Recovery and Cleanup After an Unexpected Contamination Incident
Ken Gavlik and Debra McBaugh Scroggs, CHP, HPS Homeland Security Section

Introduction

Health physics personnel are intimately familiar with large-scale postincident cleanup of radiological and hazardous material contamination. National Council on Radiation Protection and Measurements (NCRP) Report 175 states, "Typical remedial actions at industrial sites, decommissioning of facilities licensed by NRC [Nuclear Regulatory Commission] or cleanup at DOE [Department of Energy] research and weapons facilities deal with contamination that has been in place for many years and is relatively stable." This, however, is not the case for nuclear power plant (NPP) incidents from accidents such as Chernobyl, natural disasters such as Fukushima, or radiological and nuclear terrorism incidents such as an improvised nuclear detonation (IND) or release of a radiological dispersal device (RDD), which are likely to occur in unexpected, densely populated areas. Most current planning revolves around NPP incidents, characterized by slow, long-duration releases with advanced notice. Releases from NPPs are well known and easily modeled. In contrast, large-scale radiological release at a radiological research and development site, waste storage or processing facility, or NPP from natural disasters (e.g., earthquakes, hurricanes, floods, or tsunami) or an RDD or IND terrorism event will result in quick releases of short duration, provide little to no advanced notice, have vast impacts on infrastructure, and be true unknowns.

Remediation efforts for a large-area contamination incident that involves varied terrain, varied land uses, and a large population is a difficult, long-term project. Part of the difficulty revolves around determining what cleanup levels to use and how much to clean up based on a site-specific optimization process that does not include specific cleanup criteria or levels.

![Graph showing relative cost and time for different levels of cleanup](image-url)
Fortunately, in the United States we have had neither a Fukushima-sized event nor a radiation-related terrorist incident. The 9/11 attacks emphasized the urgent need for extensive improvement and reorganization of emergency-management response and coordination. Even though significant progress has since been made, a large-scale incident involving the use of an RDD, or worse yet an IND, within a densely populated area, will pose significant challenges.

In responding to natural disasters, which are relatively frequent, the emergency-response community is well versed and has deep experience with resource agencies. However, an RDD or IND incident is infrequent, and the emergency-response community may not be adequately prepared or may have little experience or expertise to respond and mitigate. The resultant destruction could have a far-reaching, cascade effect on a scale unlike anything the nation has ever seen. The incident could potentially impact tens of thousands of square kilometers and millions of people, affect several jurisdictions across multiple states, and result in debris fields 10 meters or more in depth with an extensive loss of infrastructure. Even for a small-scale RDD incident, the effects of the subsequent disruption will be significant, complex, and technically challenging.

**History of Emergency-Response Process—Post 9/11**

To address deficiencies and improve, reorganize, and evolve the national response structure after 9/11, Congress passed and President George W. Bush signed into law the Homeland Security Act of 2002, creating the Department of Homeland Security (DHS) by combining 22 agencies. Pursuant to the Homeland Security Act of 2002, Homeland Security Presidential Directive 5 (HSPD 5) and Presidential Policy Directive 8 (PPD 8) were enacted. These directives require all federal departments and agencies to adopt the National Incident Management System (NIMS) and use it in their individual incident-management programs and activities to set forth a comprehensive national approach.

Under this approach, the lowest possible geographical, organizational, and jurisdictional level would manage incidents on a daily basis. However, to ensure that successful incident-management operations (including a large-scale radiological operation) exist on all levels, NIMS depends on the involvement of multiple jurisdictions and various levels and disciplines of government, functional agencies, and/or emergency responders. Using NIMS concepts, the National Response Framework (NRF) was ultimately established in 2008. Table 1 presents the historical timeline of emergency-response processes since 9/11.
<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Purpose or Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>11 September 2001</td>
<td>Terrorists attacked World Trade Center in New York</td>
<td>Reemphasized the urgency for a revised emergency process.</td>
</tr>
<tr>
<td>25 November 2002</td>
<td>Homeland Security Act of 2002 passed</td>
<td>Created DHS.</td>
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<tr>
<td>28 March 2003</td>
<td>HSPD 5, &quot;Management of Domestic Incidents,&quot; published</td>
<td>Enhanced the ability to manage domestic incidents by establishing a single, comprehensive national incident management system and by identifying steps for DHS to improve coordination with all local, tribal, state, and federal government agencies.</td>
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<tr>
<td>1 March 2004</td>
<td>NIMS established</td>
<td>Required by HSPD 5, NIMS provided a systematic approach for all levels of government agencies, nongovernmental organizations, and private sector entities to work together seamlessly to prevent, protect against, respond to, recover from, and mitigate the effects of incidents, regardless of cause, size, location, or complexity.</td>
</tr>
<tr>
<td>January 2008</td>
<td>NRF established</td>
<td>Also required by HSPD 5, the NRF began as the National Response Plan in 2004 (revised in 2006), based on NIMS concepts, and morphed into the NRF in 2008. NRF provided a guide to conduct an all-hazards response based on stakeholder input. Incidents were required to be handled at the lowest jurisdiction level possible, and federal agencies that have the lead during specific emergency responses were delineated.</td>
</tr>
<tr>
<td>1 August 2008</td>
<td>Federal Register Volume 73, Issue 149, “Planning Guidance for Protection and Recovery Following Radiological Dispersal Device (RDD) and Improvised Nuclear Device (IND) Incidents” published</td>
<td>Optimization process selected for cleanup and recovery.</td>
</tr>
<tr>
<td>November 2016,</td>
<td>“Protective Action Guides and Planning Guidance for Radiological Incidents” (PAG manual) published</td>
<td>Revision of the Environmental Protection Agency’s (EPA) 1992 PAG manual addressed late-phase recovery and described the process to use for cleanup and recovery.</td>
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<tr>
<td>(updated January 2017)</td>
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</table>

In accordance with NIMS and the NRF, when large-scale incidents grow beyond the capability of a local jurisdiction, the local emergency manager is allowed to reach out to the state. In turn, state emergency-operation centers are activated as necessary to ensure resource needs are met or requests for assistance from other states are answered through mutual aid and assistance agreements such as the Emergency Management Assistance Compact. In addition, if incidents exceed...
state capabilities, federal assistance is readily available to state, tribal, and local jurisdictions and to other federal agencies. Therefore, many stakeholders provide input into the complicated decisions on what to clean, how much to clean, and what will be left behind.

Emergencies are divided into three phases—early, intermediate, and late. The early phase includes the beginning of the incident, in which immediate decisions are based on the status and prognosis for worsening conditions and in which cleanup is not generally a major concern. The intermediate phase begins after the source and releases have been brought under control. The late phase is when recovery and most cleanups occur. As stated in “Planning Guidance for Protection and Recovery Following RDD and IND Incidents” (DHS 2008) by DHS:

*The late phase involves the final cleanup of areas and property at which radioactive material is present. Unlike the early and intermediate phases of an RDD or IND incident, decision makers will have more time and information during the late phase to allow for better data collection, stakeholder involvement, and options analysis. In this respect, the late phase is no longer a response to an “emergency situation,” and is better viewed in terms of the objectives of cleanup and site recovery.*

**Basis for Cleanup Criteria—Site-Specific Optimization Process**

As we know, cleanup levels and release criteria exist for potential exposure of the public to residual contamination associated with previously licensed or known activities. However, specific cleanup guidance does not exist for an IND or RDD incident. In addition, “Planning Guidance for Protection and Recovery Following RDD and IND Incidents” indicates:

*Because of the extremely broad range of potential impacts that may occur from RDDs and INDs (e.g., light contamination of one building to widespread destruction of a major metropolitan area), a pre-established numeric cleanup guideline is not recommended as best serving the needs of decision makers in the late phase. Rather, a process should be used to determine the societal objectives for expected land uses and the options and approaches available, in order to select the most acceptable criteria.*

These decisions will ensure that cleanup objectives are met and that technically defensible data are collected consistently throughout the process. In contrast, the late-phase (recovery) EPA PAGs, updated in January 2017, are based on dose avoided, not dose received, and are not appropriate for long-term cleanup. Also, PAGs only apply when public protection is the focus for releases, incidents, or accidents. Furthermore, PAGs do not define safe or unsafe levels of exposure or contamination. Therefore, for large urban-area cleanup efforts, no preestablished levels exist, and the site-specific optimization process is recommended by both DHS and EPA.

The site-specific optimization process provides the best opportunity for decision makers to gain public confidence through stakeholder involvement. This process includes quantitative and qualitative assessments applied at each stage of site cleanup decision making, from initial scoping and stakeholder outreach to evaluation of cleanup options and implementation of the chosen alternative (DHS 2008).

The process requires a holistic approach to evaluate the overall issues and will include a life-cycle analysis to weigh the overall appropriateness, timeliness, and cost effectiveness of the options, approaches, and technologies used (NCRP Report 175). The evaluation of options will consider all relevant factors, which should aid in developing the agenda to include:

- Actions already taken, technical feasibility, and timeliness.
- Areas impacted (e.g., size, location relative to population).
- Types of contamination (chemical, biological, radiological) and other hazards present.
- Human health and ecological risks.
- Projected use, preservation, or destruction of places of historical, national, or regional significance.
- Wastes generated and disposal options and costs.
- Costs and available resources to implement and maintain remedial options.
• Potential adverse impacts of remedial options.
• Short-term and long-term effectiveness.
• Public welfare and acceptability, including local cultural sensitivities and intergenerational equity.
• Economic effects (e.g., on employment, tourism, and business).

The above agenda is used to design strategies that prioritize areas for cleanup based on the extent and magnitude of contamination; the varying environmental exposure sources, scenarios, pathways, and radionuclides; and the varying health risks of the areas' demographics while taking into account elevated background levels and recontamination due to weather. In addition, strategies will be designed to account for and use all available waste volume-reduction techniques available including grinding, scanning and sorting, and solidifying material.

**Long-Term Recovery**

Cleanup is a major part of late-phase recovery, although many other issues must be addressed. Late-phase activities are designed to reduce radiation levels in the environment to acceptable levels. This includes all cleanup efforts, food consumption limitations, reduction of long-term exposures, and living-condition improvements. As stressed in the site-specific optimization process, community involvement and sentiment are vital. Restoration of business, services, and public activities as soon as possible after the incident can minimize adverse social and economic impacts.

Recovery must include long-term monitoring and management and must focus on the affected community and its input. The goals of the cleanup effort will extend beyond the reduction of potential delayed radiation health effects and include:

• Public health protection goals to mitigate acute hazards and long-term chronic issues and to protect children and other sensitive populations.
• Social and economic goals to minimize disruption to communities and businesses, maintain property values, and protect historical or cultural landmarks or resources.
• National security goals to maintain and normalize use of critical highways, airports, or seaports for mass transit; maintain energy production; and provide for critical communications.
• Public-welfare goals to maintain hospital capacity, water-treatment works, and sewage systems for protection of community health; assure adequate food, fuel, power, and other essential resources; and provide for the protection or recovery of personal property.
• Long-term monitoring and management.

Of these challenges, waste management may pose the most significant problems. The amount of waste generated will be directly proportional to the cleanup approach and long-term goals. The projected amounts of wastes for a large-scale radiological incident may exceed a million cubic meters. An important fact to recognize is that the Fukushima NPP estimated radioactive waste volume from cleanup of nearby prefectures is $29 \times 10^6 \text{ m}^3$. This exceeds the capacity of all existing U.S. commercial, low-level, radioactive waste disposal sites combined.

Currently in the United States, there is limited disposal capacity in remote waste-facility locations, leading to prohibitively high disposal costs for large volumes of waste. An unexpected contamination incident will require us to consider disposal at other types of facilities that manage waste with low concentrations of radionuclides, such as EPA-regulated landfills under the Resource Conservation and Recovery Act (RCRA 1976, CERCLA 1980), Subtitle C (hazardous waste) landfills, and Subtitle D (municipal waste) landfills. In addition, strategies will be needed to develop and apply appropriate concentration levels below which certain waste can be exempted from disposal requirements. Based on this, planning strategies should anticipate a large amount of waste and develop approaches and practices to accommodate and facilitate effective cleanup operations, while keeping in mind that waste generated by an RDD or IND incident on public property may not fit current waste definitions ([NCRP Report 175](https://www.ncrp.org)).

