer Center in Houston, Texas.

The Society's own Dr. Terry Yoshizumi was caught by a weather delay and was unable to present his talk on the program at Duke University medical center; however, his slides were included in the presentation manual. In his stead, Michael Grissom was able to step in and give a presentation on the role of the National Council on Radiation Protection and Measurements (NCRP). Grissom also provided a display of books on various topics that have recently been published by the NCRP relating to radiation safety in medicine.

Left to right, PDS Academic Dean Dr. Wei-Hsung Wang, Administrative Dean Dr. Lorraine Day, and Academic Dean Dr. Wayne Newhauser

The school was set up in a unique manner. There were seven distinct tracks: proton therapy, space radiation and radiation protection, photon therapy, diagnostic imaging, medical isotope production, recent advances and future directions in molecular therapy, and the management of an ALARA (as low as reasonably achievable) radiological control program. For each track, we discussed the physical and biophysical basis of the technique, the medical rationale, the accelerator technology, and recent advances, as well as the economics for every given therapy. This was followed by a panel discussion for each of the tracks by the faculty presenting in the given track shepherded by the session chairs.

The general comment was that future PDSs should consider this multipronged approach, which was a good model for training students and a chance for the practicing health physicist to better present his or her point of view to persons with differing backgrounds, including economists. It was suggested that the economics section was one that is frequently overlooked in PDSs but was enlightening and provided understanding regarding how such economic decisions are reached in response to the researchers' applications for project funding.

The deans of this school would like to acknowledge the support we received from Jennifer Rosenberg at the Secretariat and Marcia Hartman, who worked so hard to get our website up and running. We wish future deans Ray Johnson and Sean Austin much success in Baltimore with their PDS on instrumentation.

Society News

Intersociety Sharing of Newsletters Increases Readership of *Health Physics News*

Howard Dickson, CHP, Web Operations Editor in Chief

The Health Physics Society (HPS) has joined with the Canadian Radiation Protection Association (CRPA), the Society for Radiological Protection (SRP), and the French Society for Radiation Protection (SFRP) in an initiative to share society newsletters under the auspices of the International Radiation Protection Association (IRPA). The initial newsletter-sharing effort will include the CRPA *Bulletin*, *Health Physics News*, the *SRP Newsletter*, and the SFRP *C.I.R. Newsletter*. Other IRPA associate societies are anticipated to join and share their newsletters. With 48 associate societies representing 60 countries currently under the IRPA umbrella, we expect a large number of people will have access to *Health Physics News* as this initiative continues.

The primary purpose of IRPA is to provide a medium whereby those engaged in radiation protection activities in all countries may communicate more readily with each other and through this process advance radiation protection in many parts of the world. Consequently, this initiative is a good fit with the IRPA mission and benefits the HPS in a similar way. The initiative has been developed and guided by IRPA Publications Director Christopher Clement. Management of access to the newsletters via the IRPA website will be under the direction of Andy Karam, the IRPA Commission on Publications website manager. As a member of HPS, you can access other societies' newsletters at https://hps.org/membersonly/irpa.html.

Member News

Frank Costello

Frank Costello has been appointed to the Nuclear Regulatory Commission (NRC) Advisory Committee on the Medical Uses of Isotopes (ACMUI). This committee advises the NRC on policy and technical issues related to the regulation of medical uses of radioactive material in diagnosis and therapy. ACMUI members include healthcare professionals from various disciplines (e.g., doctors, medical/health physicists, and administrators) who comment on proposed changes to NRC regulations and guidance. They also evaluate certain nonroutine uses of radioactive material and provide technical assistance in the areas of licensing, inspection, and enforcement. The ACMUI can also bring key issues to the attention of the NRC for its action. Costello will be the Agreement State representative on the ACMUI.

Costello joined the Pennsylvania Department of Environmental Protection (DEP) in 2007 as a radiological health physicist, working mainly in the materials area. Prior to joining DEP, he was a health physicist with NRC in Region I for over 30 years. More recently he has been assisting the NRC, agreement states, and Conference of Radiation Control Program Directors with the development of the new materials security rule in 10 CFR Part 37, the development of a revised 10 CFR Part 35, and suggested state regulations. Costello is a certified health physicist (comprehensive) and received his MS in health physics from Rutgers University in 1975.

If you have information you would like to share with your fellow Health Physics Society members, such as an appointment, a job promotion, an award, or participation in a special conference or event, please send a paragraph or two (150–200 words) and a photo to editormw@hps.org.

Chapter News

Rio Grande Chapter

Elaine Marshall, CHP

The Rio Grande Chapter of the Health Physics Society is excited about our upcoming spring technical meeting scheduled for 31 March 2014 and invites members of the chapter, other interested professionals, and students of health physics and/or nuclear engineering to participate. As an extra incentive, on 30 March 2014 there will be a training session. In recent years, we have been able to offer a CHP test review, "HP Statistics and Emergency Response." The American Academy of Health Physics has granted continuing education credits for participation in our training sessions as well as the technical meeting.

Please look for the call for papers and other announcements. If you have any questions, please contact Walen Mickey at wmickey@sandia.gov.

To include your chapter news in the newsletter, send a report (up to 500 words) to editormw@hps.org by the 10th of the month to appear in the next month's issue of *Health Physics News*.

Third James E. Turner Memorial Symposium

The East Tennessee Chapter (ETC) of the Health Physics Society (HPS) invites members of the Society, students, and all interested researchers and scientists to participate in the Third James E. Turner Memorial Symposium—Radiological Physics and Dosimetry—at Oak Ridge Associated Universities' Pollard Auditorium in Oak Ridge, Tennessee, 21–22 May 2014.

The symposium honors the legacy of James E. (Jim) Turner, his contributions to the health physics field, and his lifelong emphasis on providing a strong radiological physics foundation to young health physics professionals and students. Accordingly, the symposium presentations emphasize high-quality submissions by undergraduate and graduate students as well as beginning health physics professionals. The ETC has been gratified by the quality and professionalism evident in student presentations included in the Turner I and Turner II symposia programs.

The symposium has been structured as two half-day technical sessions beginning early Wednesday afternoon (21 May) and culminating with a Thursday awards luncheon (22 May). HPS President-elect Barbara Hamrick has graciously agreed to coordinate her ETC visit as our featured Wednesday evening dinner speaker. The schedule intentionally accommodates half-day travel plans on both days to encourage student participation. Attending professionals may wish to similarly utilize these "commuting" windows or to combine other Oak Ridge networking opportunities with your symposium plans.

To simplify your registration, several options are available at hp-schapters.org/etchps/2014Turner/registration.html.

Section News

Medical Health Physics Section

Ninni Jacob, President

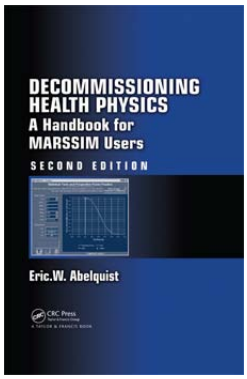
Mardi Gras celebration held at the Mary Bird Perkins Cancer Center in Baton Rouge for PDS attendees

The Medical Health Physics Section, along with the Accelerator Section and other organizations, sponsored the professional development school (PDS) "Radiation Safety in Medicine," which was held 12–15 February 2014 in Baton Rouge, Louisiana. The PDS was very informative and a great success. The focus was on a variety of contemporary health physics aspects related to the safe use of radiation in medicine.

The faculty members were outstanding in their fields and came from a variety of prestigious institutions. The participants were taken on a tour of the Mary Bird Perkins Cancer Center, which is a very impressive full-service radiation treatment center that serves the greater Baton Rouge area. Southern hospitality was evident in the sumptuous food that was served every day. We enjoyed the fresh seafood of the area. Administrative Dean Lorraine Day certainly made sure that we were well fed.

I would like to especially thank Day and Academic Deans Wayne Newhauser and Wei-Hsung Wang for organizing the whole program so well. The health physics students from Louisiana State University were a big help as well.

Books by HPS Members



Decommissioning Health Physics: A Handbook for MARSSIM Users, Second Edition

Eric W. Abelquist, CHP

Written by one of the original Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) authors, *Decommissioning Health Physics: A Handbook for MARSSIM Users, Second Edition*, is the only book to incorporate all of the requisite technical aspects of planning and executing radiological surveys in support of decommissioning. Extensively revised and updated, it covers survey instrumentation, detection sensitivity, statistics, dose modeling, survey procedures, and release criteria.

New to the Second Edition

- Chapter on hot spot assessment that recognizes appropriate dosimetric significance of hot spots when designing surveys and includes a new approach for establishing hot spot limits
- Chapter on the clearance or release of materials, highlighting aspects of the Multi-Agency Radiation Survey and Assessment of Materials and Equipment (MARSAME) manual
- Revised chapter on characterization survey design to reflect guidance in American National Standards Institute/Health Physics Society N13.59-2008 on the value of data quality objectives
- Updated regulations and guidance documents throughout
- Updated survey instrumentation used to support decontamination and decommissioning surveys, including expanded coverage of *in situ* gamma spectrometers
- Revised statistics chapter that includes an introduction to Bayesian statistics and additional double sampling and ranked set sampling statistical approaches
- More case studies and examples throughout

Published by Taylor & Francis in 2013, 696 pages, available at taylorandfrancis.com/books/details/9781466510531 or on Amazon.com.

Committee Activities

Nanotechnology Committee

Lorraine Day, Chair

The Nanotechnology Committee of the Health Physics Society (HPS) is pleased to report that it will be hosting a special session on nanotechnology at the 2014 HPS Annual Meeting in Baltimore in July. This will mark the first anniversary of the Nanotechnology Committee for the HPS. Committee members who are anticipated to attend and present include Dr. Mark Hoover of the Centers for Disease Control and Prevention National Institute of Occupational Safety and Health, Scott Walker from Brookhaven National Laboratory, Dr. Leigh Cash from Los Alamos National Laboratory, and Dr. Lorraine Day, chair of the committee. We're also hoping that Dr. Lee Madsen from Virdia Corporation in Danville, Virginia, will be able to join us.

As many of you may know, the National Council on Radiation Protection and Measurements (NCRP), under the direction of Dr. John Boice, has committed resources to produce a preliminary report on nanotechnology and its interaction with health physics. Hoover was appointed chair of the NCRP committee, and Cash is serving as a member of the committee along with other national and international scientists. Walker will likely discuss the use of radioactive nanoparticles in medicine, a subject he broached at the recent professional development school on radiation safety in medicine. We look forward to hosting our annual panel discussion in an open dialogue with members of the health physics community.

Stay tuned as our program evolves and we develop our intent for this very special session. Each of us looks forward to seeing you in Baltimore for the annual meeting; we invite you to participate in the special session and look forward to interacting with members of the health physics community. Should you have particular subject matters you would like to see addressed, please do not hesitate to send your preferences to Lorraine Day at day@lsu.edu. We seek to serve the HPS community through discourse and discussion that is mutually beneficial.

