



Health Physics News

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In This Issue

President's Message	2
Inside the Beltway	7
Correspondence	8
Elmer and the Air Raid Siren	9
New Contributing Editor	10
Outside the Corner Office	11
Committee Activities	12
Section News	12
Chapter News	13
Notes	16
2003 HPS Salary Survey	21
CHP Corner	26
Display Ads	27
Short Courses	31
Placement Center	34
Odds and Ends	36

Street Smarts

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Introduction

Resale of radioactive sources is among the top 10 security threats posed by radioactive sources (Van Tuyle et al. 2003; Stone 2003).

Used sources and devices may be offered for sale or for donation. Because of the difficulty and costs of disposing of unwanted sources, marketing a disused source in the secondhand market is a convenient way to off-load a headache.

The Internet is used to offer used sources and devices containing sources. Listings can be found by searching for Web sites of brokers specializing in used radioactive devices and sources. Recently, one site listed an uncalibrated teletherapy unit for \$20,000. Other Web sites have listed used nonmedical sources including multicurie ^{241}Am and ^{137}Cs sources, some available for the cost of packaging and shipping.

The sites may contain precautionary notices regarding licensing requirements. The Web site operators serve as middlemen only, apparently never taking possession of the source, and thus they do not need a license nor are they subject to the US Nuclear Regulatory Commission (NRC) security advisories. Regulatory oversight of such activities for security purposes will obviously be difficult.

If agreement on a sale or donation

is reached, the source or device must be prepared for shipment, an activity that may require services of a third party, especially if handling of the device requires a license. For domestic transfers, that is, those occurring within the United States, the licensee is responsible for determining that the recipient is authorized to possess the source in accordance with regulatory requirements and other measures imposed by NRC. If a Type B quantity of radioactive material is involved, the shipment must be in accordance with current shipping requirements and security advisories, including an NRC-approved quality-assurance program. Ideally, the licensee's radiation safety officer (RSO) is involved in these transactions from start to finish and is knowledgeable about all aspects.

In large broad-scope license programs, the title to radiation sources is normally held by the institution holding the license. This arrangement helps to ensure that the RSO is involved in the transfer process. Such an arrangement is not, however, required by NRC. Titles may, instead, be held by physicians' groups, research departments, or even individuals working within a licensed institution.¹ An NRC general license

(continued on page 3)

From the President

The Future of Health Physics

I was stimulated by discussions I had with many Society members during my chapter visits to reflect on the field of health physics and its future. The practice of radiation protection presents a great paradox. Fear among the general population of being exposed to radiation sources or radioactive contamination creates an increased demand for protecting workers and the public from unnecessary exposure. However, there is also an apparent belief among regulators and managers of facilities that use radiation and radioactive materials that radiation hazards are well understood and controlled. Thus, the perceived need for specialists in radiation protection is decreasing. Often the responsibilities for radiation protection are assigned to individuals who have little formal education in radiation protection and who work only part-time in this area.

This apparent belief that we know the hazards from radiation exposure has also resulted in a significant decrease in funding available for both biological and physical radiation research. However, we know that there is still much to learn, especially about radiation interactions and effects at the molecular level in both biological and physical systems.

So far I have been rather negative and this may lead one to ask, "Is there a future for someone in the radiation protection profession?" I believe that there

is because radiation protection is important for the continued development of society in several areas. There is increasing demand in medical practice to use radiation and radionuclides in diagnosis and treatment. There is a continuing need for radiation protection specialists in the power industry. Both the use of radiation sources and detection equipment and the control of radioactive material are important to our nation's security. Highly educated and competent radiation protection specialists are required to provide solutions to the problems and challenges of the use of radiation and radioactive material in these crucial areas. We are challenged to make certain that the individuals who make the decisions about staffing understand this need. This is why the work of the Society's Workforce Needs Task Group chaired by Kevin Nelson is so important.

Research is necessary to fill the needs in the areas I have described. It is important that students have the opportunity to participate in research as part of their educational experience. With an even better understanding of the biology of radiation interactions we may be able to reduce the fear among the public concerning the use of radiation and radioactive material, and its environmental impact. Certainly better detection and measurement equipment is needed in the security area and for investigating new environments, such as outer space and around very high-energy accelerators. More research is needed to

understand the movement and behavior of radioactive material in the environment. Modeling radiation fields, transport, and interaction is also a challenging area.

There can be a bright future for those of us who choose radiation protection as a career, but to make it bright we must overcome the challenges I have discussed. Exchange of information and collaborative work is essential. One important way to foster collaboration is through organizations such as the Health Physics Society and its local chapters. This provides the opportunity for health physicists who work in different areas of the profession to interact and understand the challenges they each face in their special areas and to work together to overcome those challenges. Together we can advocate for well-educated radiation protection specialists to fill the needs in health care, the energy industry, security, and regulatory fields, as well as for research funding.

In summary, I believe that there are significant challenges to us as radiation safety specialists. We can meet these challenges best through interacting with one another and collaborating on solutions. Health physics is not only an exciting and challenging profession; it is also needed by our society. Let us work together to help society realize our value and keep our profession strong.



Kenneth R. Kase

Street Smarts

(continued from page 1)

covers ownership of byproduct material regardless of quantity (US NRC 2003a).

For domestic transfers, evidence that the recipient is authorized to receive the source is normally provided by the recipient in the form of a copy of the recipient's license. Given the key role that this document has, at least one agreement state, Illinois, has restricted public access to its licenses to those having a need to know.² But, not all agreement states do this and neither does NRC. In fact, copies of most NRC radioactive materials licenses are reproduced in pdf and TIFF formats and made available on its Web site, as are the underlying applications that provide details on the licensed program.

Licensing documents are themselves not uniform. No less than 36 different agencies in the United States issue licenses for material covered by the Atomic Energy Act. This includes NRC plus 33 agreement states; in New York, three agencies issue licenses. Verifying licenses is a challenge.³

Perhaps a better approach is to eliminate paper copies as acceptable evidence of licensure and require suppliers to verify proper authorization by accessing and reading the license posted on the NRC Web site. Agreement states would need to make similar arrangements on their Web sites or make their licenses available for posting on NRC's Web site. This approach would close the opportunity to print out, modify, and then fax altered license documents to suppliers of sources.

In March 2003, as part of Operation Liberty Shield, NRC issued an advisory to licensees that they should notify NRC at least 10 days in advance of shipping large amounts of radioactive material.

Importers were advised to notify NRC of incoming large-quantity shipments. NRC has met with source manufacturers and distributors to discuss security questions and additional security measures (US NRC 2003b).

Exports of nonsafeguarded licensed material are currently governed by NRC general licenses having no requirements to notify the regulatory authority of the host country of the shipment or to verify authorization.⁴

A Case Study

In November 2001, a hospital made arrangements to decommission a teletherapy unit containing 2,400 Ci of ⁶⁰Co and transfer it to a Mexican cancer clinic. A contractor from another state was brought in to dismantle and transfer the unit. The hospital RSO, who was aware of the decommissioning project from the onset, raised questions about the copy of the contractor's license, the contractor's authorization to perform this work, and the contractor's plans to decommission and ship the unit to Mexico. These plans included the use of a subcontractor taking possession of the unit and routing the shipment to Mexico through a facility in Texas. Another question arose about whether the Mexican license, which was in Spanish, provided a valid authorization to possess the unit. A notice to the state regarding the decommissioning work and requesting reciprocity had not been filed. The hospital informed its licensing agency of its concerns.

It was subsequently learned that while the contractor had applied for and was approved to receive a license in its home state, this had not yet been signed and officially issued. Further, the license would be limited to servicing and dismantling teletherapy equipment and would not allow taking possession of the source.

A new contractor who was properly licensed for the required work was brought in to decommission and ship the unit. Other concerns were satisfactorily resolved. The unit was decommissioned and transferred to the Mexican clinic. Exports to Mexico can be routed through bonded warehouses or freight forwarder warehouses and there temporarily held prior to final shipment to Mexican consignees. Exports of radioactive material received by such warehouses are considered to be in transit and, thus, the warehouses need no license.

The licensing irregularities involved in this incident were serious. They came to light thanks to the vigilance of the hospital RSO and prompt follow-up and cooperation of the licensing agencies. Title to the teletherapy unit was held by the hospital rather than by another entity such as a physicians' group. The RSO was in the loop and closely reviewed all aspects of the decommissioning work. Other regulatory agencies were notified of the incident.⁵

NRC has distributed information on security incidents in the past (US NRC 1998). But, there is no indication that NRC specifically reviewed this incident to identify potential security weaknesses and shared lessons learned with other agencies and with licensees.

Recommendations

The 2003 joint Department of Energy (DOE)-NRC report on radiological dispersion devices identified radioactive sources posing the greatest threats based upon their potential for causing radiological harm. It also recommended that a vulnerability assessment be performed to identify weaknesses in security programs that may be exploited (DOE/NRC Interagency Working Group 2003). Vulnerability assessments provide a systematic

means to identify these weaknesses (Decker 2002). For radioactive sources, an example of a vulnerability factor is unauthorized access.

In 2003, the Los Alamos National Laboratory (LANL) issued a report of a vulnerability assessment.⁶ Although limited by resource constraints, the LANL assessment provides an insight into the value of such assessments, namely, that because vulnerabilities to theft or diversion vary, the priorities identified in the DOE-NRC report need to be modified.

Insofar as can be determined, NRC has not conducted a formal vulnerability study of its own. It should be done. Comments should be solicited because NRC's regulatory "streets" are shared by agreement states and occupied by licensees, suppliers, health physicists, and security specialists who may, if not likely will, have insights and ideas not thought of by federal experts.

Studies of incidents, near-incidents, and wrongdoer cases serve to identify security weaknesses and to learn lessons (Ferguson and Lubenau 2003). Learned lessons should be shared with agreement states, licensees, and suppliers.

The case study shows the importance of the RSO being "in the loop" on all transactions involving radioactive sources. Including the licensee on titles for radioactive sources is a simple yet effective way to help ensure this. When sources are transferred out of the country the licensee and RSO need to become knowledgeable about the export process. Even though the regulations do not require it, today's environment dictates making the effort to inform the recipient country of the shipment and verifying the authorization, especially for "high risk" sources.

NRC needs to expand its security initiatives to explicitly address the

marketplace for used devices and sources, especially those considered to be high-risk sources.

The Internet should be used cautiously when attempting to find a buyer for a used source. The same Internet information that enables finding a legitimate interested buyer can be accessed by others.

Licensees should review licensing and procedural information available on their Web sites for sensitive information such as locations of sources and access procedures (Leidholdt et al. 2003). Such information can be located and accessed through Internet search engines. In the same vein, NRC should remove copies of license applications, which contain detailed information on licensed activities, from its Web site. Licenses should remain posted on the NRC Web site to be used for authenticating license authorization instead of relying on paper copies which can be altered.⁷

Opportunities given by NRC to licensees, suppliers, health physicists, security and other specialists, and the agreement states to learn of security incidents and to contribute their ideas to enhance security have been severely limited.⁸ NRC needs to return to its principles of good regulation, particularly the principle of openness (US NRC 2003c). This principle served the NRC and the public well prior to 9/11 by encouraging input and participation in the rule-making process.