The duration of the late phase may range from months to years. Cleanup decisions must be made on a site-specific basis and reflect the risks that are reasonable and acceptable to the affected community as active remediation, radioactive decay, and natural weathering move the site towards the long-term cleanup goals.
Based on duration and extent of the cleanup effort required, late-phase cleanup will require interaction with experts in the private sector who have the expertise and experience to successfully manage this dynamic and fluid situation. As such, municipalities are proactively planning by establishing advisory committees and conducting brainstorming sessions with cleanup contractors, as they are well aware that they will need the contractor to succeed. Municipalities are interested in applying private-sector skills to large urban-area demolition, remediation, decontamination, and decommissioning. Government emergency planners are willing to consider industry resource requirements and other needs that will allow them to efficiently complete their mission. Private-sector skills can help to decide cleanup levels, explain quantitatively the correlation of waste volume with cleanup levels, and develop the means to alleviate public concerns about waste staging and transport. Other concerns that the private sector can have input on include mass dosimetry and safety considerations and, perhaps most importantly, the managing of public opinion concerning various aspects of decontamination operations.

Forward planning issues have been identified, such as determining waste-disposal outlets before an incident occurs, expediting waste-acceptance approval, and smoothly integrating private-sector contractors into the governmentally administered and, no doubt, regulated decontamination effort.

Decontamination Methods

Extensive experience exists from previous decommissioning and remedial activities throughout the United States and the world. However, in the case of large-scale efforts on the order of tens to thousands of square kilometers and impacts to hundreds of thousands to millions of people, the cleanup approach will need to consider criteria, methods, and technologies that incorporate a holistic approach. The approach will also have to address nonradiological factors, and the success of conducting a traditional cleanup based solely on a radiological risk approach should be recognized as nearly impossible because the size and scope of the incident will likely grow beyond the capabilities of the existing national infrastructure and capabilities.

Methods and technologies useful for removing radioactive contaminants from buildings, structures, equipment surfaces, soils, and aquatic ecosystems using a holistic approach are described in detail in NCRP Report 175, Appendices C and F.

Additional Support

Response will begin at the local level, but will quickly grow beyond the capabilities and resources of the emergency-response community, resource agencies, and skilled personnel, including the current cadre of volunteer technical subject matter experts (SMEs) in radiation protection. For a large-scale incident, additional technical SMEs will be needed, and there may not be enough resources where they are needed, when they are needed.

Additional technical support will be furnished by NIMS-type radiological operations support specialists, radiation experts trained to safeguard the public and responders and assist in recovery efforts. Personnel from Agreement States and jurisdictions that contain NPPs may provide added support and technical expertise. These personnel may possess the training and resources to respond to radiological and nuclear emergencies and will be a valuable resource; however, they will have to overcome their likely predispositions to address every radiological or nuclear emergency in the same manner as an NPP emergency response.

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.
Bob Cherry, CHP, PhD

The topic of my column this month, once again, is the declining number of Health Physics Society (HPS) members over the last 15 years. This has been my greatest concern during my current tenure on the HPS Board of Directors.

Figure 1 shows the number of HPS members each year from 2009 to 2016. I do not have the data handy for earlier years, but the declining trend began around 1995. The (hasty) graph shows 22% fewer members in 2016 than in 2009 and an essentially constant loss rate of about 3% per year.

Can we figure out the causes of this steady decline?

I received only a few responses to my request to former members about why they left the HPS. They all said that they no longer believed the value of membership justified the dues they were paying. So let us look at the HPS annual dues over the years.

I extracted the historical data from old issues of Health Physics News on our website. I looked at my personal records for more recent data. Figure 2 is the result of my admittedly limited research.

When I first joined the HPS in 1981, the HPS advertised the dues as a “bargain” in comparison with the dues of other professional societies. Indeed, I remember that the HPS annual dues ($20) were much less than my American Physical Society (APS) annual dues (I think they were about $75) in 1981. However, as Figure 2 (also a hasty graph) shows, HPS dues became greater than APS dues about 10 years ago. At about the same time as the crossover, our number of members began declining (late 1990s) and our average rate of dues increases increased sharply. The “bargain” is no more, although we have many more benefits of membership than we used to have. Is this why members are leaving the HPS?

Six years ago, during his retirement interview in the May 2011 issue of Health Physics News, Dick Burk observed, “We find that more and more members are having to pay out of their pockets for meeting attendance and membership dues, and that affects both attendance and membership numbers.” My employer has never paid my dues, and the Army has not paid for my meeting atten-
dance for the last three years. This is certainly “painful” for me and effectively is a cut in pay. Are members leaving the HPS for such reasons?

Others speculate that changing demographics are affecting scientific professional membership.¹ In other words, is the HPS losing aging members that younger incoming members are not replacing? I have not seen that the APS is worrying about declining numbers of members, but I remember that the APS worried about the “graying” of physicists in the 1970s. You can check and let us know about comparable professional societies (for example, the American Industrial Hygiene Association, the American Nuclear Society, and the American Chemical Society).

Finally, we have found that a few hundred certified health physicists (CHPs) are not HPS members. This is a shock to me as “CHP” designates one as a “professional,” and another mark of a professional is membership in his or her professional society. As I write this, the American Academy of Health Physics president and I, with the assistance of HPS President-elect Eric Abelquist, are considering establishment of a joint task force to study this situation, to try to figure out its causes and remedies, and then to address it appropriately.

As I have written previously, the HPS is not in trouble . . . yet. But we need to do something about this disturbing trend, if we can.

It is time for me to put this both this column and myself to bed. As always, I want to hear from you. I am enjoying serving as your president. I hope you are considering volunteering for service to the HPS, too. You will not regret it. Excelsior!²


²A Latin word often translated as “ever upward” or “still higher” and, in this case, referring to the catchphrase of Stan Lee, who used it at the end of every “Bullpen Bulletins” column in Marvel Comics. However, I am a lifelong DC Comics fan.

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**Code of Ethics for the Members of the Health Physics Society**

These principles are intended to aid members of the Health Physics Society, individually and collectively, in maintaining a professional level of ethical conduct. They are intended as guidelines by which members may determine the propriety of their conduct in relationships with employers, coworkers, clients, governmental agencies, members of other professions, and the public.

- Members of the Society shall give support to the objectives of the Health Physics Society.
- Members shall strive to improve their professional knowledge and skill.
- Each member shall be a judge of his/her competence and will not undertake any assignment beyond his/her abilities.
- All relations with employers, coworkers, clients, governmental agencies, and the general public shall be based upon and shall reflect the highest standard of integrity and fairness.
- Members shall never compromise public welfare and safety in favor of an employer’s interest.
- No employment or consultation shall be undertaken which is contrary to law or the public welfare.
- Members will gladly accept every opportunity to increase public understanding of radiation protection and the objectives of the Society.
- Professional statements made by members shall have sound scientific basis. Sensational and unwarranted statements of others concerning radiation and radiation protection shall be corrected, when practical.
- Members shall protect the sources of confidential communications, provided that such protection is not itself unethical or illegal.
The 2017 HPS Annual Meeting Is Fast Approaching
9–13 July 2017, Raleigh, North Carolina

Jason Davis, CHP, PhD, 2017 Annual Meeting Program Committee Task Force Chair

It’s never too early to start thinking about the 62nd Health Physics Society (HPS) Annual Meeting, 9–13 July in Raleigh, North Carolina. The Society last visited Raleigh for the 1991 midyear, and we hope you will plan on treating yourself (and your companion) to some of the outstanding recreational opportunities during your visit to Raleigh.

Meeting Technical Program

In addition to providing the usual technical sessions, Professional Enrichment Program (PEP) classes, continuing education lectures (CELs), and vendor exhibitions, the Program Committee is planning on a number of special sessions covering a wide range of topics of interest to the health physics community. Students are encouraged to volunteer to proctor both PEP and CEL sessions during the annual meeting. Two proctors are needed for each session and students who volunteer to proctor have the opportunity to attend their proctored PEP lectures for free. Students and academic advisors are encouraged to contact Ritchie Buschow for more information.

Sports

Baseball. The Carolina Mudcats are a first-year affiliate of the Milwaukee Brewers. Home games are scheduled during the HPS annual meeting on 12 and 15 July at Five County Stadium in Zebulon, North Carolina, a 35-minute drive from the convention center.

Prefer golf? Raleigh has a wide variety of golf opportunities, including long and short courses, driving ranges, and minigolf centers. You can even play under the stars at a course that’s open until midnight.

Music

Having the most music in North Carolina isn’t something that Raleigh locals have happened upon by accident. The area’s smart, passionate music fans have shaped the growth of this emerging and energizing live-music scene. Raleigh plays host to a wide variety of artists in a wide variety of settings. But each concert venue isn’t operating in a vacuum—all the venues are working together to form a grassroots, fired-up atmosphere visitors and residents alike can feel and take part in.

You can find a show here every day of the year and from one end of the city to the other. You can enjoy big bands, small bands, slow bands, fast bands, hard rock, and soft ballads in venues including large-scale arenas, midsized concert halls, mom-and-pop playhouses, and undiscovered, only-the-locals-know-about dives.

The Local Arrangements Committee will be highlighting the companion program in an upcoming issue of Health Physics News. Also check the Meetings web page periodically for information on local accommodations. You can make reservations now at the Raleigh Marriott City Center.
Call For Abstracts
2017 Health Physics Society Annual Meeting
9–13 July 2017, Raleigh, North Carolina

Deadline – 10 February 2017

Share your scientific findings and information with other radiation safety professionals at the 2017 Health Physics Society (HPS) Annual Meeting. Submit abstracts on the annual meeting website.

Meeting Format

The 2017 HPS Annual Meeting contains multiple formats for presentation of scientific information. The technical program kicks off with a plenary session of invited guests on Monday, 10 July, followed by poster presentations in the exhibit hall after lunch. Technical sessions start later in the afternoon and continue through Thursday.

Technical Sessions

Technical sessions are scheduled throughout the week and include many aspects of the practice of radiation safety. Although the number of technical sessions varies from year to year, typical sessions include:

- Accelerator Health Physics
- Air Monitoring
- Radiobiology – Biological Response
- Decontamination and Decommissioning
- Dose Reconstruction
- Emergency Response
- Environmental Monitoring
- Homeland Security Monitoring
- Instrumentation
- Medical Health Physics
- Military Health Physics
- Power Reactor Health Physics
- Risk Assessment
- Radiation Effects
- Operational Health Physics at:
  - Accelerator Facilities
  - Department of Energy Facilities
  - Medical Facilities
  - Military Installations
  - Nuclear Power Plants
  - Academic Institutions
  - Radiation Dosimetry
    - External Dosimetry
    - Internal Dosimetry
    - Medical Dosimetry
  - Regulatory/Licensing
  - Radiation Safety Officers (RSO)
  - Waste Management

How to Submit an Abstract for Presentation

Abstracts will be printed directly from your electronic submission. Minor editing (punctuation and grammar) may be performed on your abstract; you will not see a revised version before publication. If you experience problems or can’t submit your abstract electronically, please contact the Secretariat at 703-790-1745 (or fax 703-790-2672) for further instructions. PLEASE NOTE: Abstracts submitted via email will not be accepted.

A submitted abstract is a commitment to present; cancellations should be avoided. All presenters must register and pay for the meeting by 26 May to be included in the final program. If extenuating circumstances prevent the presenting author from making the presentation, it is the author’s responsibility to find an alternate presenter. Presenters who submit more than one oral abstract and cancel should find alternate presenters; otherwise, you may be limited to one abstract for future meetings.

Newly Elected Officers and Board Members

Congratulations to the officers and Board of Directors members who will take office at the 2017 Health Physics Society (HPS) Annual Meeting in Raleigh, North Carolina, in July:

President-elect Nolan Hertel, Treasurer-elect Steven King, and Directors Mike Mahathy, Thomas Morgan, and Jeffrey Whicker.