Science Support Committee

Craig Adams

Educational Resources Available

The Science Support Committee (SSC) of the Health Physics Society (HPS) strives to maintain and improve science and mathematics in teaching students in kindergarten through high school. This is accomplished by developing, maintaining, and coordinating training materials for chapters to use in conducting science teacher workshops (including pursuing sources of funding for workshops).

Available to teachers are Model CD 700 Geiger-Mueller survey meters, surplus from the Cold War. The meters provide visual cues and audio feedback when used to teach students how to detect and quantify radioactive material. Instructions on the characteristics of the meters are provided. Ordering a meter is made simple by contacting a member of the committee or by filling out a form and returning it to the committee chair, Elaine Marshall at etmarsh@sandia.gov. As an added bonus, the committee pays shipping costs!

For teachers (or HPS members and chapters) wishing to put on a demonstration of some of the basic principles of radiation protection as part of their general coursework, as part of a science fair, or even as part of a career day, the SSC has instrument kits available for loan. From the HPS website home page, select the Teachers icon near the top center of the page. There is a listing of the resources and links available to request one of our instrument kits and/or some of our promotional materials (irradiated salt and marbles).

The SSC recognizes that there is a lot of expertise on presenting material to science teachers at the chapter and individual level. Any individuals with material that they are willing to share are encouraged to contact a member of the committee. More importantly, we encourage teachers and HPS members with experience in teaching to look at the material currently posted or being developed and offer insight on how such might be improved. Ultimately, the committee is looking to increase student awareness of the interesting and diverse field of health physics. For more information, please follow the link hps.org/aboutthesociety/organization/committees/committee18.html.

Lastly, the SSC encourages HPS members to reach out to their local schools. Members of the SSC have found most schools to be receptive to lectures and demonstrations. To help HPS members with this, we are planning an interactive workshop session at the upcoming annual meeting in Baltimore. Hope to see everyone there!

Membership Committee

Gary Kephart

The 2013 Member-Get-a-Member Contest Results
The Membership Committee is pleased to announce Paul Madairy as the winner of the 2013 Health Physics Society (HPS) Member-Get-a-Member Contest. Congratulations Paul! Your efforts have earned you a year of free membership in the HPS. We appreciate everything you have done to bring new members to the Society.

The committee would also like to thank all the other members who worked hard to recruit new people. Twenty-four additional full members of HPS joined during 2013 as a result of your encouragement. You are our most effective resource for adding colleagues to the Society!

To include your committee news in the newsletter, send a report (up to 500 words) to editormw@hps.org by the 10th of the month to appear in the next month's issue of *Health Physics News*.

Health Physics Society Membership Advantages

- Subscription to the monthly journal *Health Physics*, the premier journal in the field of radiation protection.
- Subscription to the quarterly journal *Operational Radiation Safety*, emphasizing applied radiation protection.
- Access to the monthly online newsletter *Health Physics News*.
- Access to the Members Only section of the Health Physics Society (HPS) website.
- Member discounts for registration fees and hotel reservations for the HPS annual meeting and midyear topical meeting.
- Discounts for registration fees at meetings of the Radiation Research Society.
- Discounts for the online purchase of publications of the National Council on Radiation Protection and Measurements.
- Free copies of American National Standards Institute standards developed by the HPS.
- Automatic membership in the International Radiation Protection Association (IRPA).
- Access to newsletters of IRPA associate societies through the Members Only section of the HPS website.

HPS membership is a prerequisite for:

- Reduced fees to join one of the HPS specialized sections.
- Serving as an officer or director of the Society.

From the Editor

Why Are People Afraid of Radiation?

Howard Dickson, CHP, HPS Web Operations Editor in Chief

Like many of you, I have been trying to understand why people fear radiation so much. Kelly Classic posted a note on our Facebook News Cafe recently that really got my attention. Her post referred to David Ropeik's book *How Risky Is It, Really?* Ropeik explains how the human brain works, using some mighty impressive terminology like amygdala (part of the brain) and ophidiophobes (those fearing snakes), but I managed to wade through that to get to what he calls risk perception factors. These factors can either increase or decrease fear. Usually more than one factor is involved in our overall perception of a threat.

Some of the key factors that probably impacted attitudes toward radiation and nuclear energy over the last few decades include:

Trust. Whom can you trust? Trust was clearly lacking in the Fukushima nuclear power plant accident where Tokyo Electric Power Company, the plant operator, was thought to be covering up the extent of the accident, which acted to increase fear. John Till has been preaching the importance of trust for the longest time.

Uncertainty. The more uncertain we are, the more afraid we are likely to be. The uncertainty regarding the accident unfolding at Three Mile Island led thousands of people to flee the area, thus creating enormous upheaval. A similar evacuation also happened at Fukushima, resulting in major trauma, including deaths, in the impacted population.

Risks and benefits. People often have trouble clearly identifying the tradeoff between the perceived risks of nuclear energy versus the known benefits of nuclear power to reduce greenhouse gas emissions and reduce the health risks from burning fossil fuels.

Control. The more control we think we have, the safer we feel. If there is a "radiation leak" from a nuclear reactor, then those who are potentially exposed, who typically do not understand the degree of risk and certainly cannot control the releases, feel a loss of control, which naturally increases their fear.

Choice. If the risk is something you've chosen to take, then you will have less fear. In Finland, the siting of a nuclear waste facility was dependent on the vote of the local communities—they made the choice to build the facility. It was very different at Yucca Mountain. So the Fins welcomed the waste facility, but the residents of Nevada feared for their safety regarding the Yucca Mountain repository. Unfortunately, giving into unfounded fear has its consequences. As former Energy Secretary Spencer Abraham said, ". . . centralizing a facility, as opposed to on-site situations, is a much safer approach. Settings in metropolitan areas are not safer than storing nuclear waste under a mountain that is 1,000 feet below the earth."

Natural or man-made. Solar radiation is natural, while radiation from nuclear energy is man-made, so we fear nuclear radiation even while we sunbathe. As you know, solar radiation causes far more cancer than ionizing radiation.

Pain and suffering. The degree of pain and suffering impacts the degree of fear. We all know that radiation can cause cancer (albeit infrequently) and that involves pain and suffering; so we fear it.

Can it happen to me? Any risk feels bigger if you think it could happen to you, even if the chances are very small.

Risks to children. Finally, any risk to children evokes more fear than the same risk to adults. One of the first actions at Fukushima was to protect the kids from thyroid cancer by giving them iodine tablets. Some Fukushima parents are so frightened that they have their children regularly tested even though it is probably unnecessary and possibly uncomfortable for the child.

This book certainly helped me appreciate why people fear radiation. So even if you present all the scientific facts and statistics available, you may not be able to allay the fear of radiation. Don't be frustrated; instead, try to help people understand why their fears may be exaggerated.

Inside the Beltway

David Connolly
Washington Representative, The Connolly Group

The logjam of congressional legislation broke this past January when the House and Senate agreed to a budget resolution for the next two fiscal years. Many people were gladdened by this congressional legislative activity and have the hope that it will continue for the foreseeable future. From the standpoint of the Health Physics Society (HPS), the budget agreement reached by the Congress will have an immediate beneficial result and may possibly lead to the continued funding of the Integrated University Program (IUP).

As we have discussed before, the budget-cutting climate in Washington is as prevalent as the winter snow most of the country has been experiencing. Like previous administrations, the Obama Administration once again zeroed out the IUP for fiscal year 2014. The HPS Government Relations team, headed up by Dr. Richard Vetter and HPS President Dr. Darrell Fisher and assisted by Executive Director Brett Burk and Washington Representative David Connolly, was able to make a number of congressional visits in December 2013 with key policy makers.

These visits emphasized the importance of the IUP to health physics education throughout the country and the resulting benefits to the country as a whole in helping to provide a trained health physics professional workforce to meet the diverse needs of radiation protection of the public at large. Fortunately, due to these efforts and some grassroots activity of the HPS Board of Directors and the existing goodwill that Society members enjoy with members of Congress, senators, and the regulatory agencies, such as the Nuclear Regulatory Commission, not only was the IUP funded, but also with a slight increase!

We can only enjoy this legislative victory for a moment because the next round of budgetary battles is about to begin. From an operations standpoint, there are certain pressure points in Congress that can either pass or defeat legislation. For the IUP, these points reside in the Senate and House Appropriations Subcommittee on Energy and Water. For some Society members, it is critical that you express your support for this program to your legislators and send a message of thanks and encouragement for continued support in the future:

- California—Senator Feinstein
- Washington state—Senator Murray
- Tennessee—Senator Alexander
- Ohio—Representative Marcy Kaptur
- Idaho—Representative Mike Simpson

The easiest way to communicate with your legislators is to visit their individual websites, which can be found at either senate.gov or house.gov. Even better, if you have the opportunity to meet with them in person in your state at an event, tour, campaign stop, or office, this would send a strong message. Alternatively, a conversation with a staff person in his or her local office would also have benefit because members of Congress usually closely monitor the contacts their staff members have with constituents.

Your message is a simple one—there is a particular need for health physicists both in your locales and in the nation as a whole. An excellent way to meet this need is, at the least, to continue funding of the IUP and, if at all possible, to increase funding. Please inform HPS President Fisher, Government Liaison Vetter, or Washington Representative Connolly after your communication so that we can keep track of these efforts.

Probably one of the main factors in the successful continuation of this academic program is the long-standing legislative activity and effort HPS has expended to keep it funded. The events of January indicate that the congressional soil is fertile ground for the continued existence of the IUP, but it still needs constant watering and attention.

The Boice Report #22

John D. Boice, Jr., NCRP President
ICRP Main Commissioner, UNSCEAR Delegation
Veterans' Advisory Board on Dose Reconstruction Board Member
Vanderbilt Professor of Medicine

NASA—The Final Frontier in Radiation Protection

I had lunch with Neil Armstrong. It was exhilarating to be so close to greatness and humility. Neil sat across a table from me during a National Aeronautics and Space Administration (NASA) meeting that I had attended briefly by mistake. There were two NASA meetings ongoing and I entered the wrong room, which resulted in a brief encounter with an American legend. When mentioning this to Miles O'Brien, PBS science correspondent, he commented that this would be similar to someone in his profession sitting down and dining with J.D. Salinger.

Neil Armstrong
photo courtesy of Michael Wright Space Collection

NASA continues to effervesce with a special aura and excitement that goes beyond *Star Trek* and *Star Wars*. It might be related to accomplishing the unimaginable, overcoming extreme obstacles, facing the unknown, and having a vision for the future of mankind in the vastness of the universe. And perhaps some of you attended and were inspired by the Dade Moeller Lecture by physicist and cosmologist Larry Krauss at the 2013 Health Physics Society (HPS) Midyear Meeting in Scottsdale—"Life, the Universe and Nothing . . . A Cosmic Mystery Story."

