

# **Health Physics News**

Volume XXXIII Number 11 For Specialists in Radiation Safety November 2005

The Official Newsletter of the Health Physics Society

## In This Issue

Inside the Beltway
2006 NCRP Annual Meeting
11
Limer and the Canada Goose
10 Reasons to Be a Health Physicist
NRC and States Coordinate
16 Notes
17 Outside the Corner Office
20 CHP Corner
Short Courses
28 Discoment Center
macement Center
Odds and Ends

### The Birth of the HPS: A Look Back Affiliates Program Fosters Relationship Between Vendors and the HPS

Marv Walchuk

Affiliate (verb): to associate as a member Affiliate (noun): an affiliated person or organization

Organizations that provide services to the radiation safety profession have affiliated with the Health Physics Society (HPS) since its beginnings. Companies have advertised in the newsletter and in the Health Physics Journal, starting

with its first issue in 1958, and many people who work for companies with health physics equipment have become individual members of the Society. With this gradual sequence of association starting very early in the history of the Society, it was only a matter of time before an official affiliates program was begun in

the early 1960s, providing a more formal working relationship between these vendors and the HPS.

Although it is difficult to find information about the start of the affiliates program, early mention was in the 1961-1962 Membership Handbook (see sidebar, page 4). At that time dues were \$50 and included the following benefits:

• Affiliates will be listed in a special

section of all future handbooks.

• Affiliates are allowed to circularize the membership at no extra charge.

• It helps the Affiliate become a part of the "Radiation Protection Fraternity."



William B. Johnson Portrait by Donald L. Collins

This idea was conceived of and promoted by William B. (Bill) Johnson of Johnson & Associates (a company that still exists today as Wm. B. Johnson & Associates). Johnson later became the first chair of the Affiliates Committee. Jim Hart was on the HPS Board of Directors in 1961-1964 and became

(continued on page 2)

"The affiliates program was started to give affiliates the opportunity to get exposure to their prospects," remembered former affiliate Joe Eddlemon of Pulcir, Incorporated. "Certainly it was a good idea because you could meet a lot of people at limited expense as opposed to traveling all over the

country to see them."

#### Affiliates Program . . .

(continued from page 1)

the Society's champion for the affiliates program. The vendors most interested in becoming a formal part of the Society, with Johnson as their lead, approached Hart with the suggestion. Hart then organized the effort and received Board approval for the vendors to become affiliate members of the Society. Hart and Donald L. Collins assisted Johnson in promoting the idea to members and organizations with radiation safety products and services.

"The affiliates program was started to give companies official recognition within the Society, to encourage more companies to become exhibitors at meetings, and to support the Society in other ways," said Collins, of early affiliate Victoreen Instrument Company, who became the second chair of the Affiliates Committee. "It was also to encourage Society members to support these companies."

Collins said being an affiliate member meant a commitment for continual support of the Society by affiliate members and official support of the affiliates by the



**Donald L. Collins** 

Society. "Affiliates were recognized as professionals, specialists in their field, and were given greater opportunity to participate in the affairs of the Society," he explained. "It provided better communication between those in need of new and improved equipment and those who supplied them."

"When I became involved, being in the affiliate program allowed us vendors to participate in the annual and midyear meetings, with exhibits, etc., as well as attending any technical session we liked," added Richard D. Terry, originally with Victoreen, also a former chair of the Affiliates Committee. "As a vendor I felt it was a good way for me to stay in touch with a large portion of my customer base and also to let my customers know that I supported their activities. From a vendor standpoint I always felt my affiliate participation was a very beneficial part of my advertising budget and also felt it certainly helped my company image with the largest section of my customer base. Also as a vendor involved in the state-of-the-art instrumentation development, I called on my HPS contacts for ideas, needs, problems to be solved, and testing and evaluation of a

lot of new products. I felt health physicists would probably have not been as helpful to me or my company if I had not supported their Society."

"What we now call networking was going on within the affiliate program," commented Bob Wheeler, who was employed in the 1960s by Landauer, one of the first companies to advertise in Health *Physics* and an early affiliate of the HPS. "It wasn't called anything at the time; it was just going on. And it was multidirectional-affiliates were communicating with members more efficiently, members with affiliates, and affiliates with affiliates. This was because the mechanics were in place. Members knew who the affiliates and their people were. Affiliates, in turn, became

#### Affiliates as Listed in the Early Membership Handbooks

#### 1961-1962 Affiliates:

Atomic Accessories, Inc. Edgerton, Germeshausen and Grier Johnson and Associates Incorporated Sharp Laboratories Incorporated Snyder Manufacturing Company Victoreen Inst. Company

#### 1962-1963 Affiliates:

Atomic Accessories Inc. Bio-Science Labs. Controls for Radiation, Inc. Edgerton, Germeshausen & Grier The Harshaw Chemical Co. Johnson & Assoc., Inc. Packard Instrument Co., Inc. Pergamon Press Radiation Tech., Inc. Sharp Laboratories, Inc. Snyder Mfg. Co. Victoreen Inst. Co.

#### 1963-1964 Affiliates:

Atomic Accessories Bio-Science Labs Controls for Radiation, Inc. Douglas Aircraft Co. Edgerton, Germeshausen & Grier Johnson & Assoc. Packard Instrument Co. The Pioneer Rubber Co. Radiation Tech., Inc. Sharp Laboratories, Inc. Snyder Mfg. Co. Victoreen Inst. Co. more familiar with the people of other affiliates, and so on. As a result, health physics problems were identified more quickly and I'm sure their solutions had a way to market. Could this have been done without an affiliate program? Probably. Would it have been as efficient? Likely not."

The program benefited the HPS as well as the affiliates. "Increased participation by exhibitors resulted not only in increased revenue to the Society but also in new and improved equipment," Collins said.

"Affiliates have always provided financial support which helped the HPS with the expenses of the annual meeting, and for many years affiliates were nearly the total financial support for the midyear meetings," Terry added. "I always felt having exhibits at all HPS meetings benefited the members by permitting them to see all new products and services which might help them in their work, without taking their valuable time for a sales call in their office."

"My first thoughts when I heard that an affiliates concept was being formed was that this would be an excellent way for the Society to exercise some budgetary control on a major source of income, the annual meeting," recalled Bob Wheeler. "This may well have been the motivation at that time. Prior to the affiliate program an organization would receive a letter some months in advance asking, 'Do you want to reserve booth space for the June -meeting of the Health Physics Society?' or something similar. The Society would have poor tools for planning and an uncertain budget until replies were in. This may well be the basis of the affiliate program. Often the total value of an idea is not recognized until much later."