Learn more about your new officers and directors in the March issue of Health Physics News.
HPS Awards Nominations

Nancy Kirner, CHP, Awards Committee Chair

“If it weren’t for the last minute, nothing would get done!” (Rita Mae Brown)

The last minute is fast approaching!

Most nominations for Health Physics Society (HPS) awards need to be submitted by 1 March 2017. Nominations can be submitted directly to http://burkinc.net/hpsawards. It would also be wise to confirm with Awards Chair Nancy Kirner, Nancy.kirner@gmail.com or 253-370-0798, that your submittals have been received in good order.

For details of each award, you may go to the Awards page of the HPS website. Society members, chapters, and sections are encouraged to consider potential candidates and submit nominations for the following awards to be presented at our Raleigh meeting. Clicking on each of the following hyperlinks will direct you to our website for a general description of each award:

- Robley D. Evans Commemorative Medal
- Distinguished Scientific Achievement Award
- Elda E. Anderson Award
- Founders Award
- Fellow Award
- Distinguished Public Service Award
- Geoffrey G. Eichholz Outstanding Science Teacher Award
- National Student Science Award
- Health Physics Honor Roll
- G. William Morgan Lectureship Award
- Robert S. Landauer, Sr., Lectureship Award
- Dade Moeller Scholarship Award
- Dade Moeller Lectureship Award

Deceased individuals are memorialized by presentations of the Distinguished Scientific Achievement Award, Founders Award, and Distinguished Public Service Award in their names.

Before submitting an award, it is best to double-check the specific requirements for each award, which are contained in the Rules of the Society. The Awards Committee has been quite persnickety about following the rules, so make sure you have followed the rules on any submittal.

Nominations for an award must include a nomination letter and reference letters to be considered fully by the Awards Committee. The Awards Committee places heavy weight on the assessment of the accomplishments of candidates by individuals familiar with the candidate. The contributions of the nominee and why such contributions are significant to the Society and the profession should be clearly documented by the nominator and references. Letters should be as objective as possible. Letters that attest only to the character of the nominee are usually insufficient.

Nominations for awards at the Raleigh meeting must be submitted by 1 March 2017 (except for the National Student Science Award, which must be submitted by 30 May 2017). All submissions must be in electronic format. Please contact the chair of the Awards Committee prior to 1 March 2017 to confirm that all expected materials have been received by the Awards Committee and that the awards package you submitted is complete.
Seeking Candidates for the 2017 HPS Officer Election

John P. Hageman, CHP, Nominating Committee Chair

Nominations for candidates for the 2017 Health Physics Society (HPS) Officer election should be submitted to the Nominating Committee by 1 April 2017. However, nominations submitted after this date may be considered if time permits. The official officer and director nomination process is explained on the HPS website.

The Nominating Committee is accepting recommendations for nominees for these five positions that must be filled:

- President-elect
- Secretary-elect
- Three Directors

The Nominating Committee wants candidates from a broad representation of the HPS membership, and we believe that there are many great candidates who have worked in local chapters, within HPS sections, and on HPS committees. These activities are an excellent resource for the best candidates for HPS offices.

Our challenge each year is to identify the most qualified candidates who can lead the HPS through the coming years with dedication, enthusiasm, professionalism, and business acumen. So it has become more important than ever for each member to actively participate in the candidate-identification process.

You know those members who are willing and best able to serve as HPS officers or directors. We encourage you to submit their names for consideration by the Nominating Committee. To identify nominees from the general membership of the Society, please alert your fellow members about this request and directly ask each person to volunteer. Also, please announce that you are seeking candidates at your local chapter meetings and encourage individuals who are willing to serve.

Begin as soon as possible to identify qualified and willing candidates. Especially encourage those persons who have been active and productive in Society—committee, section, and chapter—activities. Active participation in the Society’s various activities counts heavily when evaluating candidates, as do letters of recommendation, which you should send to support those whom you identify.

While nominations can be accepted from individuals (and the Nominating Committee encourages this), nominations are even stronger with chapter, section, or committee recommendations. In addition, chapters and sections are welcome to nominate or second the nominations of other chapters and are not limited to their own geographical area.

Thank you and please send me (jph@swri.org or john.hageman@swri.org) the names of those you know are willing to serve as HPS officers or directors.

Remember, the requested deadline for submission of candidates’ names, résumés, and letter(s) of recommendation is 1 April 2017.

2017 Call for Student Fellowships, Travel Grants, and Scholarships

The online links are now available for the 2017–2018 Health Physics Society Fellowships, 2017 travel grants, 2017 Dade Moeller Scholarships, and 2017 Environmental/Radon Section Scholarship. The deadline for submittal for all is 24 March 2017. Notification of awards will take place by 28 April 2017.

Students submit directly for fellowships and travel grants. To apply for these, go to the links below, read the text to see if you are eligible, and then use the forms linked at the bottom of the text to submit your application. You will receive an email at the end of the process confirming your submission.

- Travel Grants: [https://hps.org/apply/travelgrant.html](https://hps.org/apply/travelgrant.html)
- Fellowships: [https://hps.org/apply/fellowship.html](https://hps.org/apply/fellowship.html)

Nominations for Dade Moeller Scholarships and the Environmental Radon Section Scholarship follow slightly different rules—see the information below, apply online, and send information accordingly.

- Dade Moeller Scholarships: [https://hps.org/apply/moeller.html](https://hps.org/apply/moeller.html)
- Environmental/Radon Section Scholarship: [https://hps.org/apply/erscholarship.html](https://hps.org/apply/erscholarship.html)
Central Rocky Mountain Chapter

Jim F. Herrold, CHP, President

The last gathering for 2016 of the Central Rocky Mountain Chapter of the Health Physics Society (CRMCHPS) started off as usual with the attendees engaged in professional interactions while feasting on a satisfying catered meal. Following a brief business meeting, the floor was turned over to a speaker who never fails to provide enlightening and thought-provoking discussions. Steven H. Brown, CHP, gave his invited lecture from the 14th Congress of the International Radiation Protection Association meeting (IRPA14) in South Africa and the Health Physics Society’s professional development school in Spokane: “Approach for Establishing Acceptable Risk/Dose Based Remedial Criteria for Residual Radionuclide Contamination of Land (Soil).” Several specific case studies were presented in order to demonstrate real-life applications, including examples that have been accepted by the U.S. Department of Energy (DOE) (for use in its Abandoned Uranium Mine program), the U.S. Nuclear Regulatory Commission (NRC) (for license termination and release for unrestricted use at former uranium sites), and the U.S. Environmental Protection Agency (EPA) (for methods being used at radiologically contaminated sites under EPA purview).

Brown has over 40 years of nuclear-industry experience, is certified by the American Board of Health Physics, and is a member of the Board of Directors of the American Academy of Health Physics. He has worked extensively as a licensee of the NRC and its Agreement States in the field of commercial nuclear fuel cycles and on large DOE nuclear defense and decommissioning/decontamination projects. He is recognized as an expert in environmental, safety, and health aspects of uranium mining and processing facilities and sites contaminated with uranium fuel cycle and naturally occurring radioactive materials (NORM) and has been a member of U.S. and international advisory committees in this regard.

Future Events

After a holiday break, CRMCHPS is back in action! Everyone is invited to our next chapter meeting, slated to begin at 6 p.m. on 16 February 2017 at the University of Colorado Hospital Conference Center at Anschutz (Aurora, Colorado). The esteemed guest lecturer will be F. Ward Whicker, who has been selected to give the 41st Lauriston S. Taylor Lecture—“Radiation and Life: A More Positive View”—at the 2017 annual meeting of the National Council on Radiation Protection and Measurements (6–7 March, Bethesda, Maryland).

Our 23 March 2017 meeting, also at the University of Colorado Hospital Conference Center at Anschutz, will feature Doug Van Cleef from Canberra. Doug’s talk is titled “From GM to HPGe: A Brief Refresher on Instrumentation Technology.”

Lastly, save the date for the annual CRMCHPS Technical Meeting on 20 April 2017 at the Colorado State University Lory Student Center, featuring juried papers and posters from health physics students and keynote speaker HPS President-elect Eric Abelquist.
Columbia Chapter
Brett Rosenberg, CCHPS President-elect

Hello HPS community! We are excited to announce that the Columbia Chapter of the Health Physics Society (CCHPS) now has its very own logo. In November we announced a logo contest to the chapter. At our December holiday party, we had a voting station, and one of the logos submitted was found to be most representative of the mission and goals of the CCHPS. This logo was submitted by our very own Rob Jones—congratulations Rob!

Our January technical meeting will feature scholarship recipients Sara Dumit and Brett Rosenberg (me) presenting our doctoral research. Chapter members are excited to learn about the expertise and experiences of some of our newest and youngest members!

The new CCHPS logo—approved on 6 January 2017, created by Rob Jones of CCHPS.

Committee Activities

Nanotechnology Committee
Mark D. Hoover, CHP, PhD, Chair

What if we, as radiation protection professionals, could somehow get the things we need and want to build ourselves? What would we want to have? New adaptive shielding or sensors? New targeted tumor treatments, turbines, or transmission lines? Those possibilities are a part of the exciting promise of nanotechnology. And the possibility of harnessing chemistry for nano-self-assembly is also the topic of a new 10 January 2017 Technology, Entertainment, and Design (TED) Talk segment, “The Next Step in Nanotechnology” by IBM scientist George Tulevski, PhD.

In the opening of his visionary 10-minute segment, Tulevski muses, “Let’s imagine a sculptor building a statue, just chipping away with his chisel. Michelangelo had this elegant way of describing it when he said, ‘Every block of stone has a statue inside of it, and it’s the task of the sculptor to discover it.’ But what if he worked in the opposite direction? Not from a solid block of stone, but from a pile of dust, somehow gluing millions of these particles together to form a statue. I know that’s an absurd notion. It’s probably impossible. The only way you get a statue from a pile of dust is if the statue built itself—if somehow we could compel millions of these particles to come together to form the statue. Now, as odd as that sounds, that is almost exactly the problem I work on in my lab.”

And in invoking the promise of chemistry, he describes: “So we decided that we’re going to use the same tool that nature uses, and that’s chemistry. Chemistry is the missing tool. And chemistry works in this case because these nanoscale objects are about the same size as molecules, so we can use them to steer these objects around, much like a tool. . . . And because we can do that, we can build circuits that are many times faster than what anyone’s been able to make using nanomaterials before.”
And he concludes: “Now, computing is just one example . . . but there are others in renewable energy, in medicine, in structural materials, where the science is going to tell you to move towards the nano. . . . The beauty of science is that once you develop these new tools, they’re out there. They’re out there forever, and anyone anywhere can pick them up and use them, and help to deliver on the promise of nanotechnology.”

So, on behalf of the Nanotechnology Committee, we hope you will enjoy watching the TED Talk and that you will send us your ideas about what new devices or capabilities our radiation protection community needs and wants. Let’s help shape our future. As always, we would love to hear from you about your experiences, concerns, and challenges for nanotechnology in your areas of health physics, including your willingness to be a presenter at our July 2017 special session in Raleigh. Please convey your interests by contacting Mark Hoover and Lorraine Day.

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Environmental/Radon Section

Wendy Kuhne, Nicole Martinez, CHP, and J. Matthew Barnett

Radioecology and the F. Ward Whicker Scholarship (Part 1 of 2)

The field of radioecology, as with other radiological disciplines, has seen substantial decreases in funding levels to support basic research and education for our next generation of professionals. As has been reported by the National Council on Radiation Protection and Measurement’s Council Committee 2, Meeting the Needs of the Nation for Radiation Protection (whose goal is to address “Where Are the Radiation Professionals?” [WARP]), more of our radiation professionals are reaching retirement age, and the lack of funding to properly train and replace them can be viewed as a national crisis. Radioecology and radioecologists are becoming particularly endangered in the United States as only a few programs remain at academic institutions with courses for undergraduate and graduate students; this is concerning as there is a real need for scientists with these skills who can understand chronic low-dose effects, handle legacy contamination, and assist with increased threats to homeland security.