Such input is no less important today because providing for security is not solely a federal job and the government does not necessarily know all of the answers. Procedures should be developed by NRC to enable stakeholder input in ways that facilitate meaningful exchanges while protecting sensitive information. This can be done. It may mean limiting participation, such

as by invitation only, and limiting public access to records. But, this will be better than the present exclusionary practices. If needed, legislation should be sought to provide authority to do this consistent with protection of constitutional rights.

Being smart about security means more than issuing regulations and orders and replacing the locks on our doors with more and bigger ones.

We need to be "street smart" too.

Footnotes

¹ Personal communications from radiation safety officers and suppliers.

² Personal communication, Illinois Emergency Management Agency, Division of Nuclear Safety.

³ Personal communications, source and device suppliers.

⁴ Exports to embargoed countries are prohibited; see 10 CFR Part 110, US NRC.

⁵ A summary of the incident was posted by the state on 6 December 2001 on rad_rap, an Internet information exchange for radiation safety regulatory agencies.

⁶ See Van Tuyle et al. reference. Funding for this type of work has ended, personal communication, LANL.

⁷ It is recognized that Web sites can be accessed and their contents altered but this requires penetrating firewalls, etc., in contrast to the relative ease of altering paper documents.

⁸ Personal communications from licensee representatives, suppliers, agreement state representatives, and NRC officials. While no claim is made that these communications are a representative sampling, they certainly constituted a "reality check."

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Security of Radioactive Sources, Consumer Products, and Public Education

*David J. Allard, CHP, Director
Pennsylvania Bureau of
Radiation Protection*

In “Street Smarts,” Joel Lubenau has provided an excellent overview on radioactive source security, a concern that is no doubt on all our minds since 9/11. The article rightfully cautions us to be vigilant with transfer of radioactive material. As a regulator, I can greatly appreciate that view to support the substitute use of x-ray sources when possible, but would add the need for more rigorous review of financial viability with licensees. Perhaps we need disposal cost built into the sales price of the source or need to require financial bonding with all nonexempt radioactive sources having a half-life over 120 days. The current system for financial assurance with very large sources has its problems.

We recently had a US Nuclear Regulatory Commission (NRC) licensee in the Commonwealth of Pennsylvania declare bankruptcy

and abandon a 90,000 Ci ^{60}Co irradiator. Because the sources were not transferable to another licensee, the NRC financial assurance of \$75,000 was insufficient to cover disposal cost. If left unsecured, the sources were an imminent threat to public safety so the US Environmental Protection Agency (EPA) performed an emergency removal and disposal action. This is a very good example of prudent and prompt state and federal cooperation with source security, but I expect the final total cost will exceed a million dollars. One can only hope the EPA will eventually be able to recover these costs from the corporate principals who profited from the use of these sources for decades, but when their business dropped off, they left the disposal cost burden to the public taxpayers. In my view, this experience also points to potential serious flaws in the current approach to radioactive source licensing and, specifically, disposal financial assurance. As some have suggested, shouldn't the disposal cost be built into the purchase price of a radioactive source? Also, because this has not been the case for decades, the

federal government should continue to fund orphan source recovery and disposal programs. Unless exempted from licensing, both specific and generally licensed sources should be reevaluated in a full-life-cycle context.

Self-luminescent tritium EXIT signs are widely used in public and commercial buildings under a general license, but are often stolen, disposed of in landfills, or on occasion damaged, causing costly decontamination efforts. From a strict technical health physics perspective, these EXIT signs, with up to 25 Ci of tritium gas, are a minimal public safety and health concern. They are not even subject to the new general source registration and tracking requirements. However, in the new asymmetrical threat environment that we now must consider, I can easily imagine the psychological impact from certain intentional misuse scenarios. In particular, I've seen such community impact from unintentional disposal in landfills within the Commonwealth and other states, where leachate shows above-background levels of tritium that could only have resulted from

improper EXIT sign disposal. Though really not a consumer product, a few years before the NRC and state regulators brought it to the attention of eBay®, auctions of tritium EXIT signs were common. Similarly, imported self-luminescent tritium key chains with several hundred millicuries were auctioned to consumers.

This leads me to the reason I am writing this piece: there have been literally millions of consumer products manufactured over the past hundred years that contain radioactive material. We all have the common smoke detector, uranium-loaded green/yellow depression vaseline glass, uranium mineral sample, orange Fiesta® Dinnerware plate with uranium glaze, thorium impregnated gas lamp mantle, and/or radium dial watch or clock for use in worker training or public education forums. These are interesting demonstration items, and they often provide the everyday “feel and touch” to the publicly perceived “mysterious” radiation phenomena. On 29 December 2003, *The Washington Post* ran an interesting article, “Very Hot Commodities,” by staff writer Steven Levingston, with the subtitle “Ray Johnson Is Aglow Over His Radioactive Treasures.” This article can be seen on the *Post* Web site (www.washingtonpost.com—go to “News Archives” and enter “Very Hot Commodities”). I traded emails with Ray and Paul Frame, who was also interviewed, and they tell me they managed to get the writer to accurately present the risks of such radioactive consumer products. My understanding is that the writer’s original intent was less objective. From my read, I think Ray, Paul, and John Hickey from the NRC, who was also quoted, did an excellent job. Bravo gentleman, we need to keep educating the media and the public. I truly believe NCRP Report 138 (NCRP 2001), that if someone builds

and detonates a radiological dispersion device (RDD), or “dirty bomb,” our major problem will be dealing with the psychological impact on the public. We must be ready for that reality and be able to effectively communicate appropriate protective actions (for example, shelter in place) and the short- and long-term risks. I’ve not been very impressed with some of the TV and popular print media’s portrayals of an RDD impact and, in my opinion, we’re often doing a great job at terrorizing ourselves.

Back to the consumer products. If you attended the 1995 Health Physics Society (HPS) Annual Meeting in Boston, you hopefully got to see much of Paul Frame’s official HPS collection of radioactive artifacts normally housed at the Oak Ridge Associated Universities in Tennessee. Paul is starting to build a virtual museum, and I highly recommend a “walk thru.” See <http://www.orau.org/ptp/museumdirectory.htm>. Also, Paul and William Kolb have an extensive self-published compendium, *Living With Radiation*, which illustrates and describes the typical and more exotic radioactive artifacts. For “radiation history buffs” out there like Paul, Bill, Ray, and me, the compendium is an interesting and fun read. The range of products that contained radium and uranium is amazing, from quack patent medications to self-luminescent radium fishing lures! As *The Washington Post* article noted, most of these items are relatively harmless. The authors of the recent NRC NUREG 1717 (US NRC 2001) have also looked at various exposure scenarios with such common exempt consumer products and have concluded the same. However, others may not be so harmless.

On a few occasions I’ve been in an



antique mall, or doing a “Saturday morning coffee-in-hand” eBay® search for collectable items, and have come across things that really shouldn’t be in the public realm. For example, I found a “Radium Dial

Paint Touch-up Kit” with a small radium/ZnS scintillator vial, adhesive vial, paintbrush, glass mixing rod, etc., in an antique shop in New Hampshire. I thought there would be removable contamination, so I bagged it up and paid the \$12

to get it out of the shop. I was right about the contamination. I’ve seen similar items on eBay®, and others of equal concern, for example, uranium or thorium chemical salts (see photos from an eBay® auction). In these cases, I warn the seller and/or buyer of the hazards and encourage them to contact their state radiation control program to assist with disposal. I think we all have an obligation to do the same when we see a potentially dangerous item in the public sector.

In fact, now that the Commonwealth of Pennsylvania is requiring all landfills to monitor for radiation in solid waste, we regularly see all sorts of devices with radium and lost sealed sources. We had two 10 mCi ²²⁶Ra sealed industrial sources show up last March in a load of sediment from an interstate highway storm sewer! (What’s that movie line, “build it and they’ll come.”) These items are eventually shipped for proper low-level waste disposal.

As Joel Lubenau has noted, we’ve got to use “Street Smarts” with the high-hazard large radioactive sources. I would add, we should do the same with all sources. I don’t want a highway worker picking up an interesting 10 mCi metallic pellet and putting it in a pocket, nor do I want a tritium EXIT sign or chemically toxic uranyl nitrate power auctioned off on

eBay®. Am I concerned about the orange Fiesta® Dinnerware plate? No, the gravy will take care of the alphas, but I'd recommend you pile on the second round of mashed potatoes right away. They'll be great shielding for that 2.28 MeV beta! Happy hunting, and Bon Appétit!

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Editor's Note: The opinions expressed by the authors of these articles are those of the authors and not necessarily of the Health Physics Society nor the editorial staff of *Health Physics News*.

Inside the Beltway

*Stan Ullman
Washington Representative
Capitol Associates*

Since the Energy Bill didn't pass after so much discussion and debate, I thought I'd write about a bill that did pass with much ado and may soon impact members of the Health Physics Society (HPS).

Medicare Bill

The human capital crisis in health physics is in part the result of many of you (and me) getting to that point where you begin to think of retirement. So, a word on the just-passed Medicare/Prescription Drug bill . . . If you listen closely to the accounts, you will hear the Republicans lauding the "bipartisan" bill while many Democrats will call it a "Republican" bill. Why are the Republicans being so generous to their Democrat colleagues in calling the bill "bipartisan?" Why are some Democrats distancing themselves from the final product? Well, when you look at the gory details within the drug benefit program, you will see that it is a rather convoluted benefit package. That is if you can figure it out at all. Just for fun, should you run across your Senator or Representative, ask if he or she can explain the benefit in less than five minutes. My prediction is there will be considerable irritation amongst seniors as they begin to understand just how complex this benefit is. And incum-

bent politicians get very nervous when seniors get irritated. So Republicans will say it's bipartisan to share the possible blame and Democrats will speak of being excluded from participation on the final bill. For better or worse, the issue will be revisited in the coming years.

SEAB Meeting

Secretary Abraham's Secretary of Energy Advisory Board (SEAB) recently adopted three subcommittee reports published earlier in the year. Perhaps of interest to the HPS in the reports: the Board agreed the Department of Energy must improve its public image in order to recruit and retain the best and brightest scientists; to do so, funding for physical, life, and nuclear science programs at the nation's research universities must be increased; more R&D funding must be channeled into nuclear power, energy efficiency and conservation, and cleaner coal technologies.

Capitol Associates, Inc., attended the SEAB public comments hearing on 10 December, but the comments offered either reiterated the above or had no relevance to nuclear or radiation safety. Most notably, one public comment stressed that separate contractors should run the

DOE's national labs in order to "bring about improved productivity, reduce costs, and make more resources available." These comments will be posted on the SEAB Web site in the weeks to come (www.seab.energy.gov).