The National Council on Radiation Protection and Measurements (NCRP) basks in the NASA ambiance with two scientific committees dealing with radiation protection in space. I find it remarkable that the prestige of NASA is such that no one, when asked, declines participating. Radiation protection, of course, is just one of many challenges facing long-term and short-term space flights, but it is an important one as the space radiation environment is so different from anything experienced here on Earth, and once launched, astronauts have little opportunity to turn back or implement new protection measurements.

Radiation Protection Guidance in Space: Scientific Committee (SC) 1-22 is examining the radiation protection issues in space. Over the last several decades there has been new understanding on the effects of radiation that might affect space travelers. This includes an increased awareness of noncancer effects such as cataracts, heart disease, and possibly central nervous system (CNS) disorders. The cochairs of SC 1-22 are Dudley Goodhead (Medical Research Council, United Kingdom) and Julian Preston (U.S. Environmental Protection Agency [EPA], retired) and the committee's photo can be seen below. The current guidance is based on limiting astronaut exposure such that a greater than 3 percent increase in lifetime risk of cancer does not occur. Based on the number of assumptions that go into this risk assessment, the guidance is set on the upper 95 percent confidence limit of the cancer risk projection. Thus, for missions as lengthy as one to Mars, astronauts might very well approach the current limits and guidelines.

- **Space Environment:** The challenging issues of radiation in space include the unusual environment of galactic cosmic rays of high-mass and high-energy (HZE) particles. The effect on human health following such exposures is not entirely clear and extrapolation across species is required to get an inkling of what the potential health effects might be. Over the years, NASA has supported a broad-based program of basic research to address the unique radiation environment in space (NRC/NAS 2010).

- **SC 1-22 Report Content:** The SC 1-22 report is expected to be out shortly and will include a summary and overview of NASA's radiation protection standards for space travel and exploration. NASA guidelines differ from those set for terrestrial workers in that they account for different radiation sensitivities by gender and age (NCRP Report No. 98) and by whether or not the astronauts have unhealthy lifestyles such as cigarette smoking (NRC/NAS 2012). Because women are at higher lifetime risk of developing cancer than men, their allowable radiation cumulative dose limits are lower. The report will include a brief overview of cancer risk projection models, the potential for noncancer risks, how dose can be managed to be "as low as reasonably achievable," ethical and informed consent issues, and research priorities that might be helpful to NASA in providing guidance on space radiation.
- **Ethics:** The Institute of Medicine of the National Academies has an ongoing committee on the ethics principles and guidelines for health standards for long-duration and exploration space flights. This committee will address ethical and policy principles that might guide decision making when existing standards cannot be fully met or when knowledge of a given health effect is sufficiently limited that guidance cannot be clearly developed.

SC 1-24 on CNS: A new NCRP scientific committee is addressing potential CNS effects following exposure to space radiations. There is concern that dementia and cognitive dysfunction might be associated with the peculiar radiation environments in space. SC 1-24 is cochaired by Les Braby (Texas A&M University) and Richard Nowakowski (Florida State University). Other members include Greg Armstrong (St. Jude Children's Research Hospital), John Fike (University of California at San Francisco, retired), Lee Goldstein (Boston University), Kathy Held (Harvard, Massachusetts General Hospital), Greg Nelson (Loma Linda University), Julian Preston (EPA, retired), James Root (Memorial Sloan Kettering Cancer Center), Walter Schimmerling (NASA/Universities Space Research Association [USRA], retired), Rudy Tanzi (Harvard), and Marvin Rosenstein (NCRP technical consultant).

- **CNS Health Issues:** The issue is whether radiation exposures in space might result in acute CNS effects that could impair missions and whether late CNS effects might occur that result in serious cognitive and mental dysfunction in exposed astronauts (NCRP Report No. 153). Recent animal experiments have indicated an accelerated rate of deleterious effects in a mouse model of Alzheimer's disease in animals exposed to HZE particles and at radiation levels lower than previously suspected (Cherry 2012). There are human data on early onset dementia following radiotherapy exposures for non-CNS conditions in childhood (Armstrong 2013) and in adulthood (Alhes 2012) but their relevance to space radiation is uncertain. Conceivably, risk-limitation strategies to reduce CNS effects may require a distinct strategy that differs from approaches used in the past (Cucinotta 2013).
- **SC 1-24 Scope:** During the first phase of the committee deliberations, critical issues surrounding the potential short-term and long-term consequences of space radiation on the CNS will be evaluated, existing human and experimental data will be described, research needs will be outlined, and the groundwork will be provided for a comprehensive subsequent report (Phase 2). Phase 1 will culminate with a detailed proposal outlining the steps and approaches needed in Phase 2 to fully understand the risk of CNS effects following radiation exposure in space and to provide guidance for risk management and radiation protection.

I saw "Peter and the Starcatcher" at the Kennedy Center this weekend and was reminded how Peter answered Wendy when asked where he lived: "Second star to the right and then straight on till morning" (J.M. Barrie, *Peter Pan*). As NASA has an unbounded vision for space exploration, NCRP has an all-encompassing vision for radiation protection in the nation's interest! So don't forget the upcoming NCRP Annual Meeting, 10–11 March 2014, in beautiful downtown Bethesda. You can still register (registration.ncrponline.org) for this spectacular event celebrating 50 years since NCRP was chartered by Congress in 1964. And you shouldn't be surprised that one of the highlights will be "Radiation Safety and Human Spaceflight: Importance of the NCRP Advisory Role in Protecting Against Large Uncertainties" presented by Francis Cucinotta (formerly NASA and now University of Nevada Las Vegas).

NCRP SC 1-22 Radiation Protection in Space

Left to right, Pat Fleming (St. Mary's College), Julian Preston (cochair, EPA, retired), Mike Weil (Colorado State University), Dudley Goodhead (cochair and Medical Research Council, United Kingdom), Marvin Rosenstein (NCRP consultant), Amy Kronenberg (Lawrence Berkeley National Laboratory), Roger Shaw (Shaw Partners), and Walter Schimmerling (NASA/USRA, retired). Missing are Kathy Held (Harvard, Massachusetts General Hospital) and Greg Nelson (Loma Linda University).

You are invited to join the conversations at the Health Physics Society News Cafe.

Click here or on the Facebook logo on the Health Physics Society website.

In Memoriam

George E. Hofferber

George E. Hofferber, 70, lost his battle with leukemia Sunday, 19 January 2014, surrounded by family in Cedar Rapids, Iowa.*

George was born 13 August 1943 in Cedar Rapids to Alex and Janette (Wright) Hofferber. He graduated from Washington High School in 1961 and was a proud member of the first state champion swim team. He joined the U.S. Navy on graduation from high school and served our country for eight years, including service on the first nuclear-powered submarine, the USS Nautilus. After his military service, he spent several years working as an emergency medical technician and as a deputy for the Linn County Sheriff's Office.

George was a health physicist and worked in the nuclear power industry for nearly 40 years. He joined the Health Physics Society (HPS) in 1986 and was an emeritus member at the time of his death. His professional career took him to many new places and concluded with 14 years of traveling to England, France, Canada, Japan, and China teaching computerized document management systems for radiation safety, industrial safety, and generalized maintenance management. He felt he was very blessed to have met so many wonderful people in every location that he traveled.

His professional career was second to his love of family. He met and married Linda Grobstich while working at Area Ambulance Service. Together they had three wonderful children and seven grandchildren. George was incredibly proud of his family and loved to spend time with them. One of his biggest pleasures was watching his grandchildren compete in sports and attending as many plays and concerts as he possibly could.

George was a member of First Congregational Church, the HPS, Mizpah Masonic Lodge, the YMCA LIVESTRONG program, the American Legion (Hiawatha), and the Patriot Guard Riders of Iowa. He was ride captain for the Patriot Guard Riders in Maryland for three years and attended many funerals and burials at Arlington Cemetery. George was proud to stand with his brothers and sisters in the Patriot Guard Riders flag line and provide honors to the American heroes and their families.

George is survived by his son, Timothy (Carli) Hofferber of Cedar Rapids; daughter, Tami (Courtenay) Moon of Baltimore, Maryland; and daughter, Tara Hofferber of Frederick, Maryland. He also leaves behind seven beloved grandchildren, Sydney, Naomi, and Isaac Hofferber of Cedar Rapids, Jordan Bayne and Olivia Stout of Frederick, Maryland, and Miles and Harper Moon of Baltimore, Maryland; several nieces and nephews; and many extended family members. He also is survived by his sister, Mary (Tim) Healy of Merrimac, Wisconsin, and by very special friends, Linda and Dick Hill, who have been by his side during all times of need. George was predeceased by his parents, Alex and Janette Hofferber.

Please make donations in memory of George Hofferber to one or both of these two programs dear to his heart that will continue to improve the lives of cancer survivors—the LIVESTRONG program at the YMCA (YMCA of the Cedar Rapids Metropolitan Area, 207 Seventh Avenue SE, Cedar Rapids, IA 52401) and the Maxwell Meiborg Foundation (P.O. Box 8812, Cedar Rapids, IA 52408), which supports the children's Make-A-Wish program, giving children with terminal illness and their families a last chance for enjoyment.

*Information adapted from The Gazette, Cedar Rapids, Iowa, 21 January 2014

Visit the HPS website for more news about the Society and health physics
Current News

Member's Point of View

Why Should Chicken Little Have All the Fun?

Brant Ulsh, CHP

We are irradiating ourselves to death with computerized tomography (CT) scans! The west coast is being absolutely fried with nuclear radiation from Fukushima! Radiation is riskier than we thought! The frightening headlines are endless. Have you ever read this nonsense and felt your blood pressure rise? Have you ever ground your teeth when articles predict thousands of hypothetical cancers from trivial doses, while dismissing the real-world benefits of medical imaging and nuclear power?

If so, you should check out the newly formed Scientists for Accurate Radiation Information (SARI). This is an international group of scientists with expertise in radiation biology, epidemiology, radiology, medical and health physics, and nuclear engineering. As stated in our charter, SARI's objective is "to monitor for and counter nuclear/radiological misinformation that could adversely impact the world's ability to effectively respond to nuclear and radiological challenges, to the end point of saving lives."

If you visit the SARI website (radiationeffects.org), you will find journal articles challenging the linear, nonthreshold (LNT) hypothesis and rebuttals to many of the latest radiophobic newspaper articles. Hormesis is not a four-letter word here, and we unapologetically advocate the peaceful and beneficial uses of radiation and nuclear technology.