The Environmental/Radon Section has taken a proactive stance to continue to support the academic and research training of these young professionals with the establishment of the F. Ward Whicker Scholarship. The scholarship was started in 2012 and has been very successful in funding our nation’s best in radioecology. While the funding levels for this field have decreased, the quality of students interested in taking on this profession as a career has not. Please read below to be introduced to the recipients of the F. Ward Whicker Scholarship thus far and see where they are now!

Nicole Martinez (2012) graduated with a doctorate from Colorado State University in 2014 and is now an assistant professor at Clemson University. Nicole’s research focuses broadly on the fate, transport, and effects of radiation in the environment. She teaches environmental radiations protection, environmental risk assessment, radioecology, and (unrelatedly) vinyasa yoga. Nicole of course also loves watching Clemson football, particularly when they win the national championship.

Jessica Gillis (2013) graduated from Colorado State University in 2014 with an MS in health physics, which followed a BS in environmental health. She then worked with the environmental health physics program at Los Alamos National Laboratory as a postgraduate student and later as a staff member for the past two years. She participated in public and environmental dose assessments, radiological clearance of items and land for reuse or recycle, and modeling and dose assessments for emergency-response planning.
Mary Leonard-Goodwin (2014) will be graduating from Oregon State University with a doctorate in radiochemistry this semester. The focus of her current work is removal of radioactive contaminants from groundwater, including materials characterization.

Deepesh Poudel (2015) completed his PhD from Idaho State University in May 2016 and is currently a postdoctoral research associate with the Internal Dosimetry and Bioassay Team at Los Alamos National Laboratory. Deepesh’s research involves validation and development of biokinetic models for intake of radioactive materials through wounds, and he is involved with modeling plutonium decorporation therapy with DTPA. (Editor’s note: Deepesh also writes the “Student Corner” column for Health Physics News.)

Athena Gallardo (2016) is a fourth-year student in the radiochemistry PhD program at the University of Nevada, Las Vegas, with an anticipated graduation in spring 2018. Her research interests include developing more efficient and rapid separation methods for the analysis of trace quantities of radionuclides in various matrices as well as examining the behavior and transport of radionuclides in different environments. Athena’s current project involves method development for the retrospective analysis of radionuclides in coral from a former nuclear test site.

When we spoke to them, all the awardees expressed tremendous gratitude for the scholarship as well as for the support of mentors and the health physics community in general.

Next month, we will continue this article with additional descriptions of the scholarship’s impact, how to donate in support of this effort (for members), and how to apply (for students).

To have chapter, branch, or section news, Society news, committee activities, correspondence, announcements, short courses, or display ads published in Health Physics News, contact Mary Walchuk, email: editormw@hps.org.
“Working in an Academic Medical Environment Is Both Interesting and Intellectually Engaging”

An Interview With Matthew Belley, Rhode Island Hospital

Deepesh Poudel, Los Alamos National Laboratory

Matthew Belley
Submitted photo

The “Student Corner” section of Health Physics News occasionally presents interviews with recent graduates and young professionals working in different settings—national laboratories, academia, hospitals, and industries. For this issue of the newsletter, I talked to Matthew Belley, associate medical physicist at Rhode Island Hospital, about his background, his responsibilities, what he likes about his job, and what suggestions he has for students aspiring to a similar career. With this interview, we hope to give our student readers a feel for medical physics as a potential career option.

In addition to his position at Rhode Island Hospital, Matthew also has a clinical faculty appointment in the Department of Radiation Oncology of Brown University. He participates in the didactic and clinical instruction of medical physics to clinicians, radiation oncology residents, medical physics residents, and students enrolled in the University of Rhode Island’s Commission on Accreditation of Medical Physics Education Programs (CAMPEP)-accredited medical physics graduate program. In 2011, he completed a BS in mechanical and nuclear engineering from Rensselaer Polytechnic Institute, and in 2015, he completed his doctorate in medical physics from Duke University.

As an active member in the Health Physics Society (HPS) since 2011, Matthew has attended multiple annual meetings on HPS student travel grants, and he currently serves as an advisor to the Student Support Committee and as a member of the Intersociety Relations Committee.

Give us a little information about your background and how you got involved in health physics.

Belley: As an undergraduate in nuclear engineering, I became interested in radiation transport modelling and simulation. I was intrigued by having the ability to write software and use computational tools to generate data that could then be measured and validated with physical experimentation. While in graduate school at Duke University, I was fortunate to have the opportunity to work in the research lab of Terry Yoshizumi, PhD, where I participated in a wide range of research projects, including small animal radiobiology studies, medical device hardware design, and medical dosimetry simulation and measurement.

Currently, I am working as a medical physicist at Rhode Island Hospital/Brown University, where I continue to apply my modeling and analysis skills to practical applications, while still having the chance to work hands on with high-tech equipment and instrumentation.

What does your job consist of?

Belley: Medical physicists are an essential part of the radiation oncology treatment team and are necessary to ensure high-quality care for the patients. My clinical duties are to provide quality assurance for the technical aspects of the radiation delivered to patients receiving radiation treatment. Many aspects of health physics are present in my day-to-day work, since it is paramount to use radiation-generating devices and radionuclides in a safe and effective manner (and to follow state regulations).
What do you enjoy the most about what you do?

Belley: Clinically, I enjoy working as part of a multidisciplinary team and providing technical feedback to medical experts—feedback that is used to guide decisions that affect patient care. I try to approach my clinical work as an optimization problem, and I am always looking for ways to improve on safety. I also enjoy that science and technology are at the forefront of the work I perform. Medical physicists put in a lot of time and effort “behind the scenes” collecting/analyzing data, calibrating radiation equipment, and integrating new technology at the clinic. I find it very rewarding to use this technology in a way that will have a direct impact either on a patient or as a tool that we use every day to make our jobs more efficient.

What do you enjoy the most about working in an academic medical environment?

Belley: Academically, I enjoy working on collaborative research projects and traveling to meetings and conferences where I have the chance to mingle with experts and scientists in the field. Additionally, working at an academic center provides the opportunity to teach and interact with physics students and medical residents. Between clinical work, research, and teaching, each and every day is different, and I have found the work to be both interesting and intellectually engaging.

Finally, what advice do you have for students thinking of a similar career?

Belley: Students thinking of pursuing medical physics should carefully consider their many career options (clinical, research, industry, etc.), since the pathways and opportunities vary depending on career goals. Students will need to complete a two-year clinical residency to become a clinical medical physicist in radiation oncology due to the common requirement of certification from the American Board of Radiology. I would highly recommend shadowing a clinical physicist to learn more about the career if you think it is something you may be interested in.

If you’d like to share your experiences in this section of Health Physics News, please email Deepesh Poudel.

Affiliate Notes

Eckert & Ziegler Analytics* (EZA) Expands Its Proficiency Test (PT)/Cross-Check Program

Supporting quality programs, research, and training in the global nuclear industry, we provide NIST-traceable calibration sources and solutions as well as reference and proficiency test samples and materials.

Click here to learn more about our PT program expansion, including a new online reporting and data processing interface for our established effluent and environmental monitoring programs (HCC and ECC), fresh mixed fission PT samples, and accreditation to the ISO/IEC 17043:2010 international standard for proficiency test providers.

*EZA is part of Eckert & Ziegler Isotope Products, which operates four ISO 17025 accredited calibration laboratories, three in the United States and one in Germany.

For more information, contact Larry Jassin.

Editor’s note: In gratitude for the support given to the Health Physics Society, we are now offering our affiliates each a once-a-year chance to tell us about themselves in our new “Affiliate Notes” column. Please contact News Editor Mary Walchuk for more information.
Journal Notes

Up and Coming in Health Physics

Look for these and many more articles in the March 2017 issue of Health Physics.

"Design of Interrogation Protocols for Radiation Dose Measurements Using Optically Stimulated Luminescent Dosimeters"

"A Rapid Method for Quantification of $^{242}$Pu in Urine Using Extraction Chromatography and ICP-MS"
Athena Gallardo, Chit Than, Carolyn Wong, and Ralf Sudowe

"The Pseudo-Pelger Huët Cell—A New Permanent Radiation Biomarker"
Ronald E. Goans, Carol J. Iddins, Natalia I. Ossetrova, Patrick H. Ney, and Nicholas Dainiak

If you are interested in submitting a paper to Health Physics, find submission guidelines and forms on the Health Physics Journal website.

The ATE Experts Say . . .

Kelly Classic, CMHP, ATE Associate Editor, and Genevieve Roessler, PhD, ATE Editor

Question #7449: Measure X Rays With GM Detector

The following question was submitted to Ask the Experts:

Can I use a GM survey meter to measure radiation from a medical x-ray unit? My GM detector is calibrated in μSv h⁻¹ and for my measurements I use 100 kV and a time of three to four seconds.

To see the answer by George Chabot, CHP, PhD, go to http://hps.org/publicinformation/ate/q7449.html.

Let us know (media@hps.org or ateed@hps.org) if you find a particularly interesting question and answer when you are on the Health Physics Society Ask the Experts (ATE) site; we may use it in this column in a future issue of Health Physics News.
NRC News

NRC's Reevaluation of Category 3 Source Security and Accountability

Duncan White, CHP, and Irene Wu

Since the events of 9/11, the Nuclear Regulatory Commission (NRC) has been enhancing the security and accountability of radioactive sources that pose a threat to the public. These enhancements have been focused on the most dangerous sources, those with Category 1 and 2 quantities of radioactive materials. The NRC has considered expanding these enhancements to Category 3 sources in the past, and in October 2016, the Commission directed the NRC staff to once again reevaluate Category 3 source security and accountability.

Category 3 sources are those containing a quantity of radioactive material equal to or greater than one-tenth of the Category 2 threshold but less than the Category 2 threshold. These sources have a wide variety of uses in industry, medicine, and research and include applications such as fixed industrial gauges, high-dose-rate brachytherapy sources, research reactor start-up sources, and certain well-logging sources.

In 2007, the Government Accountability Office (GAO) conducted an investigation (GAO-07-1038T) into the NRC's materials licensing program. Using a fictitious company, GAO was successful in one of two attempts to obtain a radioactive materials license and used the license to place orders for radioactive material. The investigation demonstrated that GAO could have acquired an aggregated Category 3 quantity of material, although at no point in the investigation were radioactive materials actually shipped to the fictitious company. After the 2007 investigation, the NRC and the Agreement States made a number of significant changes to strengthen the licensing and regulatory processes to prevent individuals who have malevolent intent from obtaining a radioactive materials license.

In January 2009, licensees began reporting Category 1 and 2 source information to the National Source Tracking System (NSTS). In June 2009, NRC staff requested approval of the final rule amending 10 CFR Parts 20 and 32 to expand reporting to the NSTS to include Category 3 sources (SECY-09-0086). In June 2009, the Commission did not reach a decision on the proposed rulemaking (2-2 split vote), and the final rule was not approved (SRM-SECY-09-0086).

In 2014, the GAO initiated another audit of the materials licensing program to determine whether the licensing vulnerabilities identified in its 2007 investigation had been addressed by the NRC and Agreement States. As part of its audit, GAO conducted an investigation that went beyond the 2007 investigation in its sophistication and planning—GAO rented storefront/warehouse space to demonstrate the fictitious company's legitimacy during prelicensing visits. The GAO was successful in one of three attempts and acquired a license for a Category 3 well-logging source. GAO then placed an order for one Category 3 source, then altered the license and placed an order for a second Category 3 source. The investigation demonstrated that GAO could have acquired an aggregated Category 2 quantity of material, although at no point were radioactive materials actually shipped to the fictitious company. Notified by GAO in October 2015, the NRC and Agreement States took a number of actions, including forming two NRC-Agreement State working groups to evaluate vulnerabilities identified by the investigation. Specifically, one of the working groups evaluated the need for enhancements to existing requirements for license verification and source tracking beyond Category 1 and Category 2 thresholds.