"From time to time since the beginning of the program we have received interest from people and organizations outside the health physics community which have been of value to us," Wheeler said. "Sometimes it is impossible to determine how the circle became complete. It is likely that merely the list of affiliates and its implied credibility has become a source for others to seek solutions or support to their programs."

"The affiliate program continues to help the affiliate members and the HPS," Collins said. "Being an affiliate member provides improved relationships with HPS customers. Having affiliate members provides a substantial increase in revenue to the Society through dues, advertising, and renting booth space at meetings and provides improved services to Society members."

#### EXHIBITORS 1964 HEALTH PHYSICS SOCIETY MEETING Cincinnati, Ohio

(as of 1 May 1964)

ACME PROTECTION EQUIPMENT CO. South Haven, Michigan

AMERICAN AIR FILTER CO., INC. Louisville, Kentucky

APPLIED HEALTH PHYSICS, INC. Bethel Park, Pennsylvania

ATOMIC ACCESSORIES INC. Valley Stream, New York

BAIRD ATOMIC, INC. Cambridge, Massachusetts

BAR RAY PRODUCTS, INC. Brooklyn, New York

BECKMAN INSTRUMENTS, INC. Fullerton, California

THE BENDIX CORP. Cincinnati, Ohio

S. BLICKMAN, INC. Weehawken, New Jersey

CHEMTREE CORP. Central Valley, New York

CONTROLS FOR RADIATION, INC. Cambridge, Massachusetts

EBERLINE INSTRUMENT CORP. Santa Fe, New Mexico

EDGERTON, GERMESHAUSEN & GRIER, INC. Goleta, California

THE HARSHAW CHEMICAL CO. Cleveland, Ohio

WM. B. JOHNSON & ASSOCIATES INC. Mountain Lakes, New Jersey

KAMAN NUCLEAR Colorado Springs, Colorado

R. S. LANDAUER, JR. & CO. Matteson, Illinois

LANDSVERK ELECTROMETER CO. Glendale, California

MINE SAFETY APPLIANCES CO. Pittsburgh, Pennsylvania

NUCLEAR-CHICAGO CORP. Des Plaines, Illinois

NUCLEAR DATA, INC. Madison, Wisconsin NUCLEAR MEASUREMENTS CORP. Indianapolis, Indiana

PACKARD INSTRUMENT CO. INC. La Grange, Illinois

PHYSICS INTERNATIONAL CO. Berkeley, California

THE PIONEER RUBBER CO. Willard, Ohio

RAY PROOF CORP. Stamford, Connecticut

SNYDER MANUFACTURING CO. INC. New Philadelphia, Ohio

TECHNICAL ASSOCIATES Burbank, California

TRACER/RICHMOND Waltham, Massachusetts

U. S. NUCLEAR CORP. Burbank, California USPHS, DIV. RADIOLOGICAL HEALTH Rockville, Maryland THE VICTOREEN INSTRUMENT CO. Cleveland, Ohio

## 1961-1962 HPS Membership Handbook Announcement of Affiliates Program

#### AFFILIATE MEMBERSHIP IN THE HEALTH PHYSICS SOCIETY

The By-Laws of the Health Physics Society have provisions for organizations to become Affiliate Members of the Society. Affiliates have the same privileges as other members except the right to vote.

Some of the advantages of being an Affiliate Member are:

- (1) Affiliates will be listed in a special section of all future membership handbooks.
- (2) Affiliates are allowed to circularize the membership at no extra charge.
- (3) It helps the Affiliate become a part of the "Radiation Protection Fraternity.

HOW TO BECOME AN AFFILIATE MEMBER

(1) Obtain application blank from Secretary or Executive Secretary of the Society:

#### Secretary

F. L. Paschal, Jr. General Dynamics Corporation Fort Worth, Texas **Executive Secretary** 

R.F. Cowing 194 Pilgrim Road Boston 15, Massachusetts

(2) Fill out application blank. You need only fill out those sections of blank which apply to your organization. Organizations do not need sponsors.

(3) Mail application blank to the <u>Chairman of the Admissions Committee</u>. Do not send any money. The Chairman of the Admissions Committee is:

> Dr. Louis B. Silverman 1478 Reeves Street Los Angeles 35, California

(4) You will be notified when the Board of Directors has approved your application.

(5) Dues for Affiliate Members are just \$50.00 a year.

## Affiliates in the Exhibit Hall at Early HPS Meetings



Hi Glasser, Nuclear Associates



Early HPS meeting (including exhibits) management team—the Kettlekamp family, Jane, Fred, Stephen, Nancy, and Nancy's husband



Landsverk Electrometer Co. and Wm. B. Johnson & Associates



John Handloser, Sr., and John Handloser, Jr., Health Physics Instruments



E. Dale Trout at Bendix booth

# Affiliate Advertisements from Early Issues of Health Physics

YOU SEE IT EVERYWHERE

Now, more than ever in the history of personnel dosimetry, you can use one service because it incorporates all the best features of the present state of the art. We are referring, of course, to Landauer's Gardray' film badge service.

With vapor barrier film wrapping, molded in filters, plus scores of other technical features, today, Gardray' service gives you the key advantages of computerization and automation while delivering the complete benefits of Landauer style attention and concern ... R. S. Landauer, Jr. & Co., Glenwood Science Park, Glenwood, III. 60425 (312) 755-7000

andouer JR & CO A Division of Technical Operations, Inc.

VICTOREEN

Regional Offices in California, Massachusetts and New Jersey NEW HARSHAW FAST NEUTRONS NaI (TI) SURVEY METER MODEL FNS-3 mensures by SCINTIL-LATION METHOD "TAS" neutron flux in the presence of intense guerns in inflation. Large 7" scientistic uspitally complete to GS2 integration proteinessed induced patients in sub-fectiveneed climatic and inducates fast mentors population on room parent meters. Neven theory, and gard for completence, makes FNS-3 externingly worstik for Bloath Physics, "Deam Hold" researcements and shortween tests-rate deterministics of "Lat" neutrons are required. CRYSTALS VICTOREEN VAMP pace Health Physics developments Low-Cost Area Ø. VAMP (6) Monitor IN WHOLE BODY COUNTING Contrast op ten
Association statighters and get the
Residentials statighters
Residentials and Get Statighters Continuous, low-cost monitoring of uncontrolled areas 3-Decade logarithmic meter indication from IN SCANNING 0.1 mR/hr to 100 mR/hr. Built in visual and audible slarms internally adjustable from m Lange Otamoter Countain Les Plaineis Damars Techniques background to full scale. IN GAMMA DOSE Solid-state, jam-proof circuitry eliminates erroneous indications **BATE DETECTORS** at highest radiation levels Rectanged and a Market in the South Andrews in the South State Market in the South State S Self contained; plugs into AC. Madel Philippi Station Illuminated failure indicator PEATURES IN THERMOLUMINESCENT DOSIMETRY Advised LF Oliving & Fig. Services Large portro model accellation - Societics to Science in Maler up to 10 - Straight and Science in Maler up to 10 - Transitionized HP apply - Large 4 Sparst mater - There will constitute ranges - Prior point may finder - New form finder - New form finder Wall-mount, or swivel-lock, mounting bracket. IN CHARGED PARTICLE DETECTION White lighted pendi show, WAMP is operating - extra-guistics on failure. Red paral Dashes when radiation exceeds presal wm. b. JOHNSON & Crystal-Solid State Division THE HARSHAW CHEMICAL COMPANY Sile Water - Function of the Company File Water - Company Com ASSOCIATES inc. THE VICTOREEN INSTRUMENT COMPANY 19403 WIDDLAND AVENUE - CLEVELARD, DHID 44124 ADMAN BUD ATE: DEN BORL SPECTE, MILLER, MILLER, DAMA