One of the first actions SARI took was to issue "An Open Letter to Journal Editors Regarding Cancer Risks From Low Dose Radiation" (full text publicly available for download on the SARI website). This letter was sent to a handful of journal editors, including *Health Physics*. The purpose of the letter was to provide some balance on the topic of low-dose radiation effects. Too often, the LNT hypothesis is presented as a radiobiological law or a default assumption. Too often, it is misused to claim "there is no safe dose" and abused to scare the public to death. For example, one of the precipitating issues for SARI's open letter was the avalanche of newspaper and journal articles using the LNT hypothesis to predict thousands of future cancers from CT scanning. In the words of Lauriston Taylor, past president of the Health Physics Society (HPS) and the first chairman of the National Council on Radiation Protection and Measurements:

> An equally mischievous use of the numbers game is that of calculating the number of people who will die as a result of having been subjected to diagnostic X-ray procedures. An example of such calculations are those based on a literal application of the linear, non-threshold, dose-effect relationship, treating the concept as a fact rather than a theory . . . Of course, there has been no statistical or other verification of this calculation, but nevertheless the statement is so often repeated that it gains some credence among those uninformed about the fallacies involved . . . These are deeply immoral uses of our scientific knowledge. (Taylor 1980)

The American Association of Physicists in Medicine, the Australasian Radiation Protection Society, the French Academies of Science and Medicine, the International Commission on Radiological Protection, the International Organization for Medical Physics, the Society for Pediatric Radiology, United Nations Scientific Committee on the Effects of Atomic Radiation, and our very own HPS are unanimous in warning against this kind of misuse of the LNT hypothesis. So how do these articles keep getting published in respected scientific journals? Are the journals' reviewers challenging authors who submit these papers? SARI's open letter points out some of the negative public health consequences of this kind of LNT abuse and simply asks journal editors to share this information with their manuscript reviewers. This is just one example of the initiatives SARI has taken.

Having participated in a number of SARI discussions and helped to draft a few SARI letters, I can tell you that we are a group of skeptics in the finest scientific tradition (Platt 1964). We are always opinionated, never afraid to challenge each other, and not shy about taking radiophobic Chicken Littles to task. So the next time you see some article claiming that low levels of radiation are the equivalent of a biblical plague, visit the SARI website, download a few resources, and make chicken (little) soup.

References

Platt JR. Strong inference: Certain systematic methods of scientific thinking may produce much more rapid progress than others. Science 146:347–353; 1964.

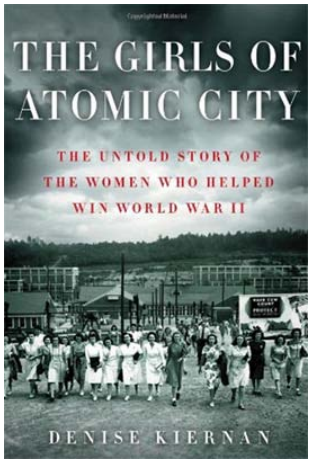
Taylor LS. Some nonscientific influences on radiation protection standards and practice. The 1980 Sievert Lecture. Health Physics 39:851–874; 1980.

Report From the Stacks

P. Andrew Karam, PhD, CHP

The Girls of Atomic City: The Untold Story of the Women Who Helped Win World War II

Denise Kiernan, Touchstone Press, 2013, 400 pages



For most of my life, I've been fascinated by the Manhattan Project. Regardless of one's opinion about the end result, I don't think there can be any doubt that it represented one of the most impressive collections of intellect ever assembled. I've read a number of books about it, and whenever one comes out that covers a new aspect of the project I am quick to pick it up.

For this reason I was eager to read the latest addition to the literature, *The Girls of Atomic City: The Untold Story of the Women Who Helped Win World War II*—all the more so after I saw an interview with the author, Denise Kiernan. We've all heard of Rosie the Riveter, who represents the women who went to the factories to take the places of the men who were fighting the war. What isn't as well known is that a large number of these women ended up at Oak Ridge operating calutrons, serving as human calculators, and so forth.

I have to say that I came away with mixed feelings about the book, but part of the reason is that I think I was expecting something different than what the author wrote. I was hoping to learn about how the ladies who worked at Oak Ridge went about their work—how they were trained, how they operated the machines for which they were responsible, etc. There was some of that, but it was only a minor part of the book—the book was primarily about what the ladies did outside of work. It's more of a social history of Oak Ridge than it is an operational or technical one.

On the one hand, there were aspects to the book that were annoying to me, although they might not bother you. Chief among these was that the author was a little too coy for my tastes in some of her references—she almost invariably referred to uranium and plutonium by their Manhattan Project code terms (tubealloy and 49, respectively), and instead of referring to major Manhattan Project characters by name, she referred to them as "the Scientist" (Oppenheimer), "the General" (Groves), and so forth. I imagine this was to give the reader a feel for the times, but it irritated me. Similarly, the author wrote the book almost as though she were one of the former workers telling her stories to grandchildren, using phrases and terms common to that era, not only when quoting the ladies whose stories she was telling, but throughout. In addition, I found the writing to be somewhat disjointed and it was hard to follow the stories of the several women the author was writing about—I suspect that this could have been avoided with better editing.

Having said that, I did pick up some interesting nuggets of information from the book. I had known that the United States pursued three different methods of uranium enrichment (and I spent some time working at a gaseous diffusion plant in the 1990s), but I hadn't known much about how the calutrons were set up or how thermal diffusion enrichment worked. In this book I was able to learn a bit about both of these methods. I was also interested to find out that the ladies operating the calutrons did a much better job of operating the equipment than did the technically trained engineers and scientists. This was all new to me and made for fun reading. Other, more-technical parts were old hat, albeit described well, and with very few scientific or technical mistakes.

With all that said, the book has had a number of very good reviews, both on Amazon.com (313 out of 385 reviews, as of January 2014, were either 4 or 5 stars) and from professional reviewers. If you're not sure if you'd like to read this book, read some of the reviews. If you're looking for a technical or scientific history, this is not the book for you. If you're interested in learning more about the social aspects of Oak Ridge during the war and the daily lives of the women who helped get the Manhattan Project up and running, then you should pick this one up.

Radiological Protection Around the Globe

Sometimes Things Get Woolly!

Ted Lazo, PE, CHP

Some might take recent discussions of this topic as a sign that the great questions of radiological protection (RP) have finally been settled, and so we now have the time to move on to more ethereal topics. Others would say that our modern society is going down the tubes, such that we MUST get our RP fundamentals firmly based on solid rationale. And perhaps many would say that RP professionals often get bogged down in really "woolly" topics. So, what the heck am I talking about? The answer is . . . the ethical basis of RP.

And so you politely ask, "What the heck is this all about?" Well, Roger Clarke started talking about ethics in 1999. Then in about 2002 the International Radiation Protection Association (IRPA) began work on what became, in May 2004 at the Madrid IRPA 11 Congress, the IRPA Code of Ethics (irpa.net/page.asp?id=54407), a short list of 11 points establishing what RP experts "should do" in order to assure that their professional behavior is ethical. This code is more practical in nature than philosophical and was presented as a tool that RP professionals could say they are following to help build trust between themselves and the people and groups with or for whom they are providing professional services.

The code has been broadly distributed by IRPA, but after the code's finalization it became less of a front-page issue. However, before the Fukushima accident, the ICRP Main Commission, notably Abel Gonzalez and Jacques Lochard, began work to pin the fundamentals of the international system of RP to a solid ethical basis.

This work became more broadly discussed in August 2013 when the Korean Association of Radiation Protection and the Korean Institute of Nuclear Safety hosted the 1st Asian Workshop on the Ethical Dimensions of the Radiological Protection System in Daejeon, Korea (irpa.net/page.asp?id=54564).

Then, in December 2013, discussions continued at the 1st European Workshop on the Ethical Dimensions of the Radiological Protection System, hosted by the Italian Association of Radiological Protection and the French Society of Radiological Protection in Milan, Italy.

I attended the Milan conference, and I must confess that I found the discussions extremely interesting, but VERY woolly. The Milan conference flyer suggests that there is a need to make ethical values explicit:

> This should facilitate the understanding of the system for specialists and non-specialists in radiological protection and allow a renewed dialogue on its foundations, its objectives and rationality. It should also encourage the emergence of informed behaviors in society vis-à-vis radiation.

There are philosophically many ways to link the pillars of radiological protection to societal ethics, but discussions have linked justification to teleology, optimization to utility, limitation to deontology, and precaution/prudence to aretaic ethics. These are a lot of Greek words that I don't use on an everyday basis—but this "top-down" approach, together with the rather "bottom-up" approach of the IRPA Code of Ethics, should lead to something that is strongly underpinned by sociological and ethical science and strongly practical for dealing with stakeholders in complex RP situations!

And the good news is, following the 59th HPS Annual Meeting this July, IRPA will hold the IRPA North American Workshop on the Ethical Dimensions of Radiological Protection, 17–18 July, also in Baltimore. I hope this will be well attended and that attendees will give an American pragmatic and utilitarian flavor to these discussions. If we're lucky, this will help us to be seen as a trustworthy bunch of ethical professionals (just like the rat-hair inspectors from my column on page 20 in the November 2013 issue of *Health Physics News*)!

REAC/TS

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From the Case Files of the REAC/TS Radiation Accident Registry

External Contamination With Uranyl Nitrate

Introduction. REAC/TS frequently receives calls from radiological facilities that have difficulties with removing external contamination. Some cases are urgent in that the contaminants may be beta or gamma emitters that may cause significant skin damage or damage to subcutaneous tissues. In other cases, the contaminants have been alpha emitters for which there is much less concern about skin injury. Most radiological technicians are familiar with the use of masking or duct tape for removal of external contaminants. Most are also familiar with the use of tepid water with soap with gentle scrubbing to remove contaminants. There are a number of other solutions on the market that purport to be better for removing external contaminants than the latter, but REAC/TS has had very little positive experience with these solutions. Some have reported that the use of a mild bleach (sodium hypochlorite) solution works better than plain soap and water. REAC/TS does not recommend the use of bleach as a decontamination solution.

Case #1. In August of 2013, REAC/TS received a call from an industrial facility in Tennessee that had an employee who became contaminated with uranyl nitrate. In the field, there was 70,000 cpm of contamination on the man's forearms. Field decontamination was incomplete, but did get the contamination down to 7,000 cpm. Ambient background level of radiation in that area is about 50 cpm. There was no suspicion that an internal contamination with the material had occurred.

The caller said that the man's forearms had been wrapped in plastic wrap, but his forearms were not wrapped first in baby diapers (or absorbent pads called ABDs) to absorb any residual contamination. He was informed by a REAC/TS staff member that wrapping with plastic alone may increase the blood flow to the area because of the heat generated under the plastic and actually increase absorption of the substance through the skin. An absorptive material under the plastic could absorb the contaminant allowing for complete decontamination of the skin.