On 15 July 2016, the GAO published its final report for the material licensing audit and investigation, GAO-16-330, titled “Nuclear Security: NRC Has Enhanced the Controls of Dangerous Radioactive Materials, but Vulnerabilities Remain.” The report made three recommendations to enhance the security of Category 3 materials.

The NRC-Agreement State working groups completed their reports and recommendations in October 2016, and a steering committee evaluated their recommendations. The two reports produced
by the working groups will play a key role in the Category 3 source accountability reevaluation. Details of this reevaluation were provided by the NRC in a staff requirements memo of 18 October 2016, COMJMB-16-0001, “Proposed Staff Re-Evaluation of Category 3 Source Accountability.”

This reevaluation is different from past efforts in its scope. Not only will the reevaluation build on the efforts resulting from the 2015 GAO investigation, but it will integrate the recently completed comprehensive review of 10 CFR 37 and current threat landscape. The Commission clearly desires a broad assessment.

To conduct the reevaluation of Category 3 source security and accountability, an NRC-Agreement State working group was established. The working group will evaluate and make recommendations on whether it is necessary to revise NRC regulations or processes governing source protection and accountability to continue to ensure adequate protection of public health and safety. The working group’s evaluations have begun, and their recommendations will be documented in a paper to be provided to the Commission in August 2017.

With the number of NRC and Agreement State licensees that could be affected by this effort exceeding 5,000, an important part of NRC’s evaluation is soliciting input from the affected regulatory community, many of whom have never been subject to enhanced security and accountability requirements. We have published two Federal Register notices (FRN), 82 FR 2399 and 82 FR 4938, which contain specific questions for stakeholders to consider regarding Category 3 sources. The working group will hold public meetings and webinars and give presentations to industry and professional organizations to solicit feedback on the FRN. Further information on this effort and public meeting details can be found at the NRC website. Your input on this reevaluation is important in order to fully assess the regulatory impact of any recommendations that might be made regarding security and accountability of Category 3 sources.

DOE News

DOE Report on National Labs

The Department of Energy’s (DOE) scientific and technical capabilities are rooted in its system of national laboratories—17 world-class institutions that constitute the most comprehensive research and development network of its kind. The first Annual Report on the State of the DOE National Laboratories describes the DOE national laboratory system, its role in advancing the frontiers of science and technology, and efforts to ensure it continues as a national resource for the DOE’s near- and long-term missions. The DOE committed to prepare this report in response to recommendations from the congressionally mandated Commission to Review the Effectiveness of the National Energy Laboratories (CRENEL) so that the DOE could better communicate the value that the laboratories provide to the nation.

The report organizes issues and recommendations into six themes: Recognizing Value, Rebuilding Trust, Maintaining Alignment and Quality, Maximizing Impact, Managing Effectiveness and Efficiency, and Ensuring Lasting Change.

Overall, the report concludes that the vitality of the DOE national laboratories has improved over the past decade, in part due to investments made through the American Recovery and Reinvestment Act and from a focus on enhancing the relationship between the laboratories and the DOE. Nonetheless, hurdles remain in recruiting and retaining the best and brightest researchers and staff, updating aging infrastructure for 21st century needs, continuing to improve operational efficiencies, and further strengthening the laboratories’ partnerships with DOE.

This article is adapted from the DOE website.
Since 2012, the Health Physics Society (HPS) has had to deal with ever-tightening rules on the part of the federal government—rules that have restricted the attendance of federal employees and contractors at both the annual and midyear meetings of the Society. You may recall that this issue arose as a response to a series of newspaper articles that documented excess spending by the government on a General Services Administration (GSA) conference in Las Vegas. Moving very quickly after these reports, the Office of Management and Budget (OMB) significantly clamped down on the ability of federal employees and contractors to attend conferences by instituting overall caps on spending and new internal approval procedures that significantly slowed down the approval process. The practical effect of these new rules was that the number of scientists in the employ of the federal government (including contractors) who were able to attend scientific meetings and conferences was greatly reduced. In turn, this had the effect of decreased attendance at these meetings, creating a significant economic hardship on the revenues of scientific societies, including HPS.

In reaction to this situation, a great number of scientific organizations throughout the country, including HPS and the Council of Scientific Society Presidents (CSSP), started to communicate to both the Executive Branch and the Congress on the adverse effect these restrictions were having not only on their organizations but on the functioning of the government itself. During the HPS semiannual leadership team visits to Washington from 2012 until the recent one in December 2016, the team argued that the inability of scientists such as health physicists to attend meetings and have the opportunity to interact with colleagues impaired their ability to carry out their functions as federal scientists to the best of their ability. In other words, by not attending an annual meeting and enhancing their knowledge, the federal scientists were not as effective as they could be.

At first, this message appeared to be in vain as visions of the lavish parties in Las Vegas by the GSA still dominated the view of both the OMB and certain congressional offices. However, as the number of groups getting involved with the issue increased and the unified message of the damage that was being done by this decrease in attendance became clear, the initial resistance started to break down. As we had touched upon in previous articles, prominent government officials such as Secretary of Defense Ash Carter started making their voices heard on the issue, and certain federal agencies started to loosen some of the constraints that they had imposed on meeting attendance.

In late December 2016, word started to leak out that the OMB might be further loosening its restrictions on travel. In a document dated 25 November 2016, titled M-17-08, OMB appears to have encouraged agencies to make it easier for employees to attend conferences by taking advantage of early registration discounts and travel and to streamline the requesting authority to approve such travel. In communicating this change to the Society leadership team, HPS President Bob Cherry related to me that the Department of the Army had received the guidance but would not be able to implement it in time for the midyear meeting; hopefully both it and all the other agencies will have their procedures updated for those employees wishing to attend the annual meeting in July.

If this travel policy applies to you, please review the OMB document with your agency to see if it agrees that the travel procedures have in fact changed. Perhaps it will be easier for you to attend Society meetings.

One of the purposes of the Society’s Government Relations Program is to maintain an institutional presence in the nation’s capital that will best serve the interest of the membership in the long term. The efforts of the program to have the initial OMB restrictions on travel changed is a good example of both the significant time it sometimes takes to get policies changed and the ongoing value of maintaining the Society’s presence.
The Martian Brain

I just watched the movie *The Martian* and was thrilled, again, about the opportunities of actually going to Mars, cultivating the soil, and living there for long periods. The National Council on Radiation Protection and Measurements (NCRP) has a long-standing relationship with the National Aeronautics and Space Administration (NASA) and recently published a commentary on the potential central nervous system (CNS) effects, primarily on the human brain, following galactic cosmic-ray and other space exposures. We have now embarked on a new venture (Phase 2) to be more detailed in our evaluations and to make recommendations to the extent possible on what might happen to the brain when traveling to the red planet. In November, NCRP Scientific Committee (SC) 1-24 met at the Johnson Space Center (JSC) in Houston with NASA scientists and astronauts to learn about the multiple insults that would affect astronauts during long-term space flight.

**Why is there a concern about CNS effects?**

NASA is particularly interested in behavioral and cognitive impairments due to effects of space irradiation on CNS, especially those of high-velocity heavy ions (e.g., $^{56}$Fe) zipping through space like cosmic bullets fired from the explosion of a supernova. The key issues: will the astronauts complete the mission and, if so, will they remember where they were? Animal studies show detrimental early and late effects of high-atomic-number, high-energy (HZE) irradiation on behavioral and cognitive performance as well as neurological disorders. SC 1-24 is charged with integrating data over all biological scales, including mechanisms of damage, experimental animal responses, and human data, as well as evaluating the interactions of radiation with other aspects of the space environment that may result in CNS effects.

**What do we know about CNS effects following human exposures?**

Not very much. There is no evidence that moderate doses of low linear-energy-transfer (LET) radiation causes dementia or lasting cognitive dysfunction. The occurrence of a range of CNS effects following radiation therapy clearly demonstrates that high doses of low-LET (x and gamma ray) radiation can initiate both prompt and delayed damage. However, the minimum absorbed doses that result in significant cognitive decrement are much larger than would be received during three years in space (time for a round-trip to Mars). High-dose radiotherapy to treat childhood leukemia in past years increases the risk of brain cancer, but the relevance to space travel is minimal at best. Since no human data currently exist for radiations that simulate the space environment, we must rely on animal experiments that use simulated space radiation, primarily the particle beams available at the NASA Space Radiation Laboratory. These experiments have produced mixed results, with no clear indication of the relative biological effectiveness of different components of the radiation environment in space, but they indicate that there is a possibility of significant damage at doses that are in the range of likely exposures to individuals involved in exploration outside the protection of Earth's magnetic field.

**Is there a possibility for research to contribute new knowledge on high-LET exposures to the human brain and CNS effects?**

The Million Person Study of radiation workers and veterans includes cohorts of workers with intakes of radionuclides that provide a high-LET dose to brain tissue from alpha-particle emitters amid a low-LET dose from external gamma rays (somewhat similar to the fields in outer space). Intakes of radionuclides that provide a high-LET dose to the brain include polonium, radium, and uranium. SY Tolmachev suggested to me in November 2016 that plutonium and americium also provide a high-LET dose to the brain. Intakes of these radionuclides occurred at the Mound Facility, Rocketdyne, Los Alamos National Laboratory, Rocky Flats, and Mallinckrodt, among others. Further validation that these radionuclides cross the blood-brain barrier and deposit energy in brain tissue is ongo-
ing in a collaboration between Northwestern University and the U.S. Transuranium and Uranium Registries. They are studying brain tissue from workers exposed to these radionuclides using synchrotron-based hard x-ray fluorescence microscopy for two- and three-dimensional trace element mapping—cool stuff and colorful images. Polonium was previously measured in brain tissue during the Litvinenko autopsy. Workers with these unique exposures are being combined in a study to look at dementia, Alzheimer’s disease, Parkinson’s disease, and motor neuron disease. Stay tuned to learn whether alpha-particle dose to the brain affects dementia and associated conditions.

November 2016 meeting at JSC.

During the JSC meeting, SC 1-24 received updates on NASA research on CNS effects and information on how the limits of cognitive ability, response time and accuracy, and tolerance of adverse circumstances (communication delay, sleep deprivation, excessive workload, etc.) are handled in the design of equipment and operational procedures for space exploration. There were eight marvelous talks and two tours, including one of the Human Exploration Research Analog (HERA).

- Talk 1 described the skills needed and tasks performed, as well as work and living environments, by and for crews on long-duration missions.
- Talk 2 focused on understanding what engineering and operational interfaces have been developed to accommodate healthy living and productivity in the space environment.
- Talk 3 provided a perspective on sensorimotor reactions to spaceflight.
- Talk 4 considered how behavioral or neurocognitive changes may be affected by elevated CO₂ levels.
- The first day ended with a tour of the HERA ground analog to illustrate firsthand what aspects of the living and working environment are like. The facilities planned for space exploration are remarkable, but it would still be a challenge (for me at least) to handle three years aboard a vehicle to Mars. But then given my age and brain-matter state, there would be no risk of late effects and the acute ones have already occurred!
- Talk 5 was a perspective by flight surgeons on what behavioral and performance parameters are actually observed in reaction to the space environment. SC 1-24 heard directly the experiences of performance impairments and the efficacy of mitigation or coping strategies.
- Talk 6 reviewed observations and assessments of different neurocognitive domains on the International Space Station and ground analogs.
- Talk 7 reviewed altered circadian and sleep-deprivation effects on performance. Having sleep apnea, I was wide awake for this presentation!
- Talk 8 addressed the question of “what is a significant behavioral effect” using measures of error that have been employed in the aerospace industry.

It is exhilarating to work with NASA and to have some of the magic rub off from their vision for civilization, how to accomplish the vision, and to boldly go where no man (or woman) has gone before. So whether there is or is not a “Martian brain” problem, I’m certain that NASA will resolve it and then it will be “second [star] to the right, and straight on ’til morning.”

Thanks to Les Braby and Janice Huff for providing and reviewing much of the text for this report.