Health Physics News • November 2005

POL HOR ATS SOUNTAIN LAKES, NJ

## **Inside the Beltway**

David Connolly Washington Representative Capitol Associates, Inc.

Sadly, once more the axiom about outside events altering the congressional agenda has come to pass. No one can witness in person, or even on television, and not be moved by the utter destruction that the twin hurricanes brought to the southeastern coastal states of our nation. Needless to say, the thoughts and well wishes of the Society go to those members and their families in the storm-ravaged sections of the country.

Almost immediately after Hurricane Katrina, fingers started being pointed as to who was responsible for the government's tardy response to the devastation. Although not as prevalent as the assessment of blame, others asked if there was something to be done to prevent or minimize the danger from these storms in the future. Gradually, over the weeks of September 2005 the realization came upon people in Washington that there are limitations to governmental power. Hurricanes Katrina and Rita retaught the lesson that Mother Nature herself is an awesome power that oftentimes cannot be tamed by human action. As the logistic problems after the storm are examined, easy solutions

to these problems are not as apparent as once thought and the focus has shifted to restore the affected regions' economy, infrastructure, and homes.

After the initial shock of the storm, the Congress quickly appropriated emergency funding to aid and rebuild the ravaged areas. Sensing the political storm descending upon him, President Bush quickly promised from a darkened and quiet French Quarter of New Orleans that the federal government would rebuild the Katrina damage and restore the southeast to its former glory. Merged with the tremendous outpouring of private charity, the President wants the federal government to lead the restoration effort to turn back the clock and make the southeast whole again. However, the clock does move on and now the big question in Washington is how the government is going to pay to fulfill these promises. Additionally, collateral issues are starting to get a great deal of attention in the aftermath of the storm. The immediate, and possibly excessive, price increases on an already inflated price per gallon at the gasoline pumps has rekindled an

already hot debate on energy policy in this country.

Questions surrounding location and capacity of the nation's oil refineries have prompted a call for <u>another</u> energy policy bill this session. Whereas it took the Congress years to pass the Energy Policy Act of 2005, an outside event is creating the possibility that the next major energy bill could be passed, not years but months thereafter!

Due to this unusual situation, the Congress has decided to stay in session at least until Thanksgiving to deal with the myriad of issues surrounding the hurricanes. Central to these activities will be finding the money to pay for Katrina/Rita relief. We do not want the Congress to find extra money in the Department of Energy budget that was not spent on fellowships and scholarships to study health physics. Therefore, do your part TO SPEND THE FELLOWSHIP MONEY and not have it lost. Hurricane relief is noble, but the legitimate long-term best interest of the country also requires trained health physicists. Please encourage students to apply for this aid. X

#### Early Deadline for January Health Physics News

The deadline for submission of items for publication in the **January 2006** issue of *Health Physics News* will be earlier than usual due to the holiday season. Please submit items for publication to Sharon Hebl (hpsnews@frontiernet.net) no later than 22 November 2005.

# NCRP

#### 2006 NCRP Annual Meeting on "Chernobyl at Twenty" Thomas S. Tenforde

President, NCRP

he 26 April 1986 accident at L reactor number 4 in the Chernobyl nuclear power plant located in the Ukrainian Republic of the Former Soviet Union was the worst nuclear power accident in history. As the 20th anniversary of this catastrophic event approaches, speakers at the 3-4 April 2006 annual meeting of the National Council on Radiation Protection and Measurements (NCRP) will provide a comprehensive review and analysis of the effects of the Chernobyl nuclear accident on human health and the environment. Speakers will also evaluate "lessons learned" from the Chernobyl accident and discuss new developments in reactor safety and more effective responses to nuclear incidents. The meeting will be held at the Crystal City Marriott, 1999 Jefferson Davis Highway, in Arlington, Virginia.

The meeting will open with the Third Annual Warren K. Sinclair Keynote Address by Mikhail Balonov of the International Atomic Energy

Agency (IAEA). He will present a retrospective analysis of impacts of the Chernobyl accident. The following six scientific sessions will feature 25 prominent scientists speaking on the topics (1) Environmental Impacts and Mitigation of Residual Radiation, (2) Dosimetry and Health Effects in Emergency Responders and Cleanup Workers, (3) Population Exposures and Health Effects, (4) Lessons Learned from Chernobyl, (5) International Perspectives on the Future of Nuclear Science, Technology and Power Sources, and (6) Summary and Discussion of Major Findings from Chernobyl.

The Thirtieth Annual Lauriston S. Taylor Lecture will be presented at 5:00 p.m. on 3 April by Robert L. Brent, who is internationally recognized for his research on the effects of radiation on embryogenesis and postnatal development.

Planning for the 42<sup>nd</sup> NCRP annual meeting was carried out by an international Program Committee chaired by NCRP President Thomas

Tenforde. Members of the committee are Vice Chair Mikhail Balonov (IAEA), Vice Chair John Boice, Jr. (International Epidemiology Institute), Vice Chair Elaine Ron (National Cancer Institute), Rudolf Alexakhin (Russian Institute of Agricultural Radiology and Agroecology), Andre Bouville (National Cancer Institute), Elisabeth Cardis (International Agency for Research on Cancer), Lars-Erik Holm (Swedish Radiation Protection Institute), Yuri Izrael (Russian Academy of Sciences), Valery Kashparov (Ukrainian Institute of Agricultural Radiology), Edward (Ted) Lazo (Nuclear Energy Agency), Ilya Likhtarev (Centre for Radiation Medicine of the Ukraine), and Shunichi Yamashita (Nagasaki University and World Health Organization).

The full program and online registration for the 2006 NCRP annual meeting can be found on the Web site http://www.NCRPonline.org under the "Important Dates" link. There is no registration fee for the NCRP annual meeting.