The caller also enquired about the use of sodium bicarbonate to alkalinize the urine. He was informed that alkalinizing the urine is appropriate for internalized uranium. For internal contamination with uranium, one would like the pH of the urine to be at least 8, if not 8.5. But because there was no reason to believe that there had been an internal contamination in this particular case, alkalinizing the urine was probably not warranted. Urinary radiobioassay was in order, however, to document the absence or presence of internal contamination with uranium.

Internalized uranyl ion is damaging to the kidney tubules. Uranyl ion in the blood complexes with carbonate to form uranyl carbonate, which is nontoxic to the kidney. However, when the uranyl carbonate reaches the kidney tubules, where the pH is relatively low, the uranyl carbonate dissociates, allowing the free uranyl ion to cause damage to the tubules. Alkalinizing the urine by raising the pH prevents the dissociation of uranyl carbonate, which is the rationale for the treatment.

Case #2. In 2009, REAC/TS received a call from another radiological facility that had a worker who had contaminated his forearms with uranium at 80,000 cpm. They had attempted decontamination several times only to be discouraged by the appearance of erythema (redness) of the skin. On further history taking, it was discovered that the worker also had a troublesome inflammatory condition

of the skin (eczema), which would make it easier for transcutaneous (percutaneous) absorption of the contaminant to occur through the abnormal skin.

In that case, it was also recommended that ABDs or baby diapers should be used to wrap the forearms and then the arms should be covered with plastic wrap. They did so and when the worker reported to the medical department the next morning, all of the contamination was gone, probably absorbed into the baby diapers with perspiration. A urine radiobioassay was also recommended in this case to demonstrate that internal contamination had not occurred.

Conclusion. One of the rules for decontamination of the skin is to avoid injury so as to avoid internalization of contaminants. Gentle cleansing with tepid soapy water with a sponge or cloth is generally effective. Cleansing with other agents or with stiff-bristled brushes or similar tools is probably not warranted. If complete decontamination is not accomplished to about two to three times background, the technique described above using baby diapers or ABDs is fairly effective.

This work was performed under Contract #DE-AC05-06OR23100 between Oak Ridge Associated Universities (ORAU) and the U.S. Department of Energy (USDOE). REAC/TS is a program of the Oak Ridge Institute for Science & Education (ORISE), which is operated for the USDOE by ORAU. The opinions expressed herein are those of the authors and are not necessarily those of the U.S. government (USG), the USDOE, ORAU, or sponsoring institutions of ORAU. Neither the USG nor the USDOE, nor any of their employees, makes any warranty, expressed or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of the information contained herein or represents that its use would not infringe on privately owned rights.

EPA Requests Comments on Updating Nuclear Power Environmental Standards

The Environmental Protection Agency (EPA) has published an advance notice of proposed rulemaking that requests public comment and information on potential approaches to updating the EPA's "Environmental Radiation Protection Standards for Nuclear Power Operations" (40 CFR Part 190).

These standards were originally issued in 1977. They limit radiation releases and doses to the public from normal operation of nuclear power plants and other uranium fuel cycle facilities—that is, facilities involved in the milling, conversion, fabrication, use, and reprocessing of uranium fuel for generating commercial electrical power. These standards were the earliest radiation rules developed by EPA and are based on nuclear power technology and the understanding of radiation biology current at that time. The Nuclear Regulatory Commission is responsible for implementing and enforcing these standards.

Comments must be received on or before 4 June 2014.

Health Physics Society (HPS) President Darrell Fisher has convened a task force chaired by HPS President-elect Barbara Hamrick to develop comments based on factual information and approved HPS positions, but HPS members are strongly encouraged to review the document and provide their own comments directly to the EPA.

See this month's short course offerings, starting on page 32

Getting to Know the HPS

Keith Rose

Rose family, left to right: Kathy, Zachary, Keith, and Hannah, at Zachary's college graduation

Education
- BS, Biology, University of North Alabama, 1977
- Postbaccalaureate course in radiation biology, Georgia Institute of Technology, 1986

Work Experience
- Health Physicist, U.S. Army Aviation and Missile Command, 1998–2010
- Physicist, U.S. Army Test, Measurement, and Diagnostic Equipment Activity, 1991–1998
- Health Physicist, U.S. Army Test, Measurement, and Diagnostic Equipment Activity, 1989–1991
- Health Physicist, Tennessee Valley Authority, 1985–1989

Memberships
- Health Physics Society, 1991–present
- Alabama Chapter of the Health Physics Society

Certification

Certified by the American Board of Health Physics, 2002

Professional Presentations

Presentations at Alabama Chapter meetings and at the Army's radiation safety officers conferences

When someone asks what a health physicist is, how do you answer?

Health physicists specialize in radiation protection. We protect people and the environment from unnecessary radiation exposure.

Where do you work and what is your job title?

I worked for the U.S. Army Aviation and Missile Command (AMCOM) at Redstone Arsenal, Alabama, as a health physicist until I retired three years ago.

How did your job involve health physics?

I was the command health physicist for AMCOM and was responsible for all features of the AMCOM Radiation Safety Program. These features included Nuclear Regulatory Commission licenses, many industrial x-ray machines, radioactive sources, lasers, training, research and development, and setting policy. I expect to be involved in consulting and training in the near future.

What have you enjoyed most about being a health physicist?

Training people and explaining the difference between radiation and contamination. Also, I enjoy explaining radiation safety and dispelling radiation myths.

Who in the field has most inspired you? In what way?

John Purvis, health physics supervisor at Browns Ferry Nuclear Power Plant. I worked for him in 1978 and he encouraged me to enter the Tennessee Valley Authority's health physics technician training program. John was a great supervisor who could inspire a team of workers to perform at their optimum ability.

What advice do you have for people entering the field of health physics?

Enjoy work and work hard. Learn all you can. Try to obtain a federal government job that interests you and pays well. I would also advise obtaining your certification as soon as possible.

In what ways have you been involved with the Health Physics Society (HPS)?

I attend many of the annual and midyear HPS meetings and almost all of the Alabama Chapter meetings. I have made presentations at the chapter meetings and now I serve as the vice president of the Alabama Chapter.

What do you do when you aren't doing health physics?

I am an elder at Woodlawn Church of Christ, where I teach classes and go on mission trips. I also fly airplanes, help with the Experimental Aircraft Association, farm, hunt deer, and work on lake homes. Most of all, I enjoy spending quality time with my family.

CHP Corner

American Academy of Health Physics
American Board of Health Physics
Website: aahp-abhp.org

American Board of Health Physics

Nora Nicholson, CHP, ABHP Chair

The American Board of Health Physics (ABHP) held its fall meeting in McLean, Virginia, 22–23 November 2013. Based on the exam results, the ABHP granted 34 new certifications in 2013 (see the "CHP Corner" in the January 2014 *Health Physics News*, page 34).

During the fall meeting, the Board applauded panel members for the time and effort they contributed to the preparation and grading of the 2013 examinations. Special thanks to Bill Rhodes, Panel 1 chair, and Wayne Gaul, Panel 2 chair. Preparing the exams is a significant effort and we all must not lose sight of the extensive time the chairs spend on this process, which is on a volunteer basis. Their hard work is sincerely appreciated.

As a reminder to certified health physicists (CHPs), the Board has now separated the processes of question development and exam preparation so that the Part II vice chair leads the process to develop questions for the exam bank and the Part II chair focuses on preparing the exam completely from the bank. For those CHPs not on the panel who would like to develop questions for the exam, receiving recertification points will now require their question to be entered into the bank, as opposed to actually being a part of the exam, as was previously required.

The term expired for two members of the ABHP, Govind Rao and Sharon Dossett. Sincere thanks to Govind and Sharon for their work on the Board. Bob May and Jay Tarzia joined the Board as new members, effective 1 January 2014. The 2014 Board is composed of the following members:

Nora Nicholson, Chair	Mark (Andy) Miller, Member
Pat LaFrate, Vice Chair	Robert May, Member
George MacDurmon, Secretary	Charles (Gus) Potter, Member
Andy Karam, Parliamentarian	Jay Tarzia, Member

The Board's sincerest appreciation goes to Nancy Johnson for all the work she does for ABHP and the certification process. Nancy truly makes the process run so well.

AAHP Appeals Committee

Cheryl Olson, CHP, Chair

The American Academy of Health Physics (AAHP) Appeals Committee evaluates appeals regarding American Board of Health Physics (ABHP) decisions on candidate applications, examinations, certifications, and/or certification renewals. Appeals may be filed with the executive secretary (Nancy Johnson, njohnson@burkinc.com) by any individual who is denied:

- Eligibility for any part of the examination,
- Part I or Part II passing,
- Certification for any reason, or
- Renewal of certification.

The Appeals Committee determines whether or not the policies and procedures of the Board were properly followed. The committee reports its findings to the appellant, the ABHP chair, the AAHP president, and the AAHP program director. In addition to my position as committee chair, the committee is made up of current members Jason Marsden and Duncan White.

Professional Standards and Ethics Committee

Timothy D. Taulbee, CHP, Chair

The American Academy of Health Physics (AAHP) Professional Standards and Ethics Committee is charged with defining the standards of professional responsibility for certified health physicists (CHPs) and reviewing all complaints about unethical practice referred to the committee by the Executive Committee. The standards of professional responsibility are in place and they have been reviewed.

The Professional Standards and Ethics Committee is a standing committee of the AAHP composed of five members of the Academy. Serving on the committee in 2014 in addition to the chair are Bruce Thomadsen, Danny Rice, Neill Stanford, and Robert Cherry.

It appears that all CHPs are continuing to conduct themselves in a professional and ethical manner as no complaints have been referred to the committee in the recent past. In fact, the committee has not received a complaint within the past three years, which really demonstrates the standards and ethics of the Academy. The committee also serves as a clearinghouse for professional standards and ethics questions from CHPs and others in the profession of health physics.

Another responsibility of the Professional Standards and Ethics Committee is the establishment of procedures for selecting, awarding, and announcing the Joyce P. Davis Memorial Award winners. The procedures have been reviewed and a call has been issued for nominations for the 2014 Joyce P. Davis Memorial Award. The information regarding the nomination process can be found in the December 2013 edition of the *CHP News* (attached to the December 2013 issue of *Health Physics News*). It can also be found on the AAHP website hps1.org/aahp/wp_awards.htm. We encourage you to nominate a CHP who has demonstrated an exceptional level of professional standards and ethics in his or her career. Previous recipients of the award include John Kelly, James Tarpinian, Carol Berger, Howard Dickson, and Frazier Bronson.