Congress Part II

Congress was due to reconvene in late January. One can hope that the Christmas Spirit will prevail and there will be less acrimony and partisan bickering than this past session but I won't believe it until I see it. In fact, I predict even more acrimony as we careen towards the November 2004 elections. War, deficits, health care, taxes, homeland security, energy policy, and all the other issues that divide the parties will be the basis for discussion and debate as each party attempts to flex its political muscle. Charges of obstructionism by Democrats will be met with accusations of abuse of power by Republicans. With the close split in both House and Senate, compromise would seem in order but, with the election looming, look for more heated rhetoric than ever. There will be much more said than done in 2004. At least that's the way I see it, inside the beltway. ☒

Hot Wheels® Atomix Nuclear Meltdown Micro Set

Ken "Duke" Lovins, CHP
Lawrenceburg, Indiana

For all health physicists interested in consumer products dealing with radiation. . . . while Christmas shopping for my children this year, I came across a new product from Hot Wheels®. Atomix Micro Hot Wheels®—"Half the Size, Twice the Attitude." There are nine sets to collect and connect into one complete "Atomix" City. The sets include "Scrap Yard," "Half Pipe Park," etc. The most pertinent set to our field is set #5—"Nuclear Meltdown."

The text on the package says, "Long ago, as scientists worked to create powerful nuclear cars, the atoms that they used split, creating good and evil Atomix vehicles: Defenders, the cars that protect Atomix City, and Destroyers, their evil twins. Now good and evil struggle for control of Atomix City. You are at the eye of the storm. Conspiracy, sabotage, and traitors are everywhere—it's up to you to outwit the Destroyers and save the city. There isn't much time, so you'll have to launch from one cooling tower to the next before a nuclear meltdown alters the balance of power in the city forever!"

Of course, the set comes with two cooling towers with the trefoil logo, a hazardous waste pond, an "exploding" nuclear plant (storage tank and generators), a nuclear waste truck, and a two-headed crow!

The kid in me enjoys seeing toys like this and the reissue of the old Lionel Atomic train; however, this is a perfect example of how we still have so little influence on public perception of nuclear power in this country.

By the way, the set is available at toy stores and retail outlets and sells for about \$10 (yes, I bought one and play with it with my kids).

December ABET Article

John W. Poston, Sr., PhD
Professor

Ian S. Hamilton, PhD, CHP
Assistant Professor and
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We read with interest the article on accreditation in the December 2003 *Health Physics News*. One of us served on the HPS Accreditation Committee and it is good to see this activity come to fruition after several years of work. We congratulate the institutions that were accredited because we know how much effort goes into this process. However, we want to make one correction.

The BS health physics academic program at Texas A&M University should be included in the ranks of accredited programs. In fact, our program has been accredited by the Accreditation Board for Engineering and Technology (ABET) continuously since 1987 through the Engineering Accreditation Commission (EAC) rather than the Applied Science Accreditation Commission (ASAC). To maintain accreditation, the process requires another visit and evaluation every six years. We will have our next accreditation visit in the fall of 2004.

It is common practice within ABET/EAC to accredit the lowest academic degree only, thus our BS degree was the one put forward for accreditation in 1985-1986. Since this is the EAC norm, it is doubtful that our MS program will ever be

submitted for accreditation (in contrast to the example of Idaho State, which chose to exercise the ASAC option of accrediting both). However, this should not be taken as an indication of a weakness in our program, only an adherence to the normal procedure in accreditation.

Since the programs were only recently accredited, it seems that we can continue to advertise our program as the "first accredited program in health physics."

Accreditation— Completing the Story

Gen Roessler, Editor

The December issue of *Health Physics News* reported on the successful efforts of the Health Physics Society in establishing accreditation of academic health physics programs under the Accreditation Board for Engineering and Technology—Applied Science Accreditation Commission (ABET/ASAC) and on the successful accreditation of the first four academic programs.

As Poston and Hamilton point out in a letter in this issue, the pioneer academic health physics accreditation was that of the Texas A&M Radiological Health Engineering (BS) program in the mid 1980s. This program was accredited under the ABET Engineering Accreditation Commission (ABET/EAC) according to the "Program Criteria for Nuclear, Radiological, and Similarly Named Engineering Programs" with the American Nuclear Society as the lead society. Texas A&M is indeed unique among engineering schools in that this program was accredited separately from the institution's Nuclear Engineering program.

Elmer and the Air Raid Siren

By Ken Miller

When the Accident at Three Mile Island occurred, Bill Allen immediately moved to my area to help out at the Island and to take part in the recovery. He needed a place to stay and called me to ask if I knew of any place that he might rent. I told him that my neighbor, Elmer, had told me earlier in the week that he was looking for someone to rent half of his farmhouse. For Bill, that would be perfect. He had grown up on a farm. Two days later, he moved into half of Elmer's farmhouse.

Bill and Elmer hit it off from the very start, due in part to Bill's familiarity with farm life but more importantly to the fact that Bill had grown up only a stone's throw from Black Lake in New York. Every time I saw Elmer after that he would tell me that Bill wanted us to go to Black Lake fishing with him. Well, Lou, Bill, Elmer, and I finally did go on that fishing trip to Black Lake and we caught a lot of fish.

Long after Bill moved on to another job, Elmer kept asking me, "When are you going to take me to Black Lake fishing?" My reply was always the same, "Yeah, we'll go up sometime." Over the next summer he brought up the subject so many times that I finally told him that I would make arrangements and we would go. I figured that it was the only way that I could stop him from asking me about it. When I called up about a cabin, at a place of Elmer's choosing, the first opening was in September after Labor Day. So, I booked a cabin for a week. For the rest of the summer, I was continually chaffering Elmer to K-Mart so he could get more bobbers or more hooks or more of whatever fishing lure someone had told him about.

The day finally came when we

were to leave for Black Lake. I wasn't really anticipating the drive because Black Lake is way up at the top of New York and it takes nine hours to drive up there from here. But, I had a new station wagon and was at least anticipating the chance



to see how it did on a long drive. Besides, I always get at least a little excited about the chance to go fishing. When I pulled into Elmer's yard he met me at the car and said, "Well, I have it all loaded and gassed up and ready to go." "What are you talking about?" I asked him. "My car," he said. "Elmer, we're going to take my car; it's brand new," I said. "Nope, you always use your car and it's not right. This time we will take mine; Lizzie washed it for us," he said. We argued, but Elmer was not one to give in when he had his mind set on something. I really didn't want to take his car since it was a 15-year-old Plymouth that had a hole in the seat on the driver's side and a trunk that was full of fine dust from all the trips it had made in and out his dirt lane. When he told me that Lizzie had put a cushion on the front seat so I wouldn't have to sit in the hole, what more could I say? Off we went.

The trip passed without incident and we arrived at Black Lake just before dark. Our cabin was one of

four, sitting on a bluff about 20 feet above the lake. It didn't have any kind of heating system, but it did have a gas-fired refrigerator, gas range top, and a well pump (the old-fashioned type) that pumped directly into the sink. The lake was our only bathtub and the outhouse was at the end of the path. Oh well, for a kid who grew up in Plum Run Holler, I felt right at home!

We turned in early that night because it had been a long and tiring trip and because we were going fishing early because that was when Elmer said they were biting best. I have always been one of those who sleep the sleep of the dead. I think that it is called "REM" (no, not the radiation kind) sleep. At any rate, once my head hits the pillow, I am out for the night.

Somewhere around 3:00 a.m. I found myself in the streets of Paris with bombs going off all around me, buildings disintegrating from the explosions, and air raid sirens blaring. Those blessed sirens, why won't they stop? Ever so slowly I began the climb upward from subconsciousness to reality. Finally, I was able to shake my head and open my eyes. But, no matter what I did, I couldn't make the sirens stop. Finally, I called to Elmer, "Elmer, what is that noise?" "I don't know, it is coming from across the lake," was his reply. After listening for a few seconds more, I declared, "No, Elmer, it is right outside our door!" I jumped up, ran to the door, and cracked it open. The noise was coming from Elmer's car! It was his horn! I ran out, opened the door, and banged on the horn. Nothing, it kept blowing. What am I to do? It finally dawned on me that if I pulled the battery cable, it would stop. I ran back inside and got my pliers

out of my tackle box. Elmer was snoring. Back out, I threw up the hood, loosened the bolt on the battery terminal, and twisted it off the battery. At last, blissful silence! As I gently let the hood back down I glanced at the ground and could see my foot-

prints all around. There was a heavy frost on the ground. That is why I was I shivering so! At that instant, I remembered that I always sleep in the buff and I had not stopped to put anything on. Thankfully, we were the only ones in the cabins that night. I ran into

the cabin, shivering. Elmer was still snoring. I crawled back into my bed but the shivering wouldn't stop and sleep wouldn't come. At 5:00 a.m. Elmer popped out of bed to declare, "Hey Ken, are you going to sleep all day? It's time to go fishing!"



New Contributing Editor James M. Hylko

James M. Hylko is the Environmental, Safety & Health (ES&H) Manager for WESKEM, LLC at the Paducah Gaseous



Diffusion Plant located in Paducah, Kentucky. At this Department of Energy (DOE)/ Nuclear Regula-

tory Commission-regulated site, Jim oversees all WESKEM ES&H field activities associated with the DOE's Paducah Office.

Jim received his BS degree in biochemistry from Eastern Michigan University in 1984 and his Master of Public Health degree in health physics from the University of Michigan School of Public Health in 1986. Since his graduation, he has acquired a very diverse background supporting commercial nuclear power and DOE operations. On the technical side, Jim has worked at the Braidwood, Monticello, and River Bend nuclear plants; the Uranium Mill Tailings Remedial Action Project; DOE-Albuquerque Operations Office; the Waste Isolation Pilot Plant; National Emission Standards for Hazardous Air Pollutants; and Sandia National Laboratories'

Radioactive and Mixed Waste Management Facility.

After relocating to Kentucky in 2000, Jim became the new manager for WESKEM's ES&H department. Jim had previously been employed by Weston Solutions, Inc. (formerly Roy F. Weston, Inc.), which is one of the parent companies of WESKEM. When Jim first arrived, the ES&H department was comprised of another employee and him. The entire company consisted of only 50 employees. However, within a period of two years, Jim's department expanded to 18 employees to include safety, training, and compliance while the company grew to over 200 full-time and subcontractor employees. It is this latter experience that inspired Jim to teach a PEP class at the San Diego Health Physics Society (HPS) meeting (Critical Decisions) and follow up with a *Health Physics News* column, "Outside the Corner Office."

According to Jim, "Following graduation from a health physics program or related technical field, an individual's training and career-development activities typically focus on acquiring additional technical knowledge and experience. However, as we advance throughout our careers, we may be required to assume managerial responsibilities, such as supervising employees and overseeing projects. This new role requires a different set of skills in order to

supervise, guide, and influence the direction of a department and its employees. Unless we are provided specific managerial-type training by an employer, we acquire and emulate the same habits of our previous supervisors—both good and bad. My intent is to share success stories and useful lessons learned, such that *Health Physics News* readers, and even current and aspiring managers, will find this information applicable to their everyday activities."