November 2016 meeting of NCRP SC 1-24 at the Johnson Space Center

Top to bottom, left to right: Jacob Raber (vice chair, Oregon Health and Science University), Larry Townsend (University of Tennessee, staff consultant), Susanna Rosi (University of California, San Francisco), James Root (Memorial Sloan Kettering), Janice Huff (NASA, observer), Peter Winsauer (Lousiana State University), Kerry O’Banion (University of Rochester), Greg Nelson (NASA, Loma Linda, observer), Kevin Krull (St. Jude), Angela Harrivel (NASA Langley Research Center), Les Braby (chair, Texas A&M), Dudley Goodhead (Medical Research Council, United Kingdom), “Q” Qin (Naval Submarine Medical Research Lab), Kathy Held (NCRP), and John Boice (NCRP). Not in photo: Polly Chang (SRI International), David Dingess (University of Pennsylvania), David Herr (Environmental Protection Agency), Tom MacVittie (University of Maryland), and John Hopewell (Oxford).

Photo courtesy of John Boice
IRPA News

R.E. Toohey, CHP, PhD, IRPA Treasurer

The editors of *Health Physics News* are pleased to introduce another new column to appear periodically, intended to inform Health Physics Society (HPS) members about the activities of the International Radiation Protection Association (IRPA). HPS is the largest of 52 IRPA associate societies, and HPS members are thereby members of IRPA.

The IRPA Executive Council elected at IRPA14 in Cape Town, South Africa, recently met at the Polytechnical Institute of the University of Madrid, hosted by IRPA Vice President Eduardo Gallego (Spain). The first meeting of the new Executive Council after the international congress is devoted to strategic planning and defining the program of IRPA for the next four years. A key part of the new plan is to improve communications with and involvement of the associate societies, hence this column. Although essentially all of the information presented here will be available on the IRPA website, we feel that having a push system of getting information to members may be more effective than the pull system of posting it on the website and hoping members will log in.

IRPA President Sir Roger Coates (United Kingdom) provided the following executive summary of the IRPA strategic program for 2016–2020.

IRPA has the following mission and vision:

**Mission:** IRPA is the international professional association for radiation protection. Through national and regional associate societies of radiation protection professionals, IRPA promotes excellence in radiation protection by providing benchmarks of good practice and enhancing professional competence and networking. IRPA encourages the application of the highest standards of professional conduct, skills, and knowledge for the benefit of individuals and society.

**Vision:** IRPA is the international voice of the radiation protection profession.

Our strategic priorities for 2016–2020 are grouped under four headings, each of which has several specific work programs:

**To promote our role as the international voice of the radiation protection profession** through engagement with other international organizations and professional bodies on the development of the system of protection, giving emphasis to impacts on practical implementation. We will liaise with our partner international organizations to consult on the system of protection and enhance our interface with key international organizations in the medical sector.

**To support the needs of the associate societies by developing, enhancing, and sharing good practices and high standards of professionalism.** These include, but are not necessarily limited to, radiation protection culture, ethics in radiation protection, public understanding, implementation of the eye dose limit, and security of radioactive sources. Other areas of emphasis include underpinning the future of our profession through our young professionals network, supporting the associate societies in developing effective national interfaces between them and the medical sector, implementing systems for the recognition of competence, and supporting the development of associate societies through the exchange of general good practice and experience.

**To support the education and training of radiation protection professionals** by enhancing education and training practices and maintaining a database of training events and to improve knowledge of scientific developments through IRPA’s regional and international congresses.

**To enhance IRPA governance and the interface with the associate societies** through enhanced regional engagement, improved interface and communications with the associate societies, provision of the “View of the Profession,” and expanded guidance for the organization of IRPA congresses.

This will form the core of IRPA’s activities for the current term up to 2020, and we look forward to cooperation with the associate societies, individual members, and international organizations in delivering this program.
In Memoriam

William A. “Billy” Mills

On 22 December 2016, William A. “Billy” Mills, PhD, a radiation safety physicist who served the federal government for over 40 years, passed away in Sandy Spring, Maryland, from complications of Alzheimer’s disease at the age of 87.

During his career, Billy held senior positions at the Public Health Service, the Environmental Protection Agency (EPA), and the Nuclear Regulatory Commission (NRC).

Billy was born 12 October 1929, the son of the Leonard and Mary Powell Mills, who worked at the Craddock-Terry shoe factory in Lynchburg, Virginia. Billy married Patricia Brown, also of Lynchburg, in 1952.

In 1951 he graduated with a B.S. from Lynchburg College, where he majored in math, physics, and chemistry. He received an Atomic Energy Commission Health Physics Fellowship to Vanderbilt University, where he received an MS in physics in 1954. Billy also studied at the Medical College of Virginia and the University of Virginia, ultimately attaining a PhD in biophysics.

Billy began his career in health physics at Oak Ridge National Laboratory in 1951, after graduation from Lynchburg College. His fondest recollection of work at Oak Ridge was working with Sam Hurst, from whom he claimed he learned more physics than from any university, while developing neutron threshold dosimeters. Legend has it that at one time he carried half the world’s supply of plutonium (as detector foils) in his pocket while traveling to the Nevada Test Site.

In 1955, Billy accepted a commission in the U.S. Public Health Service (USPHS) and transferred to Washington, DC, where he directed research programs on the effects of ionizing and nonionizing radiation. In February 1963, Billy was appointed to head the newly created Biophysics Unit of the Radiological Health Laboratory at Rockville, Maryland. He retired from USPHS as scientist director with the rank of captain.

In 1970 Billy became the first director of the Criteria and Standards Division of the EPA Office of Radiation Programs, where he managed the development of radiation exposure standards. In the 1980s, he continued to develop standards as chief of the Health Effects Branch of the NRC. In his last position, Billy was the senior science/policy advisor at the Oak Ridge Institute for Science and Education in Washington, DC, a position he held from 1985 until he retired. In this capacity he directed science and policy support for the Committee on Interagency Radiation Research and Policy Coordination, Office of Science and Technology Policy, Executive Office of the President.

Billy was a charter member of the Health Physics Society (HPS), served on various Society committees, was president of the Baltimore-Washington Chapter in 1984, and ultimately served as HPS president-elect and president (1995–1996). He was a fellow in HPS and was only the eighth recipient of the Elda Anderson Award in 1969.

Billy was also a member of the Society for Risk Analysis and the National Council on Radiation Protection and Measurements (NCRP) and served on the NCRP Scientific Committee 64 on Environmental Radioactivity.
Billy loved to garden and spend time at the beach with his family. They visited the Myrtle Beach area every summer since the early 1960s, always joined by the families of Billy's sisters, Fay and Joan. He and Pat also once owned a house in Ocean Isle Beach, North Carolina.

Billy is survived by his wife, Patricia, as well as four children: Andy Mills of Alexandria, Virginia; Cindy Elder of Sharpsburg, Maryland; Leonard Mills of Brookeville, Maryland; and Danny Mills of Rockville, Maryland. He is also survived by a sister, Joan Alcorn of Lynchburg, Virginia; eight grandchildren; and four great-grandchildren.

Billy will be missed by his Society and professional colleagues.

Announcements

**NCRP 2017 Annual Meeting, 6–7 March 2017, Bethesda, Maryland**


**ConRad 2017—Global Conference on Radiation Topics 8–11 May 2017, Munich, Germany**

The ConRad Global Conference on Radiation Topics, organized by the Bundeswehr Institute of Radiobiology, will be held 8–11 May 2017 in Munich, Germany. Topics will include radiation preparedness, response, protection, and research. For more information, contact Christina Beinke.

**6th International Conference on Education and Training in Radiological Protection, 30 May–2 June 2017, Valencia, Spain**

The 6th International Conference on Education and Training in Radiological Protection (ETRAP) 2017 will be held 30 May–2 June 2017 in Valencia, Spain. More information is available on the ETRAP 2017 website.

**CRPA 2017 Annual Conference, 5–7 June 2017 Saskatoon, Saskatchewan, Canada**

The Canadian Radiation Protection Agency (CRPA) 2017 Annual Conference—“Reflecting on the Future”—will be held 5–7 June 2017 in Saskatoon, Saskatchewan, Canada, at the Radisson Hotel (405 20th St. E, Saskatoon, SK S7K 6X6, Canada). The point of contact is Sue Singer, CRPA Secretariat, 613-253-3779, secretariat@crpa-acrp.ca. More information is available on the CRPA website.

Donate Your Books for the 2017 Web Operations Book Drawing!

Have you had a health physics book published recently? Are you the author or editor of a book that has been a classic in the field of radiation protection?

Promote your book and benefit students and other health physicists by donating new copies for the ever-popular book drawing that will be held in the exhibit hall at the 2017 Health Physics Society Annual Meeting in Raleigh.

Please contact News Editor Mary Walchuk at editormw@hps.org.
Report From the Stacks

P. Andrew Karam, CHP, PhD

“Nuclear Roundup”

Bulletin of the Atomic Scientists
Compiled by Jodi Lieberman

This column is a bit of a change of pace—I thought I’d take a break from the normal book reviews to tell you about a daily (or so) compilation of news regarding nuclear policy, nonproliferation, threats, and the like. I’ve been a subscriber to this, and its predecessor, for six years now, and I can honestly say that it’s something I look forward to each day and that I always find at least a few articles that are of interest, or use, or both.

The original publication was compiled by Jon Medalia of the Congressional Research Service; upon his retirement, Jodi Lieberman—a nonproliferation expert working for Argonne National Laboratory—took the reins. In her tenure, Jodi has affiliated the “Nuclear Roundup” with the Bulletin of the Atomic Scientists and has greatly improved its look and feel.

What Jodi does is to scour the web at least once daily, looking for relevant news articles to compile and send out to her subscribers. The email itself is rather bare bones—the headline and a link to the online article. If there are associated files—a report or testimony to Congress for example—there will be a link to that as well.

The articles themselves largely reflect what’s in the news at the time—over the last year or so there have been a bunch of pieces about the Iran nuclear negotiations and agreement, and there have also been a number of pieces about North Korea’s nuclear and missile programs, the current growing nuclear tensions between the United States and Russia, and so forth. Given Jodi’s nonproliferation background and her primary audience, it’s only natural that such stories would comprise the bulk of the roundup. What impresses me is the number and diversity of articles Jodi finds each day and the way she strives to find pieces reflecting all sides of the debate. So, for example, she has found a ton of pieces over the last year that talk about the risks of the Iran nuclear deal. But she also found a ton of pieces about the deal’s benefits. I respect the fact that, whatever biases Jodi might have, they don’t seem to be reflected in the contents of her work.

Jodi is also familiar with the work that takes place on Capitol Hill and this is reflected in the “Nuclear Roundup” as well. It’s not uncommon to find links to transcripts from testimony given to various committees or subcommittees and to reports on various nuclear-related topics. So, for example, when the U.S. Government Accountability Office recently found some holes in radioactive materials licensing practices, Jodi included a link to an article about the report as well as a link to a PDF file of the report itself.

Most of the articles are related to nuclear weapons in some sense—nonproliferation has not only been Jodi’s specialty for the last 25 years, but is the major focus of the Bulletin of the Atomic Scientists, as well as reflecting the interests of the roundup’s primary readers. But she includes a lot more than this—she tracks events within the Department of Energy complex, articles about radiological terrorism, counter-terrorism exercises, nuclear energy news, and even the occasional stories about scientific advances, climate change, and more. All in all, Jodi gives us a well-rounded look at a variety of topics that are relevant to us and that are of global importance. As I mentioned, it’s something I look forward to reading every day and I get something out of every issue.

The primary readers of the “Nuclear Roundup” work for the federal government, a variety of foreign governments, embassies, academia, and a variety of domestic and foreign nongovernmental organizations. Adding yourself to the mailing list is simple, just go to the “Nuclear Roundup” web page and click on the subscribe button at the bottom of the page. You can also subscribe to the bulletin’s newsletter by going to the subscription page and filling in your name and email address.
If you remember, the Health Physics Society (HPS) conducted an online survey in May 2016 asking members for feedback about the Society. I was reading the comments posted and one statement in particular caught my attention—especially since it was one that I wondered about when I was a younger health physicist—the comment that HPS leadership has become an “old boys club” with the same tired faces rotating through the leadership positions year after year. To be honest with you, I’m not sure if I count as one of the “old boys” or not, but I thought it might be useful to share some thoughts with those of you who are interested in doing more in the HPS.