Address contributions for CHP News and "CHP Corner" to:

Editor
Kyle Kleinhans, CHP
Work: 865-241-1024
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Associate Editor
Harry Anagnostopoulos, CHP
Work: 610-337-5322
Email: anaghw@yahoo.com

2014 Air Monitoring Users Group Meeting

The 26th annual meeting of the Air Monitoring Users Group (AMUG) will convene at the Palace Station Hotel in Las Vegas on 29–30 April and 1–2 May 2014. An informative and exciting program is planned. Relevant American National Standards Institute (ANSI) N42 and International Electrotechnical Commission (IEC) standards will be discussed on Monday, 29 April. A tour of the Nevada National Security Site, formerly known as Nevada Test Site, is planned for Wednesday, 30 April.

All interested scientists and practitioners in aerosol science and related activities and topics are invited. This includes manufacturers, researchers, and regulators. This meeting is international in scope with attendees from Canada, Germany, the United Kingdom, and the United States. Interested scientists from other countries are also invited to participate. Registration is $100 per attendee, payable to either Morgan Cox or to the Palace Station Hotel. Please contact Morgan for details at morgancx@swcp.com or 216-548-0121.

Free Stuff From Radiation Technology, Inc.

Kenneth Krieger, CHP

Radiation Technology, Inc., is offering radioactive material for which the company no longer has a use. The materials will be transferred at no cost, other than shipping expenses, to entities with license authorization for possession. The compounds are relatively old, but do not rapidly decay or break down. In many cases, the compounds are spectroscopic grade (99.8 percent pure) or hard to find.

Available are 156 g of thorium oxide, 50 g of thorium sulfate, 150 g of thorium chloride, 250 g of thorium nitrate, six 29.6-ml bottles of uranyl nitrate, 100 g of uranyl sulfate, 200 g of uranyl nitrate, 177.4 ml of uranyl oxide (UO_3), 50 g of uranium acetate, and 500 g of U_3O_8.

For additional information and/or pictures, please email Kenneth Krieger at kvkrieger@netzero.net or call Pamela Zelewski (512-346-7608).

Short Courses

There is a $100 fee for each training course advertised (up to 450 words). Send short course advertisements to:

News Editor Mary A. Walchuk
19884 Fish Lake Lane
Elysian, MN 56028
Phone: 507-267-4447
Email: editormw@hps.org

Listings that reach the office by 10 March 2014 will appear in the April 2014 issue of *Health Physics News*.
Health Physics News retains the right to edit short course listings to conform to *Health Physics News* format.
For information about specific short courses, contact the offeror.

REED COLLEGE RESEARCH REACTOR. 3203 Southeast Woodstock Boulevard, Portland, Oregon 97202-8199; voice: 503-777-7222; fax: 503-777-7274; email: reactor@reed.edu; website: reactor.reed.edu

TITLE: Radiation Safety Officer Class. This course is designed to provide RSOs and Assistant RSOs with an introduction to the practice of health physics. Regulation and documentation will be covered in addition to the practical skills necessary to perform the duties of RSO. Topics will include atomic structure, radioactivity, shielding, regulations, radiation and its biological effects; dosimetry; instrument selection, use, and calibration; contamination control; emergency planning; radioactive waste management; transportation; and laser safety. Some subjects are math based and scientific calculators are provided. The facility includes an operating TRIGA nuclear reactor that will provide the basis for some of the laboratory exercises. The course concludes with a final exam and certificate. Three hours of college credit is available through Concordia University in Portland ($250 additional fee).

DATES: 9–13 June 2014
FEE: $1,400.00 (Includes course material and "The Chart of the Nuclides")
PLACE: Portland, Oregon

BEVELACQUA RESOURCES. Attn: Dr. Joseph J. Bevelacqua, PhD, CHP, RRPT, 343 Adair Drive, Richland, WA 99352; 509-628-2240 or 509-521-8036; email: bevelresou@aol.com; website: bevelacquaresources.com; Facebook: Join us as a friend of Joseph Bevelacqua & Bevelacqua Resources; Twitter: Follow Bevelacqua Resources at twitter.com/@JJB007; LinkedIn: Connect with Joseph Bevelacqua

TITLE: Certification Review Course Part I; Self-Study Course Part I; Background Materials Review; Part I Question & Answer CD and Site License; Part I Additional Question & Answer Volume; NRRPT Question & Answer CD and Site License. This course and supporting materials prepare candidates for the successful completion of the Part I American Board of Health Physics (ABHP) Certification Examination. Historically, our students have achieved passing rates that exceed the average exam passing rates. The Part I Course has been granted 32 continuing education credits (2014-00-014). The instructor, Dr. Bevelacqua, was an ABHP Part II Panel member, vice-chairman, and chairman. His experience gained in developing the certification examination and knowledge of candidate weaknesses have strengthened the content of this course and supporting materials. Examination strategies and techniques for successfully passing the examination are emphasized. Course: The Part I Course is intense, with lectures followed by problem sessions. An exam-specific mathematical review is included with the course. About 30 percent of the course is devoted to problem solving with instructor critique and guidance provided to each student. The Part I Course materials include the Part I Self-Study Course materials. Class times are 0815–1700 each day. The Part I Self-Study Course contains 1,600+ problems with solutions, the textbook *Basic Health Physics*, detailed course notes, examination preparation materials, and a summary of recent (1997–present) National Council on Radiation Protection and Measurements Reports. Supporting Materials: In addition to the materials used in the Part I Course, supporting materials are available to assist a student's certification preparation: (1) A Background Materials Review (BMR) of basic mathematics, physical science, and operational health physics is available to assist students with weaknesses in these areas. The BMR includes 700 questions and solutions and the textbook *Basic Health Physics*. (2) The Part I Additional Question and Answer Volume contains 440 Part I questions and answers, 200 background material questions with solutions, and *Basic Health Physics*. (3) The Part I CD contains 1,500+ problems with solutions, examination strategy recommendations, and *Basic Health Physics*. (4) The National Registry of Radiation Protection Technologists (NRRPT) CD contains 1,500+ problems with solutions, examination strategy recommendations, and *Basic Health Physics*.

EXAM DATE: 14 July 2014

FOREIGN STUDENT ADVISORY: The course language is English. Translation services are not provided.

DATES: 14–18 April 2014

FEES (*): $2,999.00 (Part I Course)
$2,350.00 (Part I Self-Study Course)—Includes domestic shipping and handling
$1,800.00 (Part I CD with 1,500+ Questions and Answers)—Includes domestic shipping and handling
$1,800.00 (NRRPT CD with 1,500+ Questions and Answers)—Includes domestic shipping and handling
Site Licenses available for both CDs—License fee prices available on request
$1,900.00 (Background Materials Review)—Includes domestic shipping and handling
$1,900.00 (Part I Additional Q&A Volume)—Includes domestic shipping and handling
Foreign shipping and handling depends on the destination country.

*Given pending changes to federal and state tax structures, fees are subject to change. All credit card purchases will incur a 4 percent surcharge. Any changes will be announced on Facebook, Twitter, and LinkedIn and in subsequent *Health Physics News* ads.

PLACE: Red Lion Hotel, Richland Hanford House
802 George Washington Way, Richland, WA 99352
509-946-7611 (A special rate is available if you mention your attendance at a Bevelacqua Resources course.)

TITLE: Certification Review Course Part II; Self-Study Course Part II; Background Materials Review; NRRPT Question & Answer CD and Site License. This course and supporting materials prepare candidates for the successful completion of the Part II American Board of Health Physics (ABHP) Certification Examination. Historically, our students have achieved passing rates that exceed the average exam passing rates. The Part II Course has been granted 32 continuing education credits (2014-00-013). The instructor, Dr. Bevelacqua, was an ABHP Part II Panel member, vice-chairman, and chairman. His experience gained in developing the certification examination and knowledge of candidate weaknesses have strengthened the content of this course and supporting materials. Examination strategies and techniques for successfully passing the examination are emphasized. Course: The Part II Course is intense, with

lectures followed by problem sessions. An exam-specific mathematical review is included with each course. About 60 percent of the course for Part II is devoted to problem solving with instructor critique and guidance provided to each student. The Part II Course materials include the Part II Self-Study Course materials. Class times are 0815–1700 each day. The Part II Self-Study Course includes the textbook *Contemporary Health Physics*, 16 Part II examinations with solutions, detailed lecture notes, examination-preparation materials, and a summary of recent (1997–present) National Council on Radiation Protection and Measurements Reports. Supporting Materials: In addition to the materials used in the Part II Course, supporting materials are available to assist a student's certification preparation: (1) A Background Materials Review (BMR) of basic mathematics, physical science, and operational health physics is available to assist students with weaknesses in these areas. The BMR includes 700 questions and solutions and the textbook *Basic Health Physics*. (2) The National Registry of Radiation Protection Technologists (NRRPT) CD contains 1,500+ problems with solutions, examination strategy recommendations, and *Basic Health Physics*.

EXAM DATE: 14 July 2014

FOREIGN STUDENT ADVISORY: The course language is English. Translation services are not provided.

DATES: 19–23 May 2014

FEES (*): $2,999.00 (Part II Course)
$2,350.00 (Part II Self-Study Course)—Includes domestic shipping and handling
$1,800.00 (NRRPT CD with 1,500+ Questions and Answers)—Includes domestic shipping and handling
Site Licenses available for the CD—License fee prices available on request
$1,900.00 (Background Materials Review)—Includes domestic shipping and handling
Foreign shipping and handling depends on the destination country.

*Given pending changes to federal and state tax structures, fees are subject to change. All credit card purchases will incur a 4 percent surcharge. Any changes will be announced on Facebook, Twitter, and LinkedIn and in subsequent *Health Physics News* ads.

PLACE: Red Lion Hotel, Richland Hanford House
802 George Washington Way, Richland, WA 99352
509-946-7611 (A special rate is available if you mention your attendance at a Bevelacqua Resources course.)

RADIATION SAFETY & CONTROL SERVICES, INC. Attn: Ginger Nownes, 91 Portsmouth Avenue, Stratham, NH 03885; 800-525-8339 or 603-778-2871 (x220); fax: 603-778-6879; email: ganownes@radsafety.com, website: www.radsafety.com

TITLE: Radiation Safety Officer Training Class. This comprehensive 40-hour course provides students with a balance of technical and theoretical information along with practical applications of radiation safety. Fundamental concepts are presented in a logical progression, providing a sound basis for understanding the day-to-day requirements of the radiation safety officer (RSO). An optional exam for RSOs whose programs require testing is provided along with a Department of Transportation exam. References from past students are available upon request. The three instructors of the course are certified health physicists with a combined 70 years of experience in their field. As RSCS principals, they operate a nuclear instrumentation calibration facility and an analytical measurement laboratory and also perform consulting for radioactive material licensees. Continuing education credits have been approved by the American Academy of Health Physics (32 continuing education credits) and the American Society of Radiologic Technologists (40 hours of Category A continuing education credits).