#### **HPS Issues Position Statement**

The Health Physics Society (HPS) calls for a complete overhaul of radioactive waste disposal in a position statement, "Low-Level Radioactive Waste Management Needs a Complete and Coordinated Overhaul." The statement, issued in September 2005, is a complete revision of the Society's 1999 position statement on low-level radioactive waste. The statement, on following pages, contains three specific positions and five specific recommendations including a call to amend or replace the 1980 Low-Level Radioactive Waste Policy Act as amended in 1985. The statement as released was accompanied by a document providing "Background Information" which can be seen on the HPS Web site (http://hps.org/ documents/LLRW.2005Bkgd.pdf). This position statement is based on previous HPS congressional testimony and correspondence with the Environmental Protection Agency and Government Accountability Office. The testimony and correspondence was prepared by the HPS Legislation and Regulation Committee. The issuance of this position statement makes the positions and recommendations of the previous testimony and correspondence official positions of the Society.



## LOW-LEVEL RADIOACTIVE WASTE MANAGEMENT NEEDS A COMPLETE AND COORDINATED OVERHAUL

POSITION STATEMENT OF THE HEALTH PHYSICS SOCIETY\*

> Adopted: October 1993 Revised: May 1995 Updated: July 1998 Revised: July 1999 Revised: September 2005

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

Low-level radioactive waste (LLRW) is an inevitable byproduct of beneficial uses of radioactive materials in the United States. It arises from medical research, diagnosis and treatment of diseases, industrial processes, national defense, and electric power generation—all vital to our national interests. LLRW will continue to be generated, requiring the availability of disposal methods and sites so that society can continue to enjoy the full benefits of the use of radioactive materials. Safe and effective methods and standards for processing, transport, and disposal of LLRW are well established.

The 1980 LLRW Policy Act, as amended in 1985, established a framework for the states to provide for safe disposal of LLRW and encouraged the creation of regional compacts to develop an appropriate network of disposal sites. The deadlines established for the development of new sites have passed, with no new sites being opened. Political, judicial, and administrative obstacles have blocked the development of sites and have limited the disposal options for higher-activity classes of waste within existing sites. Disposal options for the highest-activity classes of waste are limited and may no longer exist for a majority of the states after 2008. In addition, the current regulatory framework results in excessive and overly restrictive requirements for disposal of the lowest-activity class of waste. The effect of these obstacles and restrictions is to interfere with optimal use of radioactive materials in medicine, research, energy production, and technology. The use of all available options, including private, commercial, and federal facilities, can facilitate the orderly, safe, and efficient disposal of radioactive waste.

The current state of affairs for LLRW disposal has led the Health Physics Society to take the following positions:

- 1. The goal of managing LLRW is to ensure the safety of workers and the public and to protect the environment. To achieve this goal, disposal, not long-term storage, is the best and safest long-term approach.
- 2. The Health Physics Society believes that lack of competition in LLRW disposal options results in excessively high costs to waste generators, which impede the use of nuclear technologies that provide significant benefits to society.
- 3. The Health Physics Society believes that the regulatory framework for management and disposal of LLRW needs a complete and coordinated overhaul.

The fundamental changes needed to LLRW management include the following:

- a. Waste classification and disposal requirements for any type of radioactive waste should be based on its potential risk to public health and safety, not on its origin or legislative stature.
- b. Risk-informed waste-disposal requirements for radioactive materials should be consistent and integrated with waste disposal for nonradioactive hazardous waste.
- c. The LLRW Policy Act should be amended or replaced to:
  - i. allow non-Department of Energy (DOE) waste generators access to all existing licensed and permitted disposal facilities.
  - ii. allow non-DOE waste generators access to disposal facilities owned and operated by the DOE.
  - iii. provide a new waste-disposal capacity for all LLRW at a facility currently operated by DOE or by private industry on land owned by the federal government.

Based on these positions, the Health Physics Society makes the following **recommendations.** Although some of these recommendations are available with no significant change in the regulatory framework, they are all consistent with the regulatory framework changes given above.

- 1. Based on Positions 3.a and 3.b, we endorse the approach for a waste-disposal classification system proposed by the National Council on Radiation Protection and Measurements (NCRP 2002).
- 2. Based on Position 3.b, we strongly support the Environmental Protection Agency efforts to move forward with a rulemaking to promulgate regulations allowing disposal of low-activity radioactive waste (LARW) and low-activity mixed waste (LAMW) at Resource Conservation and Recovery Act (RCRA) Subtitle C sites.
- 3. Based on Position 3.b, we support the use of uranium mill-tailings sites regulated under the Uranium Mill Tailings Radiation Control Act (UMTRCA) for disposal of radioactive materials that are appropriate for these sites. Examples of potentially appropriate materials are certain non-11e.(2) byproduct material such as the LARW and LAMW noted in 2.a above; technologically enhanced naturally occurring radioactive materials (TENORM); high-volume, low-activity waste from reactor decommissioning; and certain low-activity resins from operating reactors.
- 4. Based on Position 3.c, we strongly support DOE efforts to prepare an Environmental Impact Statement under the National Environmental Policy Act to evaluate additional alternatives for disposal of greater-than-Class-C wastes. These include deep geological disposal facilities, existing LLRW disposal facilities (both commercial and federal), and new facilities (both commercial and federal) at federal sites or on private land.
- 5. Based on Position 3.c, we urge Congress to direct federal action to ensure that disposal options and capacity for Class B and Class C waste will exist for all states in the future. This can be achieved by use of commercial or private facilities on federal or private lands to mitigate significant adverse consequences to generators of these wastes.

#### **Reference:**

National Council on Radiation Protection and Measurements. Report 139, Risk-Based Classification of Radioactive and Hazardous Chemical Wastes, Bethesda, Maryland. Issued 31 December 2002.

<sup>\*</sup> The Health Physics Society is a nonprofit scientific professional organization whose mission is to promote the practice of radiation safety. Since its formation in 1956, the Society has grown to approximately 6,000 scientists, physicians, engineers, lawyers, and other professionals representing academia, industry, government, national laboratories, the Department of Defense, and other organizations. Society activities include encouraging research in radiation science, developing standards, and disseminating radiation safety information. Society members are involved in understanding, evaluating, and controlling the potential risks from radiation relative to the benefits. Official position statements are prepared and adopted in accordance with standard policies and procedures of the Society. The Society may be contacted at 1313 Dolley Madison Blvd., Suite 402, McLean, VA 22101; phone: 703-790-1745; fax: 703-790-2672; email: HPS@BurkInc.com.