Jim resides with his wife, Jan, and son, Erik, in West Paducah, Kentucky. In his spare time, Jim continues to remain active in the HPS (Ask the Experts, N13.50) and is an avid college hockey fan who worked as a freelance writer for the MichiganHockey.net (The University of Michigan Hockey Team) Web site (1999-2001). Jim also serves as a contributing editor for *Power* magazine, *Radiation Protection Management*, and *RSO Magazine* and is a peer reviewer for *Nuclear Technology*, published by the American Nuclear Society. One of Jim's favorite past assignments was serving as an adjunct instructor for the Department of Chemical and Nuclear Engineering at the University of New Mexico (1993-1998). Jim is recognized by the American Society for Quality as a Certified Quality Auditor and received the HPS Elda E. Anderson Award in June 2000.



Outside the Corner Office

James M. Hylko

Promotions and the Bucket of Ashes

Carl Sandburg once said the past is a bucket of ashes. So why do we promote based on past accomplishments? While interviewing employees and inquiring why they should be promoted to an upper-level managerial position, the typical responses justifying the promotion are (1) the number of years of service (that is, in the trenches) and (2) meeting target goals. Essentially, the promotion becomes equivalent to a reward. In the United States as well as most industrialized nations, it is considered normal (almost automatic) to promote someone because of long-term service and successes based on retrospective events. This is an easy and satisfying way to deal with employees based on an established process that often works. However, in a situation I faced, another employee inquiring about the same opportunity provided very different reasons: (1) the need for a change (that is, prevent burnout), (2) once promoted into the position, it was the employee's personal goal to do the job well for the company, and (3) the employee provided a plan as to how the company would benefit from the promotion. Granted, this employee had an excellent track record supervising top-performing projects in the past, thus fulfilling the retrospective account.

So who gets the promotion? Is the promotion a reasonable expectation after a few years of service? Common knowledge says yes. The pressure to promote as a reward for past accomplishments is stronger than ever. However, I suggest the alternative—promote prospectively rather than retrospectively.

One classic example of the conse-

quences associated with promoting retrospectively involved a colleague of mine. The colleague worked for a manager who was hired as a true star—promoted/appointed to a position based on retrospective successes. The manager possessed a technical degree, however, even after receiving extensive on-the-job training from the subordinates, the manager was failing miserably. My colleague had to take over the operation (almost subversively) in order for the project to succeed and work effectively. Fortunately, the manager did not need to do much, other than receive accolades for achieving project goals. Everyone knew this manager was not right for the job and was replaced. This situation was not necessarily the manager's fault. As suggested earlier, a person hired for past achievements is not always the right person for the next job. The manager, formerly a star and promoted for doing a good job somewhere else, is now looked upon internally as a "tragic figure" reassigned to a minor make-work project. The manager's future survivability is solely based on staying billable. The manager could be a star again if someone would take the time and effort to help rebuild a shattered self-image.

In this situation, the basic premise is that new managers either get trained or are run over by their own subordinates. Furthermore, it is very unfortunate when managers are "blown out of the water" by their own incompetence. We can only hope that inexperienced managers are smart enough to recognize their own deficiencies. They will need to grow into the job and, more importantly,

rely on their subordinates to achieve success. Talented subordinates leaving a company because of a poor manager can devastate an organization.

Applying this scenario to my promotion dilemma, it came down to past service versus future goals. In my position, I had only one single criterion—whether the candidate would do the future job exceptionally well. The past might be an indicator, but we cannot treat the future of our organizations by flying backwards. Unfortunately, the employee looking for the reward did not like the outcome. Businesses cannot afford to use promotions as rewards. Rewards are for a job already done well and come in the form of raises, bonuses, and recognition. Promotions are for the job to be done. They must be given for prospective—not retrospective—reasons.

Nevertheless, we still took care of the reward-based employee who contributed professionally and, in turn, was rewarded accordingly (for example, raises, bonuses, and recognition). This employee may not have understood my reasoning, but accepted the satisfaction and the reward. The goal-based employee who focused on the future—from a career and company perspective—became a successful manager, and may end up overrunning me! Neither of us could be happier with the outcome. A manager cannot do any better than be promoted into success rather than from success, which is the difference between the past being a bucket of ashes, and turning the future into one. ☒

Committee Activities

Awards Committee

John R. Frazier, CHP

The Awards Committee invites all chapters, sections, and individual members to carefully consider persons who qualify for Society awards and to submit nominations of those persons as soon as possible. Society awards for 2004 include the Distinguished Scientific Achievement Award, the Robley D. Evans Commemorative Medal, the Elda E. Anderson Award, the Founders Award, Fellow Awards, and Outstanding Science Teacher Awards. A description of each award and the respective eligibility requirements were listed in the December 2003 issue of the *News*.

Although nominations are consid-

ered for three years after they are submitted, the Awards Committee finds it helpful to receive updates of the nominations for those individuals who were not previously selected to receive an award. Nominations for Outstanding Science Teacher Awards are especially critical as there are two awards to be given this year and the number of nominees for these awards in recent years has been limited. Please remember that nominations for Society awards must be submitted by 1 March 2004 to John R. Frazier, 325 Sugarwood Drive, Knoxville, TN 37922. ☒

Nominating Committee

John Auxier, CHP, Chair

The deadline for submissions of names for candidates for the Health Physics Society officer nominations for 2005 is 1 March 2004. Please send your name as a candidate or the name of another qualified candidate to me (AUXIERA@aol.com or jauxier@auxier.com) by that date.

Positions that will be open in this election are President-elect, Treasurer-elect, and three members of the Board of Directors. It is preferred that candidates for President-elect have had Board experience. The elected officers will take office during the Annual Meeting in 2005. ☒

Section News

Accelerator Section

Robert Casey

Invitation to Submit Student Paper for Patterson Memorial Award

The Accelerator Section of the Health Physics Society (HPS) will be awarding the second annual H. Wade Patterson Memorial Award at the HPS Annual Meeting in Washington, DC. The award is for the best student poster or oral presentation in accelerator health physics or an accelerator-related topic at the 2004 HPS Annual Meeting. The Patterson award winner will receive a certificate and a \$250 check from the Accelerator Section.

The award has been established by the HPS Accelerator Section to honor the late Wade Patterson, one of the Section's founders. Students must be in attendance at the HPS

Annual Meeting to be eligible for award consideration. Entries will be evaluated on equal factors of the quality of the science and the relevance of the topic. The winning student will be recognized at the Accelerator Section special session at the Annual Meeting.

Interested students (either graduate or undergraduate) submit their paper initially through the HPS Program Committee (<http://hps.org/documents/49callforpapers.pdf>) and then provide a copy of their presentation either in hard copy or electronically, no later than 11 June 2004, to Joe McDonald, Chair, Patterson Memorial Award Committee, Pacific Northwest National

Laboratory, Mail Stop K3-53, P.O. Box 999, Richland, WA 99352; joe.mcdonald@pnl.gov; 509-375-3974.

The late H. Wade Patterson was a past president of the HPS and also served as editor of *Health Physics*. Wade was instrumental in the founding of the Accelerator Section in 1990 and served as the Section's first president. Wade is generally regarded as the first professional accelerator health physicist. He coauthored the classic text *Accelerator Health Physics* with Ralph Thomas. His notable career at the University of California, both at Berkeley and Livermore, spanned five decades. ☒

Chapter News

Rio Grande Chapter

George Anastas, CHP



Activities in Support of Homeland Defense

In October Rio Grande Chapter representatives assisted in organizing and participated in the Second Annual Homeland Security Combating Terrorism Conference held in Albuquerque. Over 500 First Responders and representatives of state and federal response agencies (including Kerry Thomas of the Office for Domestic Preparedness, and Marci Larsen, the New Mexico Point of Contact in ODP, in the Department of Homeland Security) participated in the four-day event.

Chapter representatives also have been assisting the New Mexico Office of Emergency Management (OEM) in the HDER (Homeland Defense Equipment

Reuse) Program. Chapter representatives are assisting in selecting equipment that OEM is requesting from HDER, and the Chapter representatives are checking the equipment when it arrives and before it is distributed to First Responder agencies in New Mexico.

OEM is arranging for HDER training sessions during the early part of 2004. One session will be devoted to Train-the-Trainer and Chapter representatives will be invited to attend and participate. The Chapter is working to strengthen the cooperative relationship between the Chapter



Checking the equipment—OK who has the 30-volt battery?? Left to right, Bob Redden (Preparedness Bureau Chief, OEM), Scott Field (seated, WIPP Program Manager, OEM), and George Anastas.

and the New Mexico First Responder “Community,” including the New Mexico Office of Emergency Management. We all have to work together in order to maximize the effort. ☒

South Texas Chapter

John P. Hageman, CHP



Get Your News by Email . . . “Read All About It”

The South Texas Chapter (STC) of the Health Physics Society (HPS) is trying to move into the future and from the costly US Postal Service (USPS) mailing of its newsletter, *The Billet*, to an email-only notification to its members that *The Billet* is online. *The Billet* and several past issues of *The Billet* can be viewed in their entirety online at www.stc-hps.org/billet.htm.

The Billet is currently mailed to about 280 STC members, but we are trying to reduce the costs for that mailing by asking the membership to sign up for receiving only an email that tells them when *The Billet*

is available online. The STC announced its desire to have the members sign up for this new service in its August 2003 issue of *The Billet*. *The Billet* (a small French handbill, not always a slab of metal) is published three to four times a year, one month before our Chapter’s meetings. Each issue is usually 20 to 24 pages long.

When a member agrees to the “email-only program,” his/her name is dropped from the conventional mailing list, which saves printing and postage costs—about \$2.00 per person per issue. The email-only members also get to read *The Billet* earlier than anyone else. The electronic copy of *The Billet* is easily placed on the STC Web site, and then an email notice is sent out to the “email-only list.” The time required

for printing the hard copies, stamping each one, and then having the USPS deliver the issue can add up to five days. This means that the STC news and meeting announcement arrive up to five days earlier for the email-only gang.

Currently we send the email notices to only 12 people. But, since the December 2003 issue is the first one to have the dual-delivery system available, we are very hopeful that this number will grow quickly. I will keep you informed of the success of this new approach to getting out the Chapter’s news.

For now, please visit our Web site (www.stc-hps.org) and look at the current and some past issues of our newsletter. We are proud of it and we hope you will enjoy it too. ☒

Northern Ohio Chapter

Ron Fine

The Northern Ohio Chapter of the Health Physics Society (NOCHPS) held its fall meeting on 5 December 2003 at Kent State University's (KSU) NEO Beam Facility in Middlefield, Ohio. For several members, the journey to Middlefield was a "white knuckle" drive, thanks to a northern Ohio snowstorm that decided to develop that Friday evening and made the roads very slick.