I guess I should start by saying that I’ve been active in HPS, the American Board of Health Physics (ABHP), and the American Academy of Health Physics for almost 20 years. I’ve served on both the HPS and ABHP Board of Directors, I’ve chaired a few committees (and served on a few more), and served as a chapter president. I’ve also served on committees of the National Council on Radiation Protection and Measurements and the National Academy of Science. So I think I have a fairly good idea of how the Society’s business gets done and some of the challenges in getting it done. And I also have ample experience volunteering for HPS work without ever hearing back—yea or nay—so I can sympathize with those of you who complained that you keep volunteering but are never chosen for committee work. I thought it might be worth telling you a little bit about what might be going on.

The first thing to consider is that there are only a limited number of spots to fill on all the committees and the Board of Directors, and there is a LOT of work that needs to be done. At the same time, only a relatively small number of people volunteer to help out. Virtually every person in a leadership position has been burned in the past by people who don’t carry their weight, leaving that much more for the rest. There is a tendency, then, to select those who have proven themselves. This means that there is a relatively small pool of people who (1) volunteer for work and (2) have shown that they will actually accomplish something.

You should also consider that only some seats on each committee and the Board come open in any year. So on a 10-person committee with a three-year term, for example, there will only be three open seats to fill each year. And remember, too, that some committees are more or less popular than others and have more (or fewer) volunteers.

Think about things from the standpoint of those who are putting together committee rosters and slates of candidates for HPS office. With a limited number of seats to fill and positions to run for, who would you turn to first? For me, I’d want to go with a familiar name. I might also add a few wild-cards to try to discover new talent, but the majority of my selections for these important positions are likely to be people who have already proven they can be counted on. And the higher the level of work, the more important this becomes.

Considering all of this, how do you go about helping to do the Society’s work?

• Start off at the local level. Work for your local chapter and volunteer for a chapter leadership position. This not only helps your chapter, but it also lets you build a reputation as someone who can be counted on; this way, at some point your chapter can recommend you for an HPS committee or an elected position.

• Write! Contribute articles to Health Physics News (contact News Editor Mary Walchuk). If your chapter has a website or a newsletter, write for it. Write papers for publication in our journals, Health Physics and Operational Radiation Safety (submission guidelines and forms are on the Health Physics website). This is a way for you to share your ideas and experience with your colleagues; it’s also a way for people to develop a familiarity with you.

• Attend HPS meetings. And when you’re there, present papers or posters, offer to give continuing education lectures and Professional Enrichment Program classes. As with the writing, this will help you to share your experiences with your colleagues as well as to let people get to know you.
- Volunteer for committee work. You can volunteer for a specific committee or (better) simply throw your hat in the ring for whatever committee needs you the most. Here, an endorsement from your chapter can't hurt. And when you're named to a committee, make sure you contribute—far better to build a reputation as a reliable and hard worker than as someone who doesn't pull his or her own weight.
- And be persistent! You might not get chosen the first time you volunteer for an HPS committee or elected position. I volunteered many times—didn't even get a reply for several years—before I was finally able to start helping out. But if you give up the first time you're not asked to help, then you'll never have the chance to find out what you can contribute to our Society.

I'd like to offer two challenges:

- To those of you who are already established in your career, I would challenge you to be a mentor—to take a young health physicist (or two or three) under your wing and help them to contribute to our Society. This is something the HPS can facilitate by advertising its mentoring program.
- And to the HPS leadership, I would challenge you to do a better job of encouraging those who say that they want to contribute. At the very least, every request to help should be answered—by a person and not by a robo-email. I would also encourage the leadership to put forward more names of younger (i.e., younger than 40) members.

Finally, I should point out that most of the work of the HPS is going to take time and effort—much of it is thankless and you'll often wonder if it makes any difference at all. It does.

**Notes**

**Charles Mistretta Selected to Receive 18th Gray Medal**

The International Commission on Radiation Units and Measurements (ICRU) is pleased to announce that the 18th Gray Medal will be presented to Charles Mistretta, PhD, on 31 July 2017 at the 59th Annual Meeting and Exhibition of the American Association of Physicists in Medicine (AAPM) in Denver, Colorado. Mistretta's talk is titled "Historical Recollections of Developments in Angiography 1971–2017." More information is available on the ICRU website.

**Source Security Working Group Publishes Transition Memo to Incoming Administration**

The Source Security Working Group (SSWG) recently published its recommendations to the Trump transition team regarding radiological source policy. SSWG is an alliance of industry sectors, including energy, healthcare, oil and gas applications, and industrial radiography, who seek continued access to radiological sources. Highlights of the recommendations include:

- Maintain the Nuclear Regulatory Commission (NRC) as the principal federal regulator for the domestic civilian use of radionuclides.
- Do not require artificial transitions to alternative technologies.
- Support U.S. policy to provide a reliable domestic supply of key radionuclides.

The SSWG will continue to engage the incoming administration on these and other issues surrounding radiological source security. For more information, please contact the SSWG.

**WIPP Reopens**

The Waste Isolation Pilot Plant (WIPP) in New Mexico was formally reopened on 9 January 2017 by Energy Secretary Ernest Moniz and New Mexico Governor Susana Martinez. Information on WIPP and the reopening is available on the U.S. Department of Energy website.

*Every radiation safety professional in the United States should be a Health Physics Society member.*
A Fond Farewell to Nancy Johnson

Kyle Kleinhans, CHP, President-elect

As you may already know, Nancy Johnson recently retired as the executive director of the American Academy of Health Physics (AAHP) following the 2017 Health Physics Society (HPS) Midyear Meeting in Bethesda, Maryland. In my experience, she has been an invaluable resource who will be sorely missed. Nancy has been supporting the AAHP with Burk and Associates since the inception of the AAHP! AAHP meetings just will not be the same without Nancy’s gentle guidance, help, and amazing corporate knowledge that cannot be easily replaced.

I have encouraged members of the AAHP and American Board of Health Physics (ABHP) who have served with Nancy to submit their fond memories and appreciation for publication in this edition of the “CHP Corner.” I hope that Nancy enjoys these expressions as much as I did. Thank you so much Nancy, for your dedicated service!

It is hard to imagine the AAHP and the ABHP without Nancy Johnson, our executive director. She has ushered innumerable candidates through the certification process and shepherded several decades of Board chairs and Academy presidents, cheerfully and patiently teaching us what she’d just finished teaching our predecessors. Nancy is the quintessential professional—highly competent and organized, proactive, and truly kind.

She was also exceptional under fire . . . literally! I recall one year when Nancy received a call at 12:45 a.m. on the morning of the exam, informing her that the Las Alamos exam site was closed due to a major forest fire. Thanks to the remarkable creativity and good humor of all involved, we were able to arrange for an exam site in a nearby town, notify all the candidates, and administer the test on time, in calm and cool fashion. This well-handled emergency epitomizes Nancy; she made it all look easy, and our jobs were easy, with her at our sides.

It is truly appropriate that in 2016 the Academy renamed its National Service Award as the Nancy K. Johnson National Service Award. This award is presented, in honor of Nancy, to an individual who has provided exceptional service to the Academy during the immediate past president’s term of office. Nancy was the first recipient of this award, and I’m pretty sure every President thereafter felt she should have received it during their tenure, also.

It is with great fondness and appreciation that I wish Nancy all the best in her well-deserved retirement.

—Kathleen Shingleton

Nancy Johnson has been the long-term institutional memory and workhorse of the AAHP and ABHP. None of the health physicists associated with these organizations has come close to the quantity and quality of work that Nancy has provided. I really feel for whomever is designated to fill her shoes!

Nancy’s greatest strength has been the positive, up-beat, and get-it-done attitude she always projects. No matter what the situation, Nancy has always exhibited her pleasant demeanor in addressing the situation.

I will truly miss Nancy at our future get-togethers. I hope she will manage to occasionally work us into her retirement travel and other activities.

—Edgar Bailey
As anyone who has served on the AAHP Executive Committee, on the ABHP Board, or as the chair of an ABHP exam panel knows, the job is just not possible without strong support from the Secretariat. Nancy Johnson always provided that support.

What I recall most about Nancy is that she always anticipated your need, confusion, or request for support. Whether it was a reminder that your report was due in a day or two (always with the proper form attached), a letter to the membership (also past versions attached), a reminder that the action you wanted to take was or was not allowed by the procedures (also attached and exact section highlighted), or your desire for a special beverage (in my case diet Pepsi; no endorsement, just the facts), Nancy took care of making sure you could do your job as a volunteer elected official with the least amount of disturbance in your nonvolunteer job.

I know that I could not have done my job as president of the AAHP or ABHP without her help. For being that special person who made our jobs so much easier, I thank her and wish her well in retirement!

–Bob Miltenberger

Wow . . . what can I say? I spent a good 15 years on the Part 2 Panel, as an ABHP board member, then vice chair (two terms), then chair. Throughout my tenure, I had the pleasure of working alongside Nancy. She did not hesitate to help me whenever asked, and much of the time it was helping without me asking. She was expert at anticipating my lack of experience with some ABHP process or procedure. I could not have done it without her.

Nancy was truly committed to the exam, the board and panel members, and the bylaws and charter. She will be missed.

When I look back at my involvement with the board and exam, my fondest memories usually involve Nancy.

Thanks Nancy. I appreciate your help and friendship!

–Pat LaFrate

Thank you for providing the opportunity to say a few nice things about one of my favorite people, Nancy Johnson. Nancy was kind, considerate, capable, competent, professional, tactful, knowledgeable, and deserving of every other accolade that one could think of to describe her. In short, she was a wonderful person to know and work with. I have nothing but pleasant memories of Nancy, whether while working with her or just socially chatting with her at meetings or in airports. She represented the AAHP, ABHP, and HPS extremely well. Sincere best wishes to her for a long, happy, and healthy retirement.

–Ken Miller

I don’t have a specific memory to relate, just a general “couldn’t have done it without Nancy” during my terms on the Part 2 Panel, the ABHP, and the Academy, as well as her support in the development of ANSI/HPS standards. She was always there to provide guidance on what needed to be done (and, in some cases, would do it for me!). She will be greatly missed!

–Elizabeth Brackett

Nancy Johnson is a quintessential part of the Secretariat and, having served on the ABHP, the AAHP, and the Health Physics editorial boards, I cannot imagine them without her!

Nancy, I cannot say enough in the way of thanking you. My best wishes to you for the next chapter in your life.

–Joel O. Lubenau
Nancy has been extraordinary!

It is truly a pleasure working with Nancy on the Academy Executive Committee. She has done so many good things in keeping the committee members on the right track.

Nancy, congratulations and best wishes to you for a happy retirement! Hopefully we will see each other on some future occasions.

—Gloria Mei

Nancy, mixed emotions are definitely in play for me as a new chapter in your life unfolds. You have excelled for so long in the handling of AAHP operations that it is certainly going to be strange for all of us to soldier on without you.

Thank you for being so much more than a consummate administrator of Academy functions. That will be one of your legacies but, well beyond that, you are an individual whose loyalty, friendship, and compassion for others has been an enduring trademark. I will miss you, beautiful lady, but am excited that you will no longer have to herd all the cats in the right direction!

—Alex Boerner

Dear Nancy,

How can it be that you are retiring from your AAHP and HPS duties? How will the two groups survive?

They will survive because of the firm foundation you helped to build.

Back in the “good old days” when I was involved with many others in the development of the ABHP, I also held several positions in the Health Physics Society. Like those who hold similar positions today, I quickly learned to depend on the support of others. In hindsight, I especially depended on the willing support provided by the staff of the HPS business office, and especially on your help.

So, I send you my best wishes that you learn to enjoy your retirement as much as I have.

Thanks for your help over many, many years!