## Correspondence

#### Benefit of X Rays

#### David L. Horn, CHP Powhatan, Virginia

want to share a true story about a Conversation that I had with a health physics shift supervisor at a power reactor facility. A group of health physics employees were engaged in a conversation about the medical use of radiation. The prevailing sentiment was that doctors dose up patients and that is a terrible thing. I suspect that most members of the Health Physics Society have been in a similar conversation at one time or another. The shift supervisor said that a doctor ordered a skull x ray on his child because the child had a "small head." He brought a TLD (thermoluminescent dosimeter) with him to the hospital. He became very upset when the x-ray technician couldn't tell him what the radiation dose was. He was very close to refusing the test and walking out when the x-ray technician agreed to place the TLD in the x-ray beam. The skull x ray was performed, the result was negative, and the child is doing fine.

The following is a list of assump-

tions that I think are reasonable: (1) Skull x rays have been performed for about 100 years. However, a standardized procedure with a Bucky device, safety film, and a film cassette with screens has a somewhat shorter history. (2) A skull x ray has been a fairly common procedure because trauma to the head has been fairly common. (3) I am unaware of any harm that has been demonstrated from the radiation dose associated with a standardized skull x ray. (4) It is doubtful that the father could convert the radiation dose to his child's head into whole-body dose (that is, what he was used to) on the fly, in his head, and while under emotional duress. (5) The father was a loving parent who only wanted the best for his child. (6) The father knew what he knew, and he didn't know what he didn't know. (7) What he knew about the medical use of radiation was what he learned at work. (8) He didn't know that the probable reason the doctor ordered the skull x ray was to rule out premature closure of the sutures and fontanelles of the skull. This condition results in a small head. (9) He didn't know that

this condition results in profound mental retardation because the brain doesn't have room to grow. (10) He didn't know that the treatment for this condition is radical surgery. (11) He didn't know that the healing process after surgery is long and difficult. Kids hit their head a lot because their head is large relative to their body, and they are just learning to move in space.

Let's compare the risks. On one side of the equation, the radiation dose from a skull x ray is probably safe. Falling off of the x-ray table is also a concern. On the other side of the equation, there is an increased risk of profound mental retardation.

I think that this is a real problem. Based on my admitted small sample, there are a significant number of rigid radiation workers with deeply held beliefs. This radiation worker came prepared with a TLD, and he was flexible when he was pushed. Will all radiation workers be flexible when they are pushed? Or will some radiation workers refuse a procedure that they need? Also, is it right that the consequences of our dogma fall on medical personnel like the x-ray technician?



## Elmer and the Canada Goose

By Ken Miller

Elmer's farm is apparently located along at least a minor flyway for Canada geese, snow geese, and swans as they stop over on his farm by the thousands when the weather begins to break each year around the end of February. At one time, he also had about eight Canada geese that stayed on his farm all the time. Primarily, they stayed because the grand patriarch of the clan was a goose with a crippled wing. The problem with the wing prevented him from flying more than a hundred yards or so at a time. The remainder of the group that stayed were obviously offspring from this one old guy and his mate as they were always together as a group. Elmer, like many farmers, steadily received requests from hunters for permission to hunt on his farm. Most of these requests he denied. However, a few learned that Elmer was a sucker for a hard-luck tale. They would stop by, talk to him for a while and tell him that they were out of work and that sure made it hard to keep their families fed. So, when they asked if he minded if they came and hunted a day or two on his farm, he usually relented.

One fall, Elmer and I were talking when he mentioned that unusually large numbers of geese had been stopping over. He said that they were getting to be such pests that he figured he would have to shoot a few and stick them in his freezer to discourage so many from stopping over. Well, I had grown up on wild game so when he told me that he was going to shoot a few, I told him that if he got an extra one, I would



like to give wild goose a try. He promised that he would get me one. Around the middle of November, Elmer stopped over one evening and gave me a plastic-wrapped package. "What's this?" I asked. "Well, you said you wanted me to get you a Canada goose, so, I got you one. And Lizzie cleaned it for you," he said. "That's great. You know what, I'm going to stick this in the freezer and surprise the family with it for Christmas dinner. Thank you and thank Lizzie for me too," I said.

A day or two before Christmas, I got the goose out of the freezer so it would thaw out in time for roasting on Christmas day. We were going to have an old-fashioned Christmas dinner-one like our forefathers enjoyed! Christmas morning came and Carole made the stuffing, I stuffed the goose, and together we put it in the oven, figuring on having Christmas dinner around 2:00 in the afternoon. Two o'clock came but the goose wasn't anywhere near being ready to come out of the oven. I couldn't even get a fork to penetrate it. "Better give it a while longer," I told Carole. Meanwhile,

everyone was getting hungry, so we made sandwiches to tide everyone over. At 4:00 we again tested the bird and found that nothing had changed. "We better turn the oven temperature up," Carole said. So we did. An hour later, everyone was asking, "When are we going to eat?" By 6:00 the situation with the goose hadn't improved—that bird was still as tough as an old work boot! "Sorry, everyone. I didn't realize that wild geese took so long to cook," I said. By 7:00

everyone was famished and the goose still wasn't done. Fortunately, we found a Chinese take-out place that was open. That Christmas, our dinner consisted of Chinese food with pumpkin pie for dessert. At bedtime, the goose was still too tough to take out of the oven. I told Carole to go to bed and that I would stay up until the goose was done. The next morning she found me asleep on the sofa but the goose still wasn't done. "This thing is never going to get done," she said. "Well, we're just going to keep cooking it until it is," was my reply. At four o'clock that afternoon, I finally agreed with Carole that it was a hopeless cause and we resigned the goose to the garbage can. Several days later, Elmer stopped by to ask how we enjoyed the Christmas goose. I felt bad having to tell him "I'm sorry, Elmer, but that bird must have been a hundred years old! No matter how long we cooked it, and we cooked it for 28 hours, it never got tender enough to stick a fork in it." "I wouldn't doubt it," was his only reply.