Opening

NOCHPS President Ron Leuenberger opened the meeting and welcomed members and guests. He announced the opportunity to win a door prize, a copy of *Living With Radiation: The First Hundred Years*, by William Kolb and Paul Frame. The book was highly recommended by several members, and the winner was very happy to receive it. Guests included an area high school student and two Kent State University students.

NEO Beam Tour and Demonstration

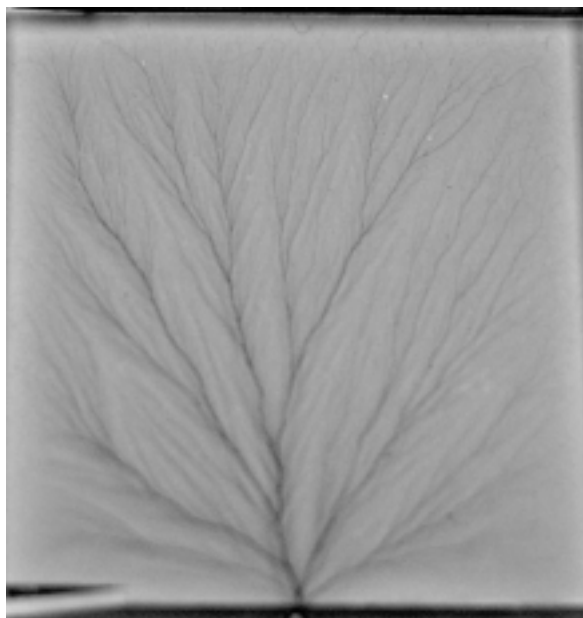
KSU's NEO Beam facility, one of Ohio's leading research facilities, is located in the town of Middlefield, Ohio, about 30 miles southeast of Cleveland. The facility is built around a Dynamitron (5 Mev and 150 kW @ 30 mA) electron accelerator. The accelerator was built and is used jointly by KSU and a local industrial partner. KSU uses the accelerator for its Program on Electron Beam Technology (PEBT) (<http://ebeam.kent.edu>), and the industrial partner uses it to irradiate plastic products. You can take a virtual tour via the



Internet at <http://www.ebeam.kent.edu/neobeam/tour.htm>.

Meeting attendees placed targets of glass, Plexiglas®, and

polycarbonate on a conveyor cart system that carries the targets through the beam of accelerated electrons. The cart under the accelerator actually passes through the beam and the targets on the cart are irradiated. A closed-circuit TV monitor allows observation of the targets traveling through the beam. Attendees used a small punch to create a dimple on one edge of small Plexiglas® squares and one end of Plexiglas® rods prior to sending them through the beam. The result was the formation of a Lichtenberg Tree, or electron tree, within the Plexiglas®. The Lichtenberg Tree originates at the small flaw created by the dimple. The photo below is of a Lichtenberg Tree created during the demonstration.



Lichtenberg tree created in a Plexiglas® square 12/5/03. The darkening will fade and the Plexiglas® will eventually clear.

Photo by Doug Bibler



Conveyor cart with system used to carry targets through the accelerator beam.

Photo from <http://www.ebeam.kent.edu/neobeam>

Science Teacher Workshop

Guest speaker Paul Williams, an American Nuclear Society (ANS) representative, described a typical ANS science teacher workshop. Paul is preparing an application for an Ohio Environmental Education Fund (OEEF) grant for purchase of Geiger Müller (GM) radiation detectors to present to teachers at future workshops.

NOCHPS prepared a Letter of Collaboration for an OEEF Grant Application to be sent to the OEEF. A request for volunteers to be listed as qualified presenters in the grant was made. Several members readily volunteered.

NOCHPS has collaborated with ANS to present workshops in the past. KSU's NEO Beam Facility is going to host a two-part science teacher workshop 7 and 21 February 2004. NOCHPS members, KSU PEBT representatives, and ANS representatives will be presenters.

NOCHPS president Ron Leuenberger, ANS representative Paul Williams, and KSU representative Ed Filppi began planning the workshop early in 2003. The ANS has presented several workshops in the area over the last few years, and NOCHPS hosted a 2001 workshop at the RMI Environ-

mental Services Facility in Ashtabula, Ohio. KSU's NEO Beam facility is an ideal location for the workshop because of its convenient location for area teachers and because of its spacious facilities.

Traveling Radiation Museum

Darwin Boyd, a physicist and KSU professor, displayed and described radioactive artifacts that he has been acquiring. The collection included a child's Gilbert Atomic Laboratory Chemistry set circa the 1950s, complete with uranium acetate and spintharoscope. Also in the collection are a Radium Revigator and several items containing radioactive material that have been or are currently readily available to the public. It was interesting to hear how many health physicists attending the meeting had collections of such materials, and how a couple of them have lead-lined boxes in their basements where they store their radioactive treasures.

Emergency Response Training

NOCHPS has an interest in providing training for community emergency response personnel such as fire and police departments. It was decided that the first priority is



NOCHPS President Ron Leuenberger, left, and NOCHPS member Ron Fine.

Photo by Doug Bibler

to identify the specific target group that could benefit the most from the training.

NOCHPS plans to sponsor a Symposium on Homeland Defense in the fall of 2004. The symposium would be hosted by a medical facility in downtown Cleveland and presented during daytime hours (full day) on a weekday.

This will be explored further at the next meeting.

2004 Goals

Proposed NOCHPS goals for 2004 were discussed. Some potential goals identified were:

Education

- Host Science Teacher Workshops, cosponsor ANS workshops and OEEF grant application.

- Facilitate placement of interns from KSU
- Promote development of KSU Health Physics degree program

Increase Membership

An initiative to increase membership is being headed by NOCHPS President-elect John Wills. Groups identified as targets for recruiting are:

- Nuclear Power-ANS—there are two nuclear power plants in northern Ohio
- National Registry of Radiation Protection Technologists membership
- American Association of Physicists in Medicine
- Emergency Management Agency, Homeland Defense
- KSU faculty and students

Financial Sponsorship

- Solicit corporate sponsorship
- Create provisions for discretionary spending for president and vice president

One vendor representative pledged his company's corporate sponsorship.

The meeting adjourned, and the participants were relieved to find that the snow had stopped falling and the roads home had been cleared. ☒

As Seen by Bela Kovach



Dennis L. Angelo



Jim DeZetter



Jose Lopez

Notes

DRH Reception

John C. Villforth, CHP

The former members of the Public Health Service (PHS) and US Environmental Protection Agency (EPA) radiological health programs (including the old Division of Radiation Health [DRH], and later the Bureau of Radiological Health, and now the Food and Drug Administration Center for Devices and Radiological Health) have been getting together each

October for the past 15 years for a wine and cheese reception in Bethesda, Maryland, to reminisce about the various aspect of the radiological health accomplishments of these agencies. On 17 October



From left to right: Fred Rueter, Jay Silhanek, Ray Daniels, Mort Goldman, Dave Janes, Dade Moeller (HPS Past President), Bernie Shleien, and Nancy Paquin.

2003, a group of about 65 retirees—mostly from the Washington, DC, area, but some from as far away as California, North Carolina, and New Jersey—shared memories of friends and programs.

This year there was a group of retirees who were involved in various aspects of environmental surveillance, some going back to the late 1950s. Part of this group is shown in the photograph.

The rad health “wine and cheese reception” in 2004 will be Friday evening, 15 October, in Bethesda, Maryland. Any of the present or former members of the EPA or PHS programs who

would like to know the details of this event may contact John C. Villforth at jcvillforth@erols.com. Here is your chance to get caught up on the activities and the people who worked with you. ☒

A New Look for the HPS Web Site

Andy Karam, CHP, HPS Web Site Associate Editor

Those of you logging on to our Health Physics Society Web site (www.hps.org) will find a new look and improved functionality. Webmaster Fred Baes has done yeoman work in the redesign to come up with a site that is much

more attractive and a LOT easier to use than the previous version. Improvements include drop-down menus, a more attractive look, and a structure that is easier to follow. Good job, Fred!

Next, we’re going to be tack-

ling the Frequently Asked Questions and the Ask the Expert feature to make these easier to use. Many of these changes are in response to comments posted by Web users—so keep the comments coming in. ☒

New HPS Officers

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

President-elect: Ruth E. McBurney

Secretary-elect: Richard R. Brey

Board of Directors:

Joseph L. Alvarez

Eva E. Hickey

Robert C. Whitcomb

These officers will begin their terms in July 2004.

HPS Annual Meeting 2004
Wardman Park Marriott
Washington, DC

Paul Marshall



at the National Institutes of
Standards and Technology
(NIST)

• Medical Cyclotron Facility

at the National Institutes of
Health (NIH)

- Medical Health Physics at the Washington Hospital Center
- NASA/Goddard Space Flight Center in Greenbelt, Maryland

The social tours below were selected from a long list with the idea of providing something for everyone beyond the range of options that are easily accessible without organized group transportation and guides.

- DC City Tour
- DC at Night
- Potomac River Cruise to Mount

The Baltimore Washington Chapter is looking forward to the next annual meeting to be held 11-15 July. In addition to the almost unlimited number and variety of excursions available to meeting attendees, we are excited to offer a range of facilitated technical and social tours. The technical tours will highlight the rich diversity of health physics applications in the Baltimore-Washington corridor. These will include visits to:

- Reactor and Cold Neutron Facility

Vernon

• Baltimore City—Camden Yards, National Aquarium, and Inner Harbor

• Virginia Wine Country

• Kennedy Center production of “The Producers”

• 100 Years of Flight at the Smithsonian Air and Space Museum, Dulles Annex

• Tour and Mass at the Basilica and Shrine of the Immaculate Conception

• Tour and Evensong at the Washington National Cathedral

Things are shaping up nicely for the meeting. Stay tuned to the *News* next month for a primer on how to get around in DC. See you in DC in 2004!



Carl M. Unruh (1928-2003)

Ronald L. Kathren, CHP
Iral C. Nelson

Retired health physicist Carl M. Unruh died on 2 December 2003 at his home at Kala Point near Port Townsend, Washington, at the age of 75. Carl was born 28 April 1928 in Hutchinson, Kansas, and earned his BS and MS degrees in chemistry from the University of Kansas.

Upon receipt of his MS in 1952, Carl joined the staff of the General Electric (GE) Company at the Hanford site, transferring to Battelle Memorial Institute when it became the operating contractor in 1965 for what is now the Pacific Northwest National Laboratory, retiring from Battelle in 1986 after a 34-year-long and highly productive career in health physics. Under his leadership, the staff of the Radiological Development and Calibrations Operation section at GE and later Radiological Physics Section at Battelle flourished, developing many innovative and practical tools for operational

health physics, including an advanced state-of-the-art film badge that incorporated a criticality and



high-range dosimeter package which served as a model for other nuclear sites. Subsequently he led a major

effort to determine the statistical variability, accuracy, and precision of film badges at the major atomic energy sites.