DATES: 9–13 June 2014, Portsmouth, New Hampshire
6–10 October 2014, Portsmouth, New Hampshire
8–12 December 2014, Las Vegas, Nevada

FEE: $1,495 (Includes all materials, daily continental breakfast and snack breaks, and a catered lunch and social on the first day of the course)

PLACE: Portsmouth, New Hampshire; Las Vegas, Nevada

TITLE: Advanced Radiation Safety Officer Training Class. This three-day course includes a review of basic theoretical concepts and in-depth discussion of operational programs, licensing issues, and regulatory considerations. The advanced radiation safety officer (RSO) course includes a brief review of the fundamentals along with a focus on 10 CFR 20 and 10 CFR 30 licensing issues. Several Nuclear Regulatory Commission (NRC) positions, regulatory guides, and NUREGs will be presented, along with real-life case studies involving NRC enforcement actions. This training includes Department of Transportation (DOT) requirements for transportation of radioactive material and satisfies the requirements of Subpart H. A DOT exam is included. This course also provides the participants an

opportunity to discuss their specific license issues. We encourage you to send us a copy of your license, program documents, and tie-down letters so we may include them in the course materials. Several workshop sessions are provided to participants that allow for detailed discussions on your particular needs. During workshop sessions, several software tools are presented that can be used to improve the efficiency and effectiveness of your radiation protection program. Continuing education credits have been approved by the American Academy of Health Physics (32 continuing education credits) and the American Society of Radiologic Technologists (24 hours of Category A continuing education credits) for the three-day RSO course. The fee for the course is $1,095. Course fee includes all materials, daily continental breakfast and snack breaks, and a catered lunch and social on the first day of the course.

DATES: 6–8 October 2014
FEE: $1,095 (Includes all materials, daily continental breakfast and snack breaks, and a catered lunch and social on the first day of the course)
PLACE: Portsmouth, New Hampshire

RSO SERVICES, INC. Contact: Robert Harrison, PO Box 575, Niceville, FL 32579; 850-651-0777; fax: 850-651-4777; email: info@rsoservices.com; website: www.rsoservices.com

TITLE: 40-Hour RSO Class & Refresher. RSO Services, Inc., offers the full 40-hour Radiation Safety Officer school and refresher class at locations throughout the United States. We also offer radiation safety classes, audits, wipe/survey/shutter tests, engineering, nuclear source disposals, EXIT sign disposals, NORM solutions, radiation clean-up, turn-key radiometric instrumentation installation and calibration, and other radiation services.

2014 DATES:
14–18 April 2014, Cincinnati, Ohio
9–13 June 2014, Orange Beach, Alabama
22–26 September 2014, Orange Beach, Alabama
3–7 November 2014, Pigeon Forge, Tennessee
Anytime, Anywhere, On-Site School, Your Facility (call or email to schedule)

FEE: Visit www.rsoservices.com/event-calendar

RADIATION SAFETY ASSOCIATES, INC. Attn: K. Paul Steinmeyer, 19 Pendleton Drive, PO Box 107, Hebron, CT 06248; 860-228-0487; fax: 860-228-4402; website: radpro.com; email: info@radpro.com

TITLE: Radiation Safety Officer (5 days). RSA, Inc., recognized by government and industry as a leader in the education and training of radiological health and safety professionals since 1981, features trainers who are radiation protection professionals who serve a diverse clientele and share their experiences with students. Our course emphasizes implementing a safe, compliant, licensed program and offers practical suggestions for meaningful radiation protection programs. Hundreds of students have taken this course since we first offered it in 1986. This course prepares you to be an effective radiation safety officer (RSO) regardless of past experience. Class discussions include current U.S. regulatory structure, a review of basic theories/concepts/math, a description of types of radiation and how they interact with matter, personal dosimetry, radiation detection/measurement, exposure/contamination controls, survey requirements/methods, skin dose calculations, understanding regulations/guidelines, licensing requirements, dealing with regulatory agencies/compliance issues, and emergency planning—ALL aspects of a radiation safety program (see outline posted at radpro.com). This course fully satisfies the 40-hour training requirement of the Nuclear Regulatory Commission and Agreement States for most RSOs. Classes are limited to 12 students—maximizing individual attention—at our licensed radiochemical laboratory and instrument calibration facility. Laboratory exercises and demonstrations reinforce technical lectures. No survey simulations here! You measure real radioactive samples and radiation levels in actual radiological areas, using the 50-plus instruments on-site. Training materials (unavailable from other sources) include a two-volume text written especially for this course, a scientific calculator, and a book containing all pertinent federal regulations and numerous Regulatory Guides that will be a practical reference and guidebook for the RSO in years to come. Some prior knowledge of algebra and science is helpful, but someone can complete the course with limited math and science experience. Beverages and lunches of your choice are provided at no extra charge.

DATES: 10–14 March, 7–11 April, 2–6 June, 8–12 September, 20–24 October 2014
FEE: $1,395 (Includes all texts, materials, lunches of your choice, and beverages)
PLACE: Hebron, Connecticut

TITLE: Health Physics Technician Level I, Basic (5 days). RSA, Inc., recognized by government and industry as a leader in the education and training of radiological health and safety professionals since 1981, features trainers who are radiation protection professionals who serve a diverse clientele and share their experiences with students. Our course introduces the principles and practice of health physics and radiation protection. Hundreds of students have taken this course since we first offered it. This course is a must for those who have never worked in the nuclear industry, or who have experience and now need theory and lab training for advancement, and will provide you with the tools you need for full qualification as a health physics technician (see outline posted at radpro.com). Classes are limited to 12 students—maximizing individual attention—at our licensed radiochemical laboratory and instrument calibration facility. Laboratory exercises and demonstrations reinforce technical lectures. No survey simulations here! You measure real radioactive samples and radiation levels in actual radiological areas, using the 50-plus instruments on-site. Training materials (unavailable from other sources) include a text written especially for this course and a scientific calculator. Some prior knowledge of algebra and science is helpful, but the course can be completed by someone with limited math and science experience. Beverages and lunches are provided at no extra charge.
DATES: 21–25 April, 6–10 October 2014
FEE: $1,395 (Includes all texts, materials, lunches of your choice, and beverages)
PLACE: Hebron, Connecticut

TITLE: Class 7 (Radioactive) DOT/IATA Training (1 day). RSA, Inc., recognized by government and industry as a leader in the education and training of radiological health and safety professionals since 1981, features trainers who are radiation protection professionals who serve a diverse clientele and share their experiences with students. Here is a one-day training course that focuses precisely on shipping the Class 7 Radioactive Materials that most people are interested in. The presentation is limited to exempt package shipments; excepted packages containing limited quantities, instruments, and articles; and radioactive White I, Yellow II, and Yellow III shipments in both exclusive use and nonexclusive use vehicles. This is all that most licensees will ever need to ship. Packaging and shipping of SCO, LSA material, and Type B shipments are not covered. Students will participate in packaging and surveying actual radioactive material and will complete documentation for several types of shipments. Each student receives a 75-page, full-color training manual complete with references, pertinent regulations, explanatory text, illustrations, sample forms, and in-class exercises. A written objective exam is administered at the end of the course and a certificate of satisfactory completion is provided. Beverages and lunch of your choice are provided at no extra charge.
DATES: 17 March, 14 April, 12 May, 9 June, 3 September, 13 October, 3 November 2014
FEE: $345 (Includes text, materials, lunch of your choice, and beverages)
PLACE: Hebron, Connecticut

TITLE: Respiratory Protection at Nuclear Facilities (3 days). First presented in 1983, this course has been completely revised, based on the 1999 changes to Subpart H of 10 CFR 20 and Revision 1 to Regulatory Guide 8.15. This is the only course available taught by the health physicist who assisted with the development of these documents. It includes discussions of both regulatory compliance and strategies for developing and implementing effective programs. Emphasis is given to establishing one respirator program that meets the requirements of both the Occupational Safety and Health Administration and the Nuclear Regulatory Commission. Time is available for solving problems posed by students (see outline posted at radpro.com). RSA, Inc., has been recognized by government and industry as a leader in the education and training of radiological health and safety professionals since 1981. Classes are limited to 12 students—maximizing individual attention—at our licensed facility. Copies of all pertinent documents will be supplied to all students. Beverages and lunches are provided at no extra charge.
DATES: 19–21 May, 22–24 September 2014
FEE: $895 (Includes all texts, materials, lunches of your choice, and beverages)
PLACE: Hebron, Connecticut

Short Course ads continue on page 37

DADE MOELLER TRAINING ACADEMY. Course Registrar: Michelle LeBlanc, 438 N. Frederick Ave Ste 220, Gaithersburg, MD 20877; 301-990-6006 or 800-871-7930; fax: 301-990-9878; website: www.moellerinc.com/academy. Contact Michelle LeBlanc, Michelle.Leblanc@moellerinc.com, to register or for an update on the training.

TITLE: Medical Radiation Safety Officer. This five-day course will help keep you current with the radiation safety aspects of the many new techniques related to using ionizing radiation in the continually evolving medical field. Gain a practical understanding of regulations governing the safe use of radiation-emitting machines and radioactive materials, as well as responsibilities for managing radiation safety in a hospital. Discuss real-world experiences on numerous relevant topics as outlined in the agenda. Learn how to implement a successful, compliant radiation safety program that will withstand rigorous inspection. **The target audience**: Those managing a radiation safety program or working with radioactive material and/or radiation-producing machines in a medical environment.

DATES: 24 March 2014, Gaithersburg, Maryland
19 May 2014, Las Vegas, Nevada
28 July 2014, Gaithersburg, Maryland
29 September 2014, Las Vegas, Nevada
17 November 2014, Gaithersburg, Maryland
FEE: $1,995
PLACE: Las Vegas, Nevada; Gaithersburg, Maryland

TITLE: Radiation Safety Officer. Newly updated course content and electives. Highly acclaimed by over 2,000 radiation safety officers (RSOs) in the past 10 years. We offer this course monthly, with free refresher training for all former RSO students. Our certified health physicist faculty are full-time training professionals on staff. *Tailor the course to your needs with electives*. This is not a "one class fits all" course. You can choose electives to tailor the course to your special program needs in research, medicine, biomedical, hospitals, government, universities, irradiators, x-ray machines, sealed source gauges, radiography, and other industrial applications. This is not a course about theory. We emphasize practical knowledge for implementing a good radiation safety program at a reasonable cost and how to assure good radiation safety inspections. You will receive extensive reference materials, including a specially designed 1,200-page *Radiation Safety Officer Manual*, which includes relevant federal regulations and selected regulatory guides, and a course certificate showing completion of a 40-hour class. Required Subjects: radiation and radioactivity, radioactive decay, radiation units, sources of radiation, interaction with matter, health effects, regulations and protection standards, licensing, enforcement, dosimetry, shielding, litigation, radiation instruments, interpreting radiation data, quality assurance, transportation overview, receiving of radioactive materials, developing training programs, radiation safety program management, preparing for inspections, and emergency response. Elective Subjects: sealed sources and industrial gauges, leak testing, x-ray safety, radioactive wastes and manifests, math review, problem solving, license applications, medical regulations (10 CFR 35), internal dosimetry, medical radiation safety, practical record keeping, how to conduct surveys, effective communications for RSOs, and training for the radiation safety trainer. Liquid Scintillation Counting Option: This option (additional $200 fee required) will provide you with a basic understanding of the principles of liquid scintillation counting for analysis of surface swipes, biomedical, environmental, waste, and other types of samples. This four-hour module is conducted at the end of the regular course on Friday. Department of Transportation (DOT) HAZMAT Certification Option: This option (additional $200 fee required) is designed to train workers in the requirements of the DOT as specified by 49 CFR 172 Subpart H and the Nuclear Regulatory Commission as specified by 10 CFR 71.5 and 10 CFR 20.1906. This four-hour module is conducted at the end of the regular course on Friday and will conclude with an examination. Students who successfully complete the exam will receive a certificate documenting this training.