Several months went by and one Sunday afternoon I decided to walk over and fish for bass in Elmer's pond. As usual, I wasn't there for more than 15 minutes when I noticed him out by his barn digging worms. He soon joined me at the pond with his fishing rod, bobber, and can of worms. We fished for a little while and then our moving around the pond in opposite directions finally brought us together. "Elmer, I don't see your flock of Canada geese anywhere," I said. "Nope, they're all gone," he said. "Well, how can that be?" I asked. "That

old gander couldn't fly," I said. "Nope, he ain't here no more," said Elmer. "Why? What happened?" I asked. "Well, one of those guys that I left hunt on the farm last fall came to the house and said he shot a goose that flew over him at the back end of the farm and it came down in the pond. He said he was pretty sure it was dead and wanted to know if he could go down and get it out of the pond. I told him okay, but don't do any shooting down at the pond. Well, he wasn't gone more than five minutes when Lizzie and me heard him shooting down at the pond. I

came down and told him to get off the farm. He told me that his goose was floating in the pond and I told him to leave it and go. After he left, I fished the goose out of the pond and, you know what, it was that old one with the crippled wing. He shot it right here on the pond!" "Aw, no, that's terrible!" I said. "What did you do with the goose?" I asked. "Oh, I fished it out of the pond and took it up to Lizzie. She cleaned it for a good neighbor for Christmas dinner!" he said. I walked home thinking that I was so glad that that goose never got tender enough for us to eat! 8

## **Those Parties Were Always A Blast!**





After

Health Physics News • November 2005

## 10 Reasons to Be a Health Physicist

by Dade and Rad (Matt's brother) Moeller (Apologies to David Letterman)

During this period of time in which members of the Health Physics Society are reviewing the history of the Society, it seems appropriate to include a brief review of the reasons that members of the Society chose this as their profession. This is particularly true in view of the potential resumption of the construction of new nuclear power plants and the need to recruit and educate additional health physicists to replace the multitudes of the members of our profession scheduled to retire during the next decade. The reasons that follow reflect experiences shared with the authors during recent interviews with selected members of the Society. To avoid any semblance of partiality, the reasons are listed in either ascending or descending order (depending on your thoughts, biases, and political affiliation).

- 1. The name, health physicist, has a certain aura to it. One of its main attributes is that it makes it difficult for anyone not a member of the Society to figure out what it is that we do. This gives any and all members of our profession an immediate advantage in any one-on-one discussions of the latest scientific issues, such as stem cell research and global warming.
- 2. Being a health physicist will make it possible for you to be one of the few people qualified to explain to your friends, and maybe even your spouse and children, the difference between a rad, rem, and rutabaga!
- 3. You will not need to rush to board the airplane and can wait until after the passengers sitting near the windows have already been seated. Having wisely requested an aisle seat, you can leisurely stroll on board and sit down knowing that the passengers (the bigger the better) sitting between you and the window will help shield you from the health risks of cosmic radiation.
- 4. It will provide you multiple opportunities to expand your vocabulary and amaze your friends by including terms such as sieverts, grays, and becquerels in each and every conversation. Think how impressive it will be to be able to sit at dinner with your less technical friends and casually say, "I just ate 3 bequerels and 1 nanocurie and, as a result, my lifetime effective dose has been increased by 14 μSv."
- 5. You can also regale your close friends, as well as those not so close, by telling about the times you

collected and analyzed the uptake of radioactive materials by the biological organisms in sewage, assessed the biological effects of radiation on caterpillars, and evaluated the uptake of pandemo-nium-349 [<sup>349</sup>Pd] by the endangered desert tortoise.

- 6. Being a full-time member of this profession will also enable you to participate in the ongoing lottery engaged in selecting a new value for the radiation weighting factor for assessing the biological effects of alpha-emitting radionuclides deposited within the body. Values during the past 50 years, particularly for converting the absorbed doses to the bronchial epithelium to equivalent doses, have ranged from 2 to 20. The number selected in the latest lottery is 10. Current speculation is that there is a 4 to 1 chance that it could be reduced to 5 by the end of the decade.
- 7. Those of you who are lucky enough to be involved in checking the safety and security of the portable <sup>60</sup>Co radiographic units used for inspecting the welds on the Alaskan pipeline will have an opportunity, during the long winter nights, to secrete away several barrels of petroleum if you are fortunate enough to be the first to arrive at the scene of a major break. With the price of gasoline almost sure to reach \$5 to \$10 per gallon, that could be one of our profession's best perks!
- 8. Those health physicists who have developed the required connections may be able to use the containment vessel of a nearby commercial nuclear power plant as a safe haven in case of an impending Katrina-like event. If the electrical power supply fails, and the microwave will not work, you can heat your packaged meals in the spent fuel pool!
- 9. Those engaged in monitoring for radon in homes will be provided with unusual opportunities to discover hidden treasures amongst the relics in family basements. In addition to having the highest radon concentrations, basements often contain longforgotten antiques and valuable manuscripts. Just think, if you are lucky and happen to locate an original handwritten copy of Lincoln's Gettysburg Address, you would almost definitely be able to apply for early retirement. Just be sure to remove the radon-decay products before taking any such documents to an antique dealer.
- 10a.\* Another often overlooked benefit is the opportunity to evaluate the potency and flavor of vintage

radiopharmaceutical cocktails awaiting administration to patients at the local hospital. Remember, however, to be sure to rinse your mouth prior to tasting the next cocktail.

- 10b.\* Should you have the opportunity to be involved in checking the safety of the x-ray machines being used in the security screening station at the local airport, you may be able to arrange to use one of them in off hours. This can save you hundreds of dollars in case you break your leg and the family doctor wants an x-ray picture of the fracture.
- 10c.\* At press time, the American Board of Health Physics had just announced that it had completed grading the responses of the candidates who took the examinations in 1998. The Board attributed the delay to problems associated with the automatic grading machine. Even so, the delay was well worth it. In fact, the results were the best ever. Of the 56 candidates who took Part I, 8 passed. While the results for those who took Part II were not as good, they were nonetheless far better than in recent years. That is to say, 6 of the 138 candidates passed! Those in the latter group are now authorized to write "CHP" after their names. In my (Dade Moeller's) case, I found this a major improvement over my normal procedure of writing SI after my name. I was particularly annoyed when I responded to people who asked what SI stood for. They all, for some unknown reason, always chuckled and smirked when I explained that, earlier in my career, I

had been a Sivil Ingineer!

\*The ability to count (or spell) is not one of the strong points of health physicists.

*Disclaimer:* This historical account was written solely for the entertainment of readers of *Health Physics News*. Any relation to places, organizations, or persons, living or dead, is coincidental. Also to be noted is that none of the above comments is intended to imply that any health physicist should, or would, ever violate the Code of Ethics that is provided by the Health Physics Society as a guide for the professional behavior of its members.



Dade and Rad Moeller. Rad (a rheumatologist) is the oldest in Dade's family followed by Mark (board certified in internal medicine), Kehne (an orthopedic surgeon, Matt (a certified health physicist), and Anne (an MBA). Dade also has 16 grandchildren who no doubt have asked him and Matt many times to define health physicist.



#### NRC and States to Coordinate Increased Controls Over Radioactive Materials

#### Barbara Hamrick, CHP, JD

n 6 September 2005, the US Nuclear Regulatory Commission (NRC) announced a new joint effort by NRC and the Agreement States to increase controls over certain radioactive materials and enhance the protection of the public health and safety. Between 1 September and 1 December 2005, NRC will be issuing Orders to approximately 550 licensees, and Agreement States will be issuing similarly legally binding requirements to approximately 1,650 licensees delineating increased controls for certain radioactive materials. This is the culmination of a cooperative effort between NRC and the Agreement States to further improve the security of radioactive materials and increase the protection of the public health and safety throughout the nation.