—Roger Cloutier

There are many ways that Nancy is appreciated, and outright loved. First and foremost is her excellent work; she is efficient, reliable, smart, and honest, with an amazing memory of our history. She is always quick with praise, telling you how your contributions are valuable. She is friendly and gracious. I remember being a bit bewildered by the recertification requirements and she was very helpful and set my mind at ease. As I volunteered for AAHP she was so helpful in getting me started in the right direction. I could always count on Nancy to help to make things work, and to be fun too.

—Alan Jackson

It was at the Orlando midyear meeting when (as usual), I was arriving at the conference hotel late. I did have a reservation, but was informed by the desk clerk that there were no rooms left! That included the entire surrounding area! Nancy Johnson was walking by and overheard what was becoming a very loud conversation. She sprang into action (as she always does) and graciously offered me the extra bed that was in her room for that night.

Lifesaver! We have since referred fondly to each other as “Roomie.”

—Nancy Kirner
William A. McAdams Outstanding Service Award
A Call for Nominations

The American Board of Health Physics (ABHP) is soliciting nominations for this year’s William A. McAdams Outstanding Service Award recipients. This award is presented annually by the ABHP and the American Academy of Health Physics (AAHP) to honor a certified health physicist (CHP) who has made a significant contribution toward the advancement of professionalism in health physics and to the certification process.

Nominees shall be CHPs who have served the health physics community through distinguished service with the AAHP or ABHP, in teaching, or in other areas that enhance the professionalism of health physics. This award may be bestowed posthumously.

Any member of the AAHP may submit a nomination. Nominations should be received by 2 March 2017 to be considered.

Professional Development Committee

Janet Johnson, CHP, Chair

The Professional Development Committee met at the 2016 Health Physics Society Annual Meeting in Spokane, Washington, in July. The American Academy of Health Physics (AAHP) booth was well staffed by committee members and other certified health physicist (CHP) volunteers, with nearly all time slots filled.

The current members of the Professional Development Committee are Dennis Clum, Jim Herrold, Balwan Hooda, Jeff Kotsch, and Allison Wilding.

The committee discussed the strategies needed to encourage health physics professionals to become certified. The number of active CHPs has remained static for the past decade at approximately 1,300. In November, in response to a question from a member (Jim Herrold), the committee looked into the trends in the number of applicants and examinees over the past 12 years. It appears that the number of applicants has been increasing over the past five years, while the number of individuals actually taking the Part 1 and part 2 exams has remained relatively static.

The Professional Development Committee will continue to look into the reasons for these trends.
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 February 2017 will appear in the March 2017 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.

LOS ALAMOS NATIONAL LAB. TA00-0767-149, Los Alamos, NM, 87545; Contact: David Seagraves, 505-667-4959; email: dseagraves@lanl.gov; website: http://www.lanl.gov/orgs/rp/mcnp.shtml

TITLE: Practical MCNP® for the Health Physicist, Rad Engineer, and Medical Physicist. Monte Carlo-type calculations are ideally suited to solving a variety of problems in radiation protection and dosimetry. The Los Alamos MCNP® code is a general and powerful Monte Carlo transport code for photons, neutrons, electrons, and many other particles and can be safely described as the “industry standard.” This course is aimed at the health physicist, medical physicist, and rad engineer with no prior experience with Monte Carlo techniques. The focus is almost entirely on the application of MCNP® to solve a variety of practical problems in radiation shielding and dosimetry. The intent is to “jump start” the student toward using MCNP® productively. With a little practice and study of the examples, many will find they are able to solve problems that have, in the past, been out of reach. Course content: Extensive interactive practice sessions are conducted on desktop computers. Topics will include an overview of the MCNP® code and the Monte Carlo method, input file preparation, geometry, source definition, standard MCNP® tallies, interpretation of the output file, exposure and dose-rate calculations, radiation shielding, photon skyshine, detector simulation, and dosimetry. Students will be provided with a comprehensive class manual and a CD containing all of the practice problems. This course has been granted 32 continuing education credits by the American Academy of Health Physics. The course is offered by the RP2 Radiation Services Group at Los Alamos National Laboratory and is cosponsored by the Radiation Safety Information Computational Center (RSICC). Participants must be vetted by LANL’s Export Control Office (a two-sided form will be sent upon registration to complete and submit to the Export Control Office) before being allowed to attend. Possessing a recent copy of the MCNP® code will expedite this process. Contact RSICC directly (https://rsicc.ornl.gov/) if a copy of the code (and license) is desired. Note that class computers will be provided. Registration is available online at http://www.lanl.gov/orgs/rp/mcnp.shtml. Non-U.S. citizens need to register 60 days in advance to allow for necessary visitor approvals. Inquiries regarding registration, class space availability, and payment options should be made to David Seagraves, 505-667-4959, email: dseagraves@lanl.gov. Technical questions may also be directed to Tom McLean, 505-665-9944, email: tmclean@lanl.gov.

DATES: 26–30 June 2017
FEE: $1,800 per person
PLACE: Los Alamos National Lab, TA00-0767-149, Los Alamos, NM, 87545

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

TITLE: Radiation Safety Officer Class. This course is designed to provide radiation safety officers (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. 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.

DATES: 19–23 June 2017
FEE: $1,500
PLACE: Portland, Oregon
Health Physics News February 2017

BEVELACQUA RESOURCES. Attn: Dr. Joseph J. Bevelacqua, CHP, PhD, 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 40 CECs (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. Part I 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% 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) NCRP 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: 10 July 2017

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

DATES: 3–7 April 2017

FEES (*): $3,350 (Part I Course)
$2,650 (Part I Self-Study Course)—Includes domestic shipping and handling.
$1,950 (Part I CD with 1,500+ Questions and Answers)—Includes domestic shipping and handling.
$1,950 (NRRPT CD with 1,500+ Questions and Answers)—Includes domestic shipping and handling.
Site Licenses are available for both CDs—License fee prices are available on request.
$2,150 (Background Materials Review)—Includes domestic shipping and handling.
$2,150 (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 incur a 4% surcharge. Foreign purchases are subject to additional fees. Any changes will be announced on Facebook, Twitter, and LinkedIn and in subsequent Health Physics News ads.

REFUND POLICY: Based on local, state, and federal accounting requirements, no inventory is maintained. Given these restrictions, no refunds are available after an order is processed.

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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*, sixteen Part II examinations with solutions, detailed lecture notes, examination-preparation materials, and a summary of recent (1997–present) NCRP 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:** 10 July 2017

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

**DATES:** 8–12 May 2017

**FEES (\_*\):** $3,350 (Part II Course)  
$2,650 (Part II Self-Study Course)—Includes domestic shipping and handling.  
$1,950 (NRRPT CD with 1,500+ Questions and Answers)—Includes domestic shipping and handling.  
Site Licenses are available for the CD—License fee prices are available on request.  
$2,150 (Background Materials Review)—Includes domestic shipping and handling.  
Foreign shipping and handling depends on the destination country.

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**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:** Advanced Radiation Biology and Radiological Risk. This five-day advanced course covers the current theories and risk-assessment models of the effects of ionizing radiation on the human body. Topics covered include interaction of charged particles, review of basic biology, radiation cellular effects and cellular response to radiation damage, system biological considerations, high- and low-level radiation effects, case studies of radiation accidents/incidents and resultant injuries, radiation-induced heritable ill-health, radiation effects on the embryo/fetus, noncancer effects such as the cardiovascular syndrome, radiation risk, and human experience with radiation exposure. Emerging concepts such as nontargeted (bystander) effects, genomic instability, and use of biomarkers in radiation therapy; apoptosis; delayed stress response protections; immediate operating protections; integrated defenses; adaptive response; development of radiation effectiveness factors (REFs) for radiation injury compensation programs; and endogenous vs. radiogenic cancers will be compared. Theories of radiation carcinogenesis and dose models will be expanded on, including absolute risk, relative risk, and deterministic vs. probabilistic risk-assessment modeling. The main points in reports BEIR and UNSCEAR will be covered, including a detailed discussion of BEIR VII and the BEIR IV and VI reports on radon. Other pertinent literature on radiation effects will be provided. Human experience with dose reconstruction and radiation effects will be summarized, including discussion of at least 12 different cohorts that have been followed. Increased use of radiation in diagnostic medical procedures will be discussed and comparisons made between charged particle and photon irradiation modalities for cancer patients. Problem solving and case studies on dose/risk assessment and risk communication will be interspersed among the lectures. Students should bring a scientific calculator to class.

**DATES:** 24–28 April 2017

**FEE:** $1,295

**PLACE:** Washington, DC

**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 libraries 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 fundamentals physical processes underlying their application. The primary focus of the course is HPGe detectors, although applications of NaI(Tl), CZT, and LaBr3(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:** 27–31 March 2017  
**FEE:** $1,295  
**PLACE:** Baltimore, Maryland

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**RSO SERVICES, INC.** Contact: Robert Harrison, PO Box 575, Niceville, FL 32588; 850-651-0777; fax: 866-254-3211; email: info@rsoservices.com; website: rsoservices.com/school

**TITLE:** Radiation Safety Officer (RSO) School and Refresher Class. Michael Hensley, PhD, senior radiation specialist and instructor, has been providing a full 40-hour RSO School and Refresher Class for over 40 years. The course is updated throughout the year for the latest changes in all aspects of being a radiation safety officer as approved by the states and the Nuclear Regulatory Commission. We specialize in industrial fixed gauges, x-ray sources, naturally occurring radioactive material, disposals, and more. We have a broad spectrum of customers from all industries: power, chemical, oil/gas, pulp and paper, mining, hospitals, government, radiography, etc. We offer no electives because everything is covered and course emphasis is given based on the attending students' work field. Please check our website at rsoservices.com/event-calendar for the latest school dates and optional on-site training at your facility. Textbook, calculator, pad, pen, and beverages are included.

**2017 DATES:**
- 17–21 April 2017: Pigeon Forge, Tennessee (in the Smoky Mountains)  
- 5–9 June 2017: Orange Beach, Alabama (on the Beautiful Gulf Shores)  
- 31 July–4 August 2017: Orange Beach, Alabama (on the Beautiful Gulf Shores)  
- 25–29 September 2017: Orange Beach, Alabama (on the Beautiful Gulf Shores)  
- 6–10 November 2017: Pigeon Forge, Tennessee (in the Smoky Mountains)  
- January–December 2017: Anytime, Anywhere, One-week on-site training at your facility

**FEE:**  
40-hour class is $1,495 and Refresher Class is $925

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**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: 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 (40 continuing education credits) and the American Society of Radiologic Technologists (40 hours of Category A continuing education credits).

**DATES:**  
- 27 February–3 March 2017, Orlando, Florida  
- 5–9 June 2017, Exeter, New Hampshire  
- 4–8 December 2017, 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:** Orlando, Florida; Exeter, New Hampshire; Las Vegas, Nevada
Upcoming Events

- 62nd HPS Annual Meeting
  9–13 July 2017, Raleigh, North Carolina
- 51st HPS Midyear Meeting
  4–7 February 2018, Denver, Colorado
- 63rd HPS Annual Meeting
  15–19 July 2018, Cleveland, Ohio
- 64th HPS Annual Meeting
  7–11 July 2019, Orlando, Florida

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Health Physics News Contributions and Deadline
Items received by the news editor by 10 February and approved by the
Web Operations editor in chief will be printed in the March issue.

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From the Archives

Jim Willison, CHP, History Committee Chair

Health Physics Society (HPS) meetings are all about gatherings with colleagues. Part of the purpose of posting old pictures on the website is to help identify some of these colleagues. In this picture from the 1992 HPS Annual Meeting in Columbus, Ohio, we find an unidentified individual in front along with (clockwise) Kathy Higley, Mike Jones, Bruce Napier, Fred Monette, Ernest Antonio, Bill Kennedy, Tracy Ikenberry, and Steve Simon.

If you know who the unidentified health physicist in this picture is or want to try your luck at others in our galleries, stop by at the annual meetings photos page or the midyear meetings photos page on the HPS website.

Each picture that has missing names has an easy mechanism for you to email the History Committee your input. Have fun!