DATES: 3 March 2014, Gaithersburg, Maryland
7 April 2014, Las Vegas, Nevada
5 May 2014, Gaithersburg, Maryland
9 June 2014, Las Vegas, Nevada
7 July 2014, Gaithersburg, Maryland
11 August 2014, Las Vegas, Nevada
8 September 2014, Gaithersburg, Maryland
13 October 2014, Las Vegas, Nevada
10 November 2014, Gaithersburg, Maryland
8 December 2014, Las Vegas, Nevada
FEE: $1,995 (Includes all materials, continental breakfast, lunches, and free refresher training)
PLACE: Gaithersburg, Maryland; Las Vegas, Nevada; or at your facility

TITLE: DOT, NRC, & IATA Requirements for Shipping and Receiving Radioactive Materials. This monthly two-day class is for persons responsible for shipping and receiving radioactive materials for biomedical research, nuclear medicine, specific- and broad-scope licensees, portable gauges or sources, and decommissioning sites. This class is designed to train employees in the requirements of the Department of Transportation (DOT) as specified by 49 CFR 172 Subpart H and the Nuclear Regulatory Commission (NRC) as specified by 10 CFR 71.5 and 10 CFR 20.1906. We also offer one-and-a-half-day DOT Recertification for $595. The first day of this class will provide an introduction to radiation and radioactivity, radiation health risks, and radiation-detection instruments. This provides the students with the knowledge and skills required for identifying DOT-regulated radioactive materials and measures to protect themselves from exposure to ionizing radiation. Students then move on to an introduction to transporting radioactive materials. It will include a review of the different categories of radioactive material regulated in transport and describe the process for classifying your materials. Class exercises further explain key topics. The second day focuses on function-specific requirements such as packaging, labeling, marking, placarding, and other hazard-communication requirements for DOT Class 7 (radioactive) materials. We cover transportation of excepted packages for limited quantities and instruments or articles, LSA materials, and Type A quantities. Shipments of surface-contaminated objects are briefly discussed. NRC requirements for shipping radioactive wastes are covered, as well as security of certain shipments. In-class exercises are included. This course does not cover detailed requirements for fissile materials, Type B packages, and highway route controlled quantities. Copies of the pertinent regulations and regulatory guides are reviewed and included in the student manual on DOT and NRC requirements for shipping and receiving radioactive materials. This manual includes extensive checklists to assist in maintaining compliance with regulatory requirements for shipping and receiving radioactive materials and a template for employer certification of trained employees. Upon passing a required examination, students receive a certificate showing they successfully completed the course. This certificate, along with the training manual, may be used to document the training for employer certification, as required by 49 CFR 172.704(d). Credits are approved by the American Board of Health Physics and the American Board of Industrial Hygiene.

DATES: 28 April 2014, Gaithersburg, Maryland
23 June 2014, Las Vegas, Nevada
18 August 2014, Gaithersburg, Maryland
27 October 2014, Las Vegas, Nevada
8 December 2014, Gaithersburg, Maryland
FEE: $795 (Includes all materials, continental breakfast, and lunches)
PLACE: Las Vegas, Nevada; Gaithersburg, Maryland

TITLE: Medical X-Ray Safety. This two-day course will help keep you current with the radiation safety aspects of the many new techniques related to using x-ray machines for the healing arts in the continually evolving medical field. It will help you to gain a practical understanding of the safe use of radiation-emitting machines including fluoroscopic and PET/CT units. It also includes a review of applicable state regulations pertaining to the installation, registration, and maintenance of x-ray machines. Sessions include developing and managing personnel radiation dose monitoring and training programs. In addition, accreditation will be discussed along with imaging techniques to reduce dose. Every state in the United States requires the registration of medical-use x-ray machines and the facility housing those machines before they can be used. On the application for registration, all states ask the name of the person responsible for radiation safety at the facility. This course is designed to provide you with the knowledge needed to be named as that person. In this course we discuss real-world experiences and current topics as outlined in the agenda. You will learn how to implement a safe and compliant radiation safety program that will withstand rigorous inspection. The Intersocietal Accreditation Commission requires a medical physicist or qualified expert to obtain 15 hours of continuing education every three years. At least three of these hours must be in the category of radiation safety.

DATES: 24 March 2014, Gaithersburg, Maryland
19 May 2014, Las Vegas, Nevada
28 July 2014, Gaithersburg, Maryland
29 September 2014, Las Vegas, Nevada
17 November 2014, Gaithersburg, Maryland
FEE: $795 (Includes all materials, continental breakfast, and lunches)
PLACE: Las Vegas, Nevada; Gaithersburg, Maryland

TECHNICAL MANAGEMENT SERVICES, INC. Attn: Robin Rivard, PO Box 226, New Hartford, CT 06057; 860-738-2440; fax: 860-738-9322; email: info@tmscourses.com. For other course listings please visit our website: tmscourses.com.

TITLE: Gamma Spectroscopy Applications. This five-day course is designed to remove the "black-box" approach to gamma spectroscopy results (i.e., put the sample on the detector, push the button, read the printed report, accept the results). It will provide a solid basis in the fundamentals of gamma spectroscopy while focusing on the areas that permit the operator to prepare a representative sample, optimize system parameters, and understand the effects of cascade summing, interference peaks, geometry, and library parameters. Class exercises guide the student through the interpretation of results with consideration of peak fit, source term, and process knowledge of the sample. Laboratory QA and good practices are also discussed. Time permitting, students will be introduced to the concepts and benefits of modeled geometries and in situ measurements. This course will also provide an overview of the hardware and techniques employed in gamma-ray spectroscopy and provide an understanding of the fundamental physical processes underlying their application. The primary focus of the course is HPGe detectors, although applications of NaI(Tl), CZT, and $LaBr_3$(Ce) detectors are included as applicable to the course participants. The course will review basic radioactive decay theory and interaction of radiation with matter to explain spectral features and their interpretation, including peak identification and energy determination, backscatter peaks, single and double escape peaks, and proper use of control charts. This course is designed to provide a practical introduction to gamma spectroscopy for those new to the field of gamma spectroscopy, but also provide practical applications to those who are currently performing gamma spectroscopy. The course is intended for radiochemists, technicians, and others who will be doing routine and specialized gamma spectroscopy, as well as quality assurance officers and data validators who may have a need to understand gamma spectroscopy measurements.
DATES: 28 April–2 May 2014
FEE: $1,295
PLACE: San Francisco, California

TITLE: Assessments of Radiological Control Programs. This three-day course will enable participants to correctly identify strengths and weaknesses of radiological protection programs with specific guidance provided on improving operational radiation protection performance in all major areas. Although preventing regulatory violations is a key course objective, participants will be given guidance on evaluating the efficient use of resources (instrumentation, procedures, staffing, etc.). Current regulatory philosophy on radiation protection programs will be addressed with emphasis on minimum program qualifications, "fatal flaws," performance indicators, management qualities, and response to special problems. The course will conclude with a review of proper documentation of appraisals and corrective actions, tracking systems, and follow-up evaluations.
DATES: 28–30 April 2014
FEE: $1,195
PLACE: Orlando, Florida

TITLE: Neutron Detection and Measurement. Neutrons are most commonly detected via charged particles produced by neutron interactions, so those reactions frequently used in neutron detection are reviewed. The course will cover the principal methods of neutron detection and spectroscopy, principles and operation of common neutron detectors, specialized neutron detectors, and neutron dosimetry instruments and dosimeters. The course stresses the development of a basic understanding of the principles of operation of neutron detectors and dosimeters and helps develop an ability to intercompare and select instrumentation best suited for different applications. It will provide an opportunity for those new to the field to gain a broad perspective of measurement options and for practitioners to refresh their knowledge in areas outside their own specialties. A survey of recent developments in neutron detectors will be presented.
DATES: 29–30 May 2014
FEE: $695
PLACE: Vancouver, British Columbia

Upcoming Events

59th HPS Annual Meeting
13–17 July 2014, Baltimore, Maryland

48th HPS Midyear Topical Meeting
1–4 February 2015, Norfolk/Virginia Beach

60th HPS Annual Meeting
12–16 July 2015, Indianapolis, Indiana

61st HPS Annual Meeting
17–21 July 2016, Spokane, Washington

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***Health Physics News* Contributions and Deadline**
Items received by the News Editor by 10 March and approved by the Web Operations Editor in Chief will be printed in the April issue.

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From the Archives

Jim Willison, CHP, History Committee Chair

Health Physics Society (HPS) Past President Robert E. Alexander (Bob) passed away 12 February 2014. Here he is with Ron Kathren (left) at the fun that was the 1988 HPS Annual Meeting in Boston. An In Memoriam piece with be included in the April issue of *Health Physics News*. He will be missed.

Photographs from past HPS annual meetings can be found on the HPS website Photographic History page from the "Meetings" pull-down menu. Please help us identify the members in these pictures or just take a stroll down memory lane.

The History Committee has also recorded interviews with senior members of the Society and posted them to the HPS website in the Members Only Area.

Article II, Section 1, of the Bylaws of the Health Physics Society declares:
"The SOCIETY is a professional organization whose mission is excellence in the science and practice of radiation safety. 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."

***Health Physics News* is intended as a medium for the exchange of information among members. *Health Physics News* is published monthly in electronic format and is available on the Health Physics Society website to the members of the Society as a benefit of membership.**

CHANGE OF EMAIL, ADDRESS, PHONE, OR FAX INFORMATION

To receive notices when the latest issue of *Health Physics News* is available online, keep your email address current via the Health Physics Society website (hps.org) in the Members Only section. Address, phone, and fax information can be changed there also. The changes will be made to the website database and will automatically be sent to the HPS Secretariat so that changes will also be made on the Society database.