Initial efforts for increased security of radioactive materials of concern began shortly after 11 September 2001, with NRC issuing a series of Advisories to major NRC and Agreement State radioactive materials licensees. The Advisories instructed these licensees to take a number of additional actions to further enhance the security of their radioactive materials. Early on, it was recognized that a more permanent and binding solution than the Advisories was needed to ensure the appropriate level of protection of high-risk radioactive materials. NRC then began the task of drafting binding Orders to include specific compensatory measures with requirements to attain goals similar to those addressed by the Advisories, such as the installation of additional physical barriers, enhanced coordination with law enforcement, and more restrictive site access controls.

The Organization of Agreement

States (OAS) and the Conference of **Radiation Control Program Directors** (CRCPD) requested involvement in this process, since the proposed Orders would be issued to both NRC and Agreement State licensees. In May 2003, a proposal was put forth to establish the Materials Security Working Group (MSWG), to be comprised of two state members, and NRC staff from various offices, and to be cochaired by a representative of OAS and a representative of NRC's Office of Nuclear Security and Incident Response (NSIR). At about the same time, the Materials Security Steering Committee (MSSC) was also established to oversee the work of the MSWG, with then OAS Chair Pearce O'Kelley of South Carolina and Michael Weber, deputy director of NSIR, as cochairs.

The MSWG was initially charged with developing the compensatory measures, supporting guidance, inspection procedures, licensing procedures, and enforcement policy to support the issuance of the Orders. Although there was significant state involvement through the MSWG and MSSC, both the Orders issued to the panoramic and underwater irradiator licensees (large irradiator licensees) and the major radioactive materials manufacturers and distributors (M&D licensees) were issued under NRC's authority to protect the common defense and security, an authority reserved solely to NRC under the Atomic Energy Act (AEA). This meant not only that the Orders were issued by NRC, but also that all inspection and enforcement activities were undertaken by NRC.

The states and the NRC continued to work together to find additional opportunities for state involvement in the issuance of the increased controls and the subsequent inspection of the implementation of these controls. The NRC responded in early 2004 with a proposal to increase state involvement via a special agreement, available under section 274i of the AEA, which authorizes NRC to enter into contracts with the states for the inspection of activities regulated by NRC. Nine states entered into a 274i Agreement with NRC to inspect the implementation of Orders. The issuance of the Orders and enforcement actions resulting from the inspections is still under the purview of NRC.

In early 2004, the MSWG began development of increased controls for over 2,000 additional licensees possessing high-risk quantities of certain radionuclides. Faced with the resource-intensive task of issuing and inspecting against an additional 2,000 Orders, and at the continued request of the states to more fully utilize the expertise and experience of the Agreement States' programs, NRC, in coordination with the states, formulated an alternative approach to enhance the controls of radioactive materials in quantities of concern. This alternative approach relies upon NRC's and the Agreement States' respective authorities to protect the public health and safety and requires a high level of cooperation and coordination between NRC and the Agreement States. The approach also includes a synchronized issuance of the binding requirements, coordination on the prioritization of the inspections, and continued harmonization of related efforts via a specially convened Task Force to include NRC and state representatives. NRC and the Agreement States look forward to the successful implementation of this alternative approach to provide increased controls for certain highrisk radioactive materials. 8

## Notes

#### Penn State EHS Radiation Safety Roundtable Conference

Tearly 50 health physicists, regulators, service organizations, and program managers from 10 states attended the 4<sup>th</sup> Annual Penn State Environmental Health and Safety (EHS) Radiation Safety Roundtable Conference at the University Park Campus of Penn State University 12-14 September 2005. The conference, conceived and administered by Mark Linsley, Penn State EHS program manager and associate radiation safety officer (RSO), has increased attendance each year since its inception. Linsley attributes the roundtable's success to sticking to its agenda. The agenda's format provides for as much time as needed for attendees to discuss operational matters related to the safe, effective, and efficient management of their work areas.

"The meeting is intentionally designed to be 60% roundtable discussions and 40% presentations," says Eric Boeldt, manager of radiation protection and RSO for Penn State. "Mark Linsley is able to make sure that opportunity of discussion, networking, and resource mining happens."

Linsley began the conference by asking each person to not only introduce themselves but also provide everyone with a response to the question "Over the past 12 months what was your biggest problem and achievement in your field of work?" That set in motion the development of a number of common problem areas to be discussed later, but also the opportunity for even more individual (oneon-one) discussion during the threeday event.

#### John R. Vincenti

This year, like with previous conferences, the discussion and presentation topics covered a wide range of topics. They included training, communication, administration, administration and management protocol, hiring personnel, denying use of radioactive materials, governmental regulations and rules, licensing, legal, risk management, cost/benefit, ALARA, inventory, surveying, dosimeters, disposal and storage, construction, decommissioning, homeland and institutional security, economics, patient and caregiver safeguards and information, emergency response, dealing with superfund issues, and specific subjects surrounding medical and research applications.

Those in attendance at the conference were never short on words of appreciation for being part of the Radiation Safety Roundtable. Kristin Erickson, RSO at Michigan State, noted that the conference environment was "open, candid, and productive." Later she went on to say that this type of meeting, with its emphasis on informality, made it overall "rejuvenating and exhilarating."

Invited speakers for this year's meeting included John Miller, RSO at Merck & Company, on the topic of health physics issues related to using PET radiopharmaceuticals; Michael Burba, assistant RSO at the University of Cincinnati, on instituting a new MIBG facility; Candi Schaub, RSO at the University of Maryland Baltimore, on issues dealing with <sup>210</sup>Po in angiogenesis research; Aggie Barlow, associate director of EHS and RSO at Yale University, on investigating a badge overexposure; David Simpson,

assistant professor and RSO at Bloomsburg University, on a superfund site and its implications to users and principal disposal party issues; Steve Simpson, assistant director of EHS and RSO at Iowa State University, designing and building a state-of-the-art hazardous materials and operations center; John R. Vincenti, coordinator of special projects in mechanical and nuclear engineering at Penn State, statewide and national implication regarding nuclear science education challenges for the future; Greg Herman, senior EHS specialist in health physics at Penn State, developing an online laser database and management system; Eric Boeldt, update on Pennsylvania's program on monitoring statewide landfills to prevent illegal disposal of radioactive materials; Jack S. Brenizer, Jr., professor and program chair in nuclear engineering at Penn State, neutron radiography and health physics education/training; and Mark Linsley, update and lessons learned regarding Penn State's radon monitoring and mitigation program.