Carl was not only superbly qualified in the scientific and engineering bases of health physics and a fine researcher, but also was blessed with excellent management and leadership skills. With respect to staff reporting to him, he capitalized on their strengths, worked around their weaknesses, and was a warm-hearted mentor to all. He served in a number of senior-level management

positions during his career, including heading the Radiation Protection Department which had responsibility for various site-wide aspects of health physics at Hanford and overall responsibility for health physics and safety at Battelle-Northwest.


He was a great boss and one who could provide keen and often imaginative insight into complex and unusual technical problems as well as the more mundane everyday professional activities. Thus he was often called upon by top management to take temporary leave from his line management and scientific responsibilities to head or work in a senior technical capacity on major projects, including the Environmental Impact Statement for Management of Commercially Generated Radioactive Waste (also referred to as the GEIS, or Generic EIS) which contributed to the Department of Energy decision on the path for disposal of commercial high-level waste. Carl was professionally active, serving the Health Physics Society in numerous capacities,

including a stint on the Board of Directors (1973-1976) and as President (1978-1979). He was made a diplomate of the American Board of Health Physics in 1962 and was a member of the American Nuclear Society and American Industrial Hygiene Association.

In addition to his contributions to health physics, Carl was a well-known rockhound and lapidary enthusiast, publishing a nationally distributed newsletter, contributing numerous articles to various mineralogical publications, and

publishing “how to” gemstone faceting books. In his retirement years, he was able to devote more time to his hobby and passion, continuing and expanding his publications, lecturing, and participating in various activities of the Intermountain Faceter’s Guild and the Golden Spike Gem and Mineral Club, of which he was a member and to whom he left his vast collection of rough and superbly cut gemstones. He was also chair for Long Range Planning for the Northwest Federation of Mineralogi-

cal Societies.

To those of us who had the privilege of working with and for him, Carl will be remembered with great fondness. He was a consummate gentleman and outstanding professional health physicist, always fascinating to talk with and listen to, who earned and commanded the respect and admiration of his colleagues and staff. In addition to his wife of 47 years, Doris, he leaves a large number of coworkers and friends to mourn his passing. 

Howard Milton Prichard, III (1946-2003)

John R. Frazier, CHP

Howard Milton Prichard, III, was born on 3 June 1946, in Neptune,

New Jersey. He attended elementary school and high school in Arkansas. During those early years, Howard developed a strong



interest in science. After graduating from high school in Flippin, Arkansas, in 1964 as class valedictorian, Howard attended the University of Missouri at Rolla and graduated in 1969 with a BS degree in physics. While working on his degree at Rolla, Howard also worked for a total of two years at the Y-12 Plant in Oak Ridge, Tennessee, as part of an internship program in physics. During his time in Oak Ridge, he acquired an interest in health physics—the field that became his lifelong profession.

In 1972, Howard earned an MS degree from Rice University in

space science. His thesis research was on low-energy gamma-ray spectral measurements of an anomaly in Scorpius. In 1978, Howard completed the PhD degree in community health sciences with Tom Gesell at the University of Texas School of Public Health in Houston. His research and dissertation involved the assessment of radiation dose from radon in water. This was a pioneering effort that spawned a large amount of follow-on research, culminating in a report by the National Academy of Sciences and efforts by the US Environmental Protection Agency to regulate radon in drinking water. As a part of the research, he developed a liquid scintillation-based measurement method for radon in water. The method that he helped to develop is widely used throughout the world today.

Howard worked in several capacities at the University of Texas School of Public Health from 1973 to 1990, becoming a postdoctoral student upon graduation in 1978 and a member of the faculty in 1981. He taught graduate courses in radiological health and environmental sciences and conducted research on natural radioactivity and the biological effects of radiation in the space

environment. He did pioneering research on the contamination of equipment in the natural gas industry by naturally occurring radionuclides. Howard also did some of the early work on fate and transport of man-made radionuclides in sanitary sewerage and treatment facilities, a topic that is still of interest.

In 1990, Howard and his family moved to Knoxville, Tennessee, to work with a group of health physicists headed by John Auxier—first at IT Corporation and then with Auxier & Associates. During the last 13 years he directed radiological characterizations of several sites throughout the United States, he performed environmental radiation dose and risk assessments, and he served as an advisor on tort litigation involving radiation and radioactive materials.

He was active in his professional society—the Health Physics Society—and served for six years on the Part II panel of examiners of the American Board of Health Physics. Howard served as a technical reviewer of articles submitted to *Health Physics*. He also presented several papers and continuing education lectures at meetings of the Health Physics Society.

With a distinguished educational

background, dozens of scientific publications to his credit, and a long history of research, teaching, and other professional activities, one would think that these are the accomplishments by which Howard would want to be remembered. However, Howard made it known that although his professional contributions as a scientist were very important to him, the driving

forces in his life were his love of his family, his love of nature, and his desire to make a difference in the world.

Over the past two years, Howard became a hero to those who knew him well. He fought a long, hard battle with cancer, he continued to be a committed scientist to the end, and he spent the last few weeks of his life courageously and with

dignity. On 13 December 2003, after six weeks without substantial nourishment because of the advanced stage of his colon cancer, Howard passed from us. We lost a good scientist, a nice person, a good husband and father, and a good friend. He is greatly missed by his wife, Trish, his two daughters, Roxanne and Andrea, and all who knew and loved him. ☒

William Emmett Bolch, Jr. (1935-2003)

Wesley E. Bolch, CHP

William Emmett Bolch, Jr., of Gainesville, Florida, passed away on Saturday, 27 December 2003 at the E.T. York Hospice Care Center. He was 68 years old.



Emmett was born in Lenoir, North Carolina, on 27 October 1935. He

studied preengineering at Southwest Texas State Teachers College (LBJ's alma mater) and he later transferred to the University of Texas at Austin,

earning his BS degree in civil engineering in 1959. Upon graduation, he was commissioned as a Lieutenant in the US Air Force and served as Sanitary and Industrial Hygiene Engineer at Lackland AFB in San Antonio, Texas. In 1962, he returned to UT-Austin to obtain an MS degree in radiological health. He received his PhD degree in health physics in 1967 from the University of California, Berkeley, under a US Public Health Service Fellowship. The previous year, he joined the faculty of the newly created Department of Environmental Engineering Sciences at the University of Florida. Emmett directed a variety of research programs in radiological health, including grants and contracts with the Centers for Disease Control and Prevention, the Florida

Institute of Phosphate Research, the US Nuclear Regulatory Commission, and a 20-year contract with Florida Power Corporation for environmental surveillance of the Crystal River Nuclear Power Plant. Emmett graduated some 300+ students with MS and/or PhD degrees. He was a recipient of two departmental and one college Teacher-of-the-Year awards, he was a registered Professional Engineer in the state of Florida, and in 2002 he was named Fellow of the national Health Physics Society.

Survivors include his mother Gladys Bolch, his wife of 44 years, Sandra Talley Bolch, son Wesley Bolch, daughter Elizabeth (Betsy) Bolch, and granddaughters Charlotte and Caroline, all of Gainesville, Florida. ☒

Vern C. Rogers, CHP, PE (1941-2003)

David Bernhardt, CHP

The radiation protection community lost a valuable member and friend on 18 December 2003. Vern C. Rogers died peacefully at his home in Bountiful, Utah, with his family present, after a protracted illness from cancer. Vern was a long-time member of the Health Physics



Society and was a member and Fellow of the American Nuclear Society. Much of his professional life was associated with Rogers and Associates Engineering Corporation (RAE), which he founded with his father in 1980. Each of his four sons had the opportunity to thrive and provide unique professional contributions to RAE as their careers evolved. Vern loved his work, loved his family, and

served his church. Geri, his sister, noted that even as a teenager he was humble and his family did not know of his many awards and accomplishment in school. He always found great pleasure in solving seemingly unsolvable mathematical and technical problems and finding "simple" solutions.

Vern received a BS in physics and, in 1965, an MS in mechanical engineering from the University of Utah and received his PhD in nuclear engineering in 1969 from Massachusetts Institute of Technol-

ogy (MIT). Continuing his lifelong search for knowledge, he obtained his PhD in economics from the University of Utah in 2002. As part of his quest for education and excellence he also taught at the University of Utah, Brigham Young University, the University of Massachusetts Lowell, and MIT and was a thesis supervisor for graduate students. His professional teaching included nuclear engineering, chemical engineering, physics, and economics. As part of his church and spiritual life he served on a mission in Canada and Alaska and showed strong passion for studying the scriptures and shared his enthusiasm in teaching classes.

Vern's nonacademic professional work prior to starting RAE included Assistant Nuclear Engineer with Argonne National Laboratory at the Idaho Engineering Laboratory; Manager of the Nuclear and Applied Science Department at IRT Corporation in San Diego, California; and his return to Utah as Vice President of Ford, Bacon & Davis Utah, Inc.,

in 1977. While with Ford, Bacon, & Davis he was Manager of Nuclear and Advanced Programs and was extensively involved in the Inactive Uranium Mill Tailings and Formerly Utilized Sites Remedial Action Programs and programs for disposal of radioactive waste.

In 1980 Vern, with his father, making it a two-man company, reached out and started RAE Corporation in Salt Lake City, Utah. RAE flourished and its excellence became known throughout the United States. With Vern's guidance and active professional involvement (he was always technically active in projects), RAE became well known for excellence and superb knowledge of radioactive and mixed waste characterization and disposal, performance assessment and environmental pathways modeling, radiation risk assessment, radon diffusion, and site characterization and remediation. Vern always showed interest in his employees and, as an employee-owned company, RAE provided an environment where workers were

supported and given the opportunity for professional growth and accomplishments.

Vern was active in many professional societies; he presented numerous professional papers and Professional Enrichment Programs at Health Physics Society meetings. He was certified by the American Board of Health Physics and was a member of the Certification Exam Committee. He was a member of National Council on Radiation Protection and Measurements committees, International Atomic Energy Agency working groups, and National Academy of Sciences subcommittees.

Vern was always positive and showed that he loved life, both in work and play. To the end, even after a painful illness, he was thankful for the blessings in his life and was interested in others. The opening song at his funeral, "There is Sunshine in My Soul Today," characterized his life. Vern is survived by Pat (his high school sweetheart and wife of 41 years), six children, and 20 grandchildren. ☒

Announcements

14th International Conference on Solid State Dosimetry

The 14th International Conference on Solid State Dosimetry will be held in New Haven, Connecticut, 27 June-2 July 2004. This series of scientific conferences began in 1965 at Stanford, California, initially focusing on luminescence dosimetry. Since then it has expanded its original scope and has become a traditional forum for exchange of information and experience on the current variety of solid state processes and methods available for radiation dosimetry.

The event has been planned to

stimulate and encourage closer relations and provide opportunities for interaction among solid state dosimetry specialists involved in research, development, applications, or service management. A technical exhibit will provide selected companies with the opportunity to present state-of-the-art instrumentation, highlighting their products and services while at the same time supporting this conference.

More information about the Conference can be obtained by going to the Conference Web site (<http://www.ssd14.org>). The Conference Secretariat can be

contacted by email (suzanne.miranda@yale.edu) or by phone (203-785-2971). ☒

International Dosimetry Symposium

The 24th Annual International Dosimetry Symposium and National Dosimetry Records Conference will be held 7-11 June 2004 at Big Sky Resort, Montana. The meetings are of interest to ionizing radiation dosimetry and dosimetry records systems professionals. More information may be found at <http://tlds Symposium.nukeworker.net/>. ☒

The 2003 HPS Salary Survey

Chris Graham and Andy King
AmerenUE Callaway Plant

Introduction

This year's health physicist salary survey data was collected in conjunction with a Web-based survey of the entire Health Physics Society (HPS).

Gary Lautenschlager reported the CHP salary survey results separately in the December 2003 *CHP News*, Volume 13, Number 2. The results reported in this survey do not include respondents who are CHPs.

Questions about this survey should be directed to Chris Graham via email: ccgraham@cal.ameren.com.

The number of participants decreased compared to the 2002 and 2001 HPS Salary Surveys. There were less than 400 participants in this year's survey compared to 660 in the 2002 survey and 539 in the 2001 survey.

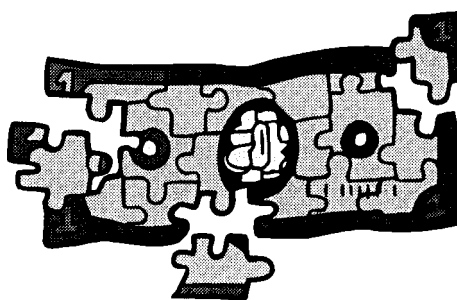
Data Analysis

The salary ranges marked by HPs on the completed survey forms were rounded to the midpoints of those ranges before statistical analyses were performed. For example, if a salary was marked in the range \$50,000 to \$54,999, then it was rounded to the midpoint value of \$52,500.

Responses from those who were either part-time or retired were not

analyzed, since the data did not appear to allow meaningful comparisons to be made.

There has been no attempt to analyze and draw conclusions from the data; this is left to the reader.



In addition to the salary information, there are tables which provide a breakdown of experience by education level and job responsibility by education level to assist the reader in interpreting the salary data. HP salaries by region are also presented in this report.

Data Presentation

In an effort to make the results of the survey interesting and useful, HPs were subcategorized in several ways by education, primary job responsibility, years of experience, region, and combinations of these subcategories.

Readers are cautioned that for statistical validity and in order to

preserve anonymity, results are provided only if there were 10 or more responses within that subcategory. Data presented for one subcategory may not be possible for another subcategory. Note that with the lower number of participants, there are fewer subcategories than in previous years.

Every effort was made to keep the subcategories consistent with the previous HPS Salary Surveys.

The tables show results for full-time HPs who received health, vacation, and retirement benefits from their primary employer.

Acknowledgments

Many thanks to all who participated in this survey. Your participation benefits the entire health physics community. Special thanks to Scott Medling for his helpful comments and suggestions and for coding the survey and making it available on the Internet, and a very special thanks to Gary Lautenschlager for initiating the CHP salary survey from which this survey was born. The careful reader may also note an uncanny similarity between this report and the CHP salary survey report. Any similarities are entirely intentional; let's call it recycling good ideas—again.

Table 1:

Experience by Education Level

Education	Responses	<6 Years Experience	6-15 Years Experience	>15 Years Experience	<6 Years Current Job	≥6 Years Current Job
BS Health Physics	33	4	9	20	19	14
MS Health Physics	165	6	55	104	79	86
PhD Health Physics	28	3	9	16	12	16
MS Nuclear Engineering	18	1	4	13	7	11
Bachelor's Other	52	1	10	41	23	29
Master's Other	42	3	13	26	23	19
PhD Other	34	2	7	25	16	18
Total Responses:	372					

Table 2:

Job Responsibility by Education Level

Job Title	Responses	Nondegree Associate Degree Technical Degree	Bachelor's (all)	Master's (all)	Doctorate (all)
Professional Staff	219	6	54	114	45
Supervisor Professional Staff	94	4	18	58	14
RPM/RSO	73	0	18	47	8
Facility Manager	10	0	2	7	1
Total Responses:	396				

Table 3:

Salary by Education and Experience

Education	Experience	Responses	Average	Median	Maximum	Minimum	Std. Dev.
BS Health Physics	>15 yrs	20	92,375	91,250	146,250	41,250	22,294
MS Health Physics	6-15 yrs	56	83,616	81,250	148,750	53,750	16,898
MS Health Physics	>15 yrs	108	98,889	93,750	175,000	51,250	23,316
PhD Health Physics	>15 yrs	17	110,000	106,250	175,000	73,750	27,429
MS Nuclear Engineering	>15 yrs	14	93,928	86,250	146,250	53,750	26,557
Bachelor's Other	6-15 yrs	11	67,159	63,750	93,750	51,250	12,955
Bachelor's Other	>15 yrs	41	87,408	86,250	173,750	46,250	26,499
Master's Other	6-15 yrs	13	75,865	78,750	96,250	46,250	17,555
Master's Other	>15 yrs	26	91,923	86,250	175,000	51,250	31,435
PhD Other	>15 yrs	25	108,750	108,750	151,250	58,750	24,281
Total Responses:		331					

Table 4:
Salary by Region*

Region	Responses	Average	Median	Minimum	Maximum	Std. Dev.
Midwest	56	84,955	81,250	41,250	161,250	26,680
Northeast	57	93,377	86,250	36,250	175,000	28,657
South	125	87,060	86,250	38,750	175,000	23,570
West	129	97,267	93,750	38,750	175,000	24,925
Total Responses	367					

* The four major regions of the United States as defined by the US Census Bureau for which data are presented represent groups of states as follows:
Northeast—Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont.
Midwest—Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin.
South—Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia.
West—Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming.

Table 5:
Salary by Employer

Employer	Responses	Average	Median	Minimum	Maximum	Std. Dev.
Federal Government	61	90,143	88,750	51,250	148,750	21,137
State Government	14	64,107	61,250	48,750	86,250	11,888
Medical Facility	18	76,528	73,750	46,250	108,750	16,536
Consulting Firm	46	100,245	96,250	41,250	175,000	30,182
University	61	79,570	76,250	36,250	148,750	24,151
National Laboratory	55	101,341	101,250	63,750	161,250	20,446
Government Contractor	60	88,417	88,750	53,750	173,750	18,402
Nuclear Power Utility	43	93,169	88,750	48,750	175,000	25,322
Other Commercial	34	97,794	93,750	48,750	161,250	29,076
Total Responses	392					

Table 6:
Salary by Education Level

Educational Level	Responses	Average	Median	Minimum	Maximum	Std. Dev.
BS Health Physics	34	82,720	88,750	38,750	146,250	24,627
MS Health Physics	170	92,353	88,750	36,250	175,000	23,368
PhD Health Physics	29	100,948	103,750	61,250	175,000	26,461
MS Nuclear Engineering	20	90,375	86,250	48,750	146,250	24,739
Bachelor's Other	53	82,524	76,250	46,250	173,750	25,691
Master's Other	42	87,440	86,250	46,250	175,000	27,735
PhD Other	34	100,441	93,750	53,750	151,250	26,938
Total Responses	382					

Table 7:

Salary by Job Responsibility

Job Responsibility	Responses	Average	Median	Minimum	Maximum	Std. Dev
Professional Staff	219	87,728	86,250	36,250	175,000	24,104
Supervisor Professional Staff	94	93,298	93,750	51,250	161,250	21,188
RPM/RSO	73	88,733	86,250	41,250	175,000	24,014
Facility Manager	10	112,125	98,750	53,750	175,000	44,088
Total Responses	396					

Table 8:

Salary by Field of Expertise

Expertise	Responses	Average	Median	Minimum	Maximum	Std. Dev.
Administration	43	98,634	93,750	53,750	161,250	24,452
Applied HP	125	86,030	86,250	36,250	171,250	22,884
Dosimetry	34	94,449	88,750	48,750	175,000	24,628
Education	11	90,341	88,750	38,750	148,750	31,884
Environmental	38	85,789	83,750	48,750	123,750	17,221
Radiological Assessment	30	97,833	93,750	56,250	151,250	28,295
Regulations/Standards	31	85,121	86,250	41,250	143,750	22,637
Waste Management	11	101,136	101,250	53,750	175,000	42,162
Reactors, Power	34	99,485	93,750	48,750	175,000	30,527
Medical Physics	10	70,000	63,750	46,250	106,250	17,330
Instrumentation	10	86,250	83,750	61,250	121,250	15,635
Total Responses	377					

Table 9:

Salary by Bachelor's Degree and Employer

Employer	Responses	Average	Median	Minimum	Maximum	Std. Dev.
Federal Government	12	81,250	88,750	51,250	106,250	17,965
Consulting Firm	14	109,286	108,750	43,750	171,250	34,975
University	14	60,000	61,250	38,750	81,250	11,919
Government Contractor	17	85,956	76,250	61,250	173,750	25,585
Nuclear Power Utility	13	85,481	86,250	48,750	121,250	20,010
Total Responses	70					

Table 10:

Salary by Master's Degree and Employer

Employer	Responses	Average	Median	Minimum	Maximum	Std. Dev.
Federal Government	35	93,750	88,750	51,250	148,750	20,064
Medical Facility	13	76,826	83,750	46,250	96,250	15,980
Consulting Firm	23	94,239	93,750	41,250	175,000	29,778
University	31	81,250	81,250	36,250	123,750	21,223
National Laboratory	34	101,029	101,250	63,750	161,250	20,239
Government Contractor	29	90,302	91,250	66,250	126,250	11,791
Nuclear Power Utility	26	96,538	88,750	53,750	175,000	28,241
Other Commercial	23	97,337	91,250	48,750	161,250	31,720
Total Responses	214					

Table 11:

Salary by Doctorate Degree and Employer

Employer	Responses	Average	Median	Minimum	Maximum	Std. Dev.
Federal Government	12	93,333	88,750	63,750	141,250	24,070
University	16	93,437	88,750	53,750	148,750	27,216
National Laboratory	12	110,000	108,750	81,250	153,750	22,900
Government Contractor	12	88,958	83,750	61,250	128,750	18,993
Total Responses	52					

Table 12:

Salary by University and Job Responsibility

Job Responsibility	Responses	Average	Median	Minimum	Maximum	Std. Dev.
Professional Staff	22	76,477	63,750	36,250	148,750	29,870
Supervisor Professional Staff	10	79,250	68,750	56,250	108,750	18,174
RPM/RSO	27	81,713	76,250	46,250	131,250	20,334
Total Responses	59					

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ABMP Announces Changes in Medical Health Physics Certification Process

The American Board of Medical Physics has now created a three-year window (January 2004 to December 2006) to allow the entrance of well-experienced medical health physicists (MHP) to their examination for certification in MHP. Candidates with a BS degree

from an accredited university in physics, medical physics, or another appropriately related field and with 15 years of experience in medical health physics should now apply. Also, now eligible for this three-year period are those certified by the American

Board of Health Physics with five years of experience in medical health physics.

Applications may be obtained from the ABMP, c/o Credentialing Service, Inc., P.O. Box 1502, Galesburg, IL, 61402-1502 or telephone: 309-343-1202. ☒

Omission from the December 2003 *CHP News*

In the December 2003 *CHP News*, item 12.2, Study of Taiwanese Population, referenced a motion that was inadvertently omitted from the article. The motion is stated below.

The AAHP was to write a letter to the US Department of Energy (DOE) (Marvin Frasier) to encourage study of a Taiwanese population that has been exposed to low-dose radiation (from Co-60 in rebar) and that has expressed significantly reduced cancer rates. Additionally Otto Raabe pointed out that the DOE program is looking at doses less than 10 rem (average dose in the Taiwanese population is 35 rem) and that a scientist would need to make a proposal to DOE that the Academy could then support. ☒

The display ads and short courses are available in the hard-copy version of *Health Physics News*.

Placement Center

Employers Seeking Health Physicists

The maximum length for each description is 300 words. There is no charge for this service. Send placement advertisements to:

SHARON R HEBL
MANAGING EDITOR
19890 FISH LAKE LN
ELYSIAN MN 56028
Phone: 507-362-8958
Fax: 507-362-4513
Email: hpsnews@frontiernet.net

Listings that reach the office by the 25th of February will appear in the April issue of *Health Physics News*. If requested, your job offer will also be placed on the HPS Web site at the time of receipt.

Listings are by equal opportunity, affirmative action employers. *Health Physics News* retains the right to edit ads to newsletter format.

EXELON NUCLEAR Corporate Headquarters, 4300 Winfield Road, Warrenville, IL 60555

Description: Exelon Nuclear is the largest generator of nuclear power in the United States, third largest in the world, with 10 nuclear power stations housing 17 reactors in three states and with Regional Offices in Chicago and Philadelphia. We have excellent career paths in health physics for radiation protection professionals, including degreed health physicists and RPM-qualified individuals. We are also interested in personnel who have had previous experience in emergency planning and/or chemistry. We offer excellent salaries, comprehensive benefits, and the opportunity to get involved in leading-edge technology with the largest generator of nuclear power in the United States. Send résumé to nukecareers@exeloncorp.com and careers@exeloncorp.com with Reference Code ENHPSRAD. Additionally, please feel free to visit our Web site at www.exeloncorp.com.

LAWRENCE BERKELEY NATIONAL LABORATORY, Berkeley, CA 94720-8076

Description: Health Physicist—Working within the EH&S Division of Lawrence Berkeley National Lab (LBNL), the health physicist will

support the Operational Health Physics Group (OHP) that provides health physics support to the LBNL research community including the 88" Cyclotron, the Biomedical Imaging Facility (PET/Cyclotron), biomedical and actinide chemistry research. To learn more about the EH&S Division's work, visit our Web site at <http://www.lbl.gov/ehs/>. The health physicist will help implement and maintain radiation work authorizations issued to control the use of unsealed and sealed radioisotopes. Responsibilities include performing hazards evaluations, recommending appropriate controls and monitoring, conducting audits of work areas and facilities, performing ALARA reviews, recommending corrective actions when necessary, and monitoring employee external and internal doses. Additional responsibilities include writing applicable procedures, evaluating radiation monitoring equipment, supervision of radiological control technicians, managing required records, and performing radiation safety training. The position reports to the OHP group leader. The candidate must possess a BS in health physics or related discipline and/or have a minimum of seven years of experience in radiological safety at the professional level. Advanced degrees and/or progression toward certification (CHP) are desired and may be substituted for experience requirement. Excellent written and oral communication skills, previous supervisory responsibilities, and project management experience are required. Direct experience with the development and implementation of programs to meet 10 CFR 835, 49 CFR, and part 20 requirements is highly desirable. Go to www.lbl.gov for more details about LBNL. You can apply online at <http://cjo.lbl.gov>. Alternatively, you can email your résumé/CV to AVPJobs@lbl.gov. Please reference EH/015570/WHPS. LBNL performs unclassified research. No security clearance required. We are an AA/EOE, committed to a diverse workforce.

UNIVERSITY OF NEVADA LAS VEGAS, Department of Health Physics, 4505 Maryland Parkway, Las Vegas, NV 89154-3037

Description: Assistant or Associate Professor. The Department of Health Physics at UNLV has an opening for a full-time tenure track faculty member beginning in August 2004. This position involves teaching at the undergraduate and graduate level in the health physics and CMI programs as well as service and research duties in accordance with University criteria. Applicants should have academic experience and a record of research accomplishments in one of the following areas: operational health physics, medical physics, environmental health physics, or radiochemistry. A PhD in a related science or engineering discipline is required. A curriculum vitae, three letters of professional reference, original transcripts from all institutions attended, and statements outlining your research program and teaching interests should be addressed to Dr. Steen Madsen, Search Committee Chair. Application reviews will begin 15 February 2004.

Description: Laboratory Supervisor. Applicant will manage the day-to-day operations of the Department's research and teaching laboratories. They will be responsible for the calibration and maintenance of all analytical, testing, and imaging equipment; administrative functions associated with laboratory operation; and the training of researchers in equipment operation. Fieldwork related to sample collection will be required. This position requires a BS degree (MS preferred) in nuclear or radiochemistry, health physics, radiological sciences, or a related field. Experience in radiochemistry, radiation spectrometry, or laser applications is preferred. A résumé, three letters of professional reference, and original transcripts from all institutions attended should be sent to Dr. William H. Johnson, Chair, Department of Health Physics. Application reviews will begin 15 February 2004.

UNLV is a doctoral-degree-granting institution with more than 24,000 students and 700 faculty members. Over 180 undergraduate, master's, and doctoral degrees are offered. Founded in 1957, UNLV is located on 337 acres in dynamic Southern Nevada. The university is ranked in the category of Doctoral/Research Universities-Intensive by the Carnegie Foundation for the Advancement of Teaching. The Department of Health Physics at UNLV offers BS degrees in health physics, nuclear medicine, and comprehensive medical imaging (CMI) and an MS degree in health physics and is involved in a proposed PhD program in applied radiochemistry. In addition, the Department offers a certificate in radiography. The Department's facilities include an extensive low-level counting facility, radiochemistry laboratories, sediment core and soil analysis laboratories, an aquatic systems sampling badge, a biomedical laser laboratory, a DEXA scanner, three radiological imaging machines, a mammography machine, and film processing laboratories. For more information, see the UNLV Web site at <http://www.unlv.edu>.

RESEARCH PARTICIPATION PROGRAM - USACHPPM, Oak Ridge Institute for Science and Education, PO Box 53, Aberdeen Proving Ground, MD 21010-0053; email: Joanne.Rasnake@apg.amedd.army.mil; 410-436-7257; fax: 410-436-5811
Attn: Joanne Rasnake

Description: Research Participation Program for the US Army Center for Health Promotion and Preventive Medicine; Medical/Optical Physics Research; Project #CHPPM 39-03. A research appointment is available at the USACHPPM, Aberdeen Proving Ground, Maryland involving Medical/Optical Physics. Project areas include, but are not limited to, the following: Assist in conducting laboratory studies of ultraviolet radiation and laser hazards and the evaluation of potential control measures; Review of scientific literature related to Medical/Optical Physics; Limited travel. Applicants should have received a bachelor's or master's degree in physics, optics, health physics, or related discipline, or expect to complete all requirements for such a degree prior to the desired starting date. Applicants familiar with laboratory operations, quality assurance and quality control concepts, and statistics are highly desirable. Other applicants will be considered on a case-by-case basis. The program is open only to US citizens, without regard to race, sex, religion, color, age, physical or mental disability, national origin, or status as a Vietnam-era veteran or disabled veteran. Appointment is for one year and may be renewed for two additional years upon recommendation of USACHPPM/host facility and subject to the availability of funds. Participant will receive a monthly stipend. Inbound travel and moving expenses may be reimbursed according to established policies. Applications are accepted and processed on a continuing basis. If you are interested in this program, please email your résumé and request an application. The Research Participation Program for USACHPPM is administered by the Oak Ridge Institute for Science and Education. Please reference Project # CHPPM when calling or writing for information. For additional information and application material contact Research Participation Program - USACHPPM using the contact information shown above.

WASTE CONTROL SPECIALISTS, PO Box 1129, Andrews Texas, 79714

Description: WCS is looking for a Staff Health Physicist or Radiological Engineer for its mixed waste treatment and storage facility near Andrews, Texas. The responsibilities include special nuclear material waste acceptance; generation of Safety Evaluation Reports involving both occupational and public exposures; providing direction to the internal and external dosimetry programs, estimation of airborne radionuclides generated during various mixed waste treatment operations; act as mentor to our staff of radiation safety technicians; assist with RST technician and Radworker training; review, revise, and implement Radiation Safety Procedures; review of mixed waste profiles for acceptance; radiological environmental data review; radiological instrumentation support; review of mixed waste analytical for disposal site acceptance. Applicants will need a minimum of a BS degree in health physics or similar field, five plus years of experience in health physics, ABHP certification is a plus. Salary will be commensurate with education and experience. Please send résumés or questions to Terry Moore at tmoore@wctexas.com or to the address above.

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Health Physics News Contributions and Deadline

Almost everything the Managing Editor receives by 20 February will be printed in the April issue.

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Odds and Ends from the Historical Archives

Paul Frame

Uranium Rush

The “Uranium Rush” board game dates from the 1950s when the uranium prospecting craze was at its height.

Each player starts with \$15,000. When it is his/her turn, the player spins a wheel to determine whether he/she pros-



pects in the mountains, hills, or desert. He/she then stakes a claim at one of the mines by paying \$1,000 to the government. The mine can be auctioned or tested for uranium as follows: the player puts the tip of the Geiger counter cord on the mine and if the counter lights up and buzzes, uranium has been discovered. A lucky prospector receives \$50,000 and an instruction card from the government bank. When



all the claims have been staked, the game is over. As always, the winner is the one who ends up with the most money.



Upcoming Events

37th Health Physics Society
Midyear Topical Meeting
[http://hps.org/newsandevents/meetings/
meeting13.html](http://hps.org/newsandevents/meetings/meeting13.html)

Radisson Riverfront Hotel
Augusta, Georgia
8-11 February 2004

NCRP Annual Meeting
<http://www.ncrp.com/dates.html>
Crystal City Marriott
Arlington, Virginia
14-15 April 2004

IRPA 11
<http://www.irpa11.com/>
Madrid, Spain
23-28 May 2004



49th Annual Meeting
of the Health Physics Society
[http://hps.org/newsandevents/meetings/
meeting5.html](http://hps.org/newsandevents/meetings/meeting5.html)

Marriott Wardman Park Hotel
<http://www.wardmanpark.com>
Washington, DC
11-15 July 2004

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

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