On the last day of the conference, Maurine Claver, director at Penn State EHS, spoke to the group. Claver had just returned from a meeting of Big-10 EHS directors. She told the group that these types of conferences are important in this day and age with increased awareness on security, but also improving EHS issues. She was pleased that Penn State is able to offer such a program. She noted that next year's EHS Radiation Safety Roundtable Conference is slated for 25-27 September 2006. 8

#### Melvin R. Sikov 1928-2005

William J. Bair

On 4 August 2005, the radiation protection community lost its

pioneer in developing our understanding of the risks to the embryo/fetus from the maternal intakes of radionuclides and I



lost a good friend and colleague of over 50 years. Melvin R. Sikov was born 8 July 1928 and graduated from high school in Detroit, Michigan. During 1947-1948 he served in the US Army, stationed in Alaska. After earning a BS degree in biology and physics at Wayne State University in Detroit, he was awarded a fellowship in radiological physics at the Oak Ridge Institute of Nuclear Studies in 1951-1952 where he was one of Elda Anderson's students. Upon completion of his fellowship program he was admitted to the University of Rochester School of Medicine and Dentistry as a graduate student in the Department of **Radiation Biology and Biophysics** that was associated with the Atomic Energy Project. He studied under Dr. Thomas Noonan, receiving a PhD in radiation biology in 1955. He and Robert G. Thomas were recipients of the University of Rochester's (and the world's) second and third PhDs in radiation biology; since the degrees were awarded alphabetically Mel took pleasure in needling Bob, claiming his was second and Bob's third.

A major event in Mel's life occurred on 1 June 1952 when he married Shirley Dressler, whom he had met at Wayne State University. Following their marriage Shirley was employed in the Department of Statistics in the Atomic Energy Project.

Mel was fortunate in having Tom Noonan as his mentor. He was an outstanding physician/scientist and teacher with a wonderful sense of humor. He introduced Mel to the relatively new field of radiation effects on the female reproductive system and, in particular, the intricacies of radionuclide transfer across the placental membrane and the incorporation into fetal tissue.

After completing his PhD, Mel returned to Detroit as assistant professor of radiobiology in the Department of Radiology, Wayne State University College of Medicine. In 1961 he was appointed associate professor in the same department. He held concurrent staff appointments at Detroit Receiving Hospital and the Veterans Administration Hospital in Dearborn, Michigan. In these positions he taught graduate courses in radiation biology and isotopic tracer techniques, supervised graduate students, and lectured to medical students and radiology residents. His research continued along the lines of his doctoral work, radiobiology of tumors and effects of x radiation and <sup>32</sup>P on embryos including neurological deficits and behavioral and developmental effects.

In 1965 Mel joined Dr. Bruce Stuart and me as the third University of Rochester graduate at Battelle's Pacific Northwest Laboratory's Biology Department at Hanford. Mel reported to Dr. Roy C. Thompson, a pioneer in radionuclide radiation biology. Mel advanced through several scientific positions, achieving the highest scientific rank. Upon his retirement in 1995 he was named Scientist Emeritus in the Molecular Biosciences Department. Mel also held adjunct faculty appointments at Oregon State University and the Joint Center for Graduate Studies, which subsequently became Washington State University-Tri-Cities, where, at the time of his death, he held an appointment with the United States Transuranium and Uranium Registries in the Pharmaceutical Sciences Department, College of Pharmacy.

Mel considered himself a "specialist in reproductive and developmental toxicology and radiobiology, placental transfer and prenatal dosimetry of radionuclides, biological effects of radionuclides, and biokinetics of nutrients and toxic substances," and indeed he was. His research led to 256 publications. Mel was especially skilled in developing successful collaborative efforts with other scientists and he mentored several postdoctoral staff.

At Hanford he continued his interest in the possible health consequences to the embryo and fetus following maternal intakes of radionuclides. With several collaborators he expanded his research to include a much larger range of radionuclides including fission products such as <sup>85</sup>Kr, <sup>131</sup>I, <sup>144</sup>Ce, and <sup>90</sup>Sr; radon; uranium; and the transuranium elements including <sup>239</sup>Pu, <sup>141</sup>Am, <sup>253</sup>Es, and <sup>249</sup>Bk. This research has contributed significantly to the biokinetic and dosimetric models developed by the International Commission on Radiological Protection (ICRP) and National Council on Radiation Protection and Measurements (NCRP) for deriving dose coefficients for members of the public. Mel's most important contribution may be in identifying the many factors that influence the transfer of specific radionuclides across the placental membrane, the incorporation in the conceptus, the radiation doses received by the embryo/fetus, and the potential for early and long-term biological effects. His research showed that

radionuclides have specific affinities and localize in characteristic organs and tissues of the feto-placental unit and of the embryo/fetus, influenced by the physical, chemical, and physiochemical state of radionuclides, the gestational stage, and maternal biokinetics. Mel's nearly 50 years of research have significantly increased our understanding of the risks to the embryo and fetus from maternal intakes of radionuclides and led to radiation protection practices directed to the reduction of these risks.

While pursuing studies on radionuclides he collaborated with other scientists in some of the first research to apply ultrasound imaging to embryonic tissues. Mel's work on the prenatal effects of ultrasound helped to establish the safeness of this valuable clinical technique. With other scientists he examined the potential prenatal and postnatal effects of metals and slow-release system contraceptives used in intrauterine devices for birth control. He also investigated possible effects of nonionizing radiations including extremely low-frequency electromagnetic fields, microwaves, and dc-magnetic fields on the developing fetus. These studies were in response to concerns for potential health effects resulting from exposures to radiations from radar generators, microwave ovens, highvoltage electrical transmission lines, cell phones, etc. Then in the 1970s, during the Department of Energy's push to explore alternative energy sources, Mel conducted developmental and teratogenic studies on high-temperature-boiling liquids derived from coal liquefaction processes. He participated with other scientists in studies of a wide range of industrial chemicals, his emphasis always being on possible embryo toxicity.

Mel was extremely generous in sharing his expertise with others,

but he remained focused on the developmental effects of radionuclides and improving radiation protection for members of the public. He was a charter member of the Health Physics Society (HPS) which honored him with Fellow membership. The Columbia Chapter of the HPS also honored him with Lifetime membership. He was a Fellow of the American Association for the Advancement of Science and the American Institute of Ultrasound. He was a member of the American Society for Investigative Pathology, Radiation Research Society, Society of Toxicology, and Teratology Society. He was actively involved in outreach and public educational efforts of regional professional organizations.

His expertise was recognized by his being asked to serve on numerous committees and panels, such as those of the National Academy of Sciences-National Research Council, Federal Food and Drug Administration. American Institute of Ultrasound in Medicine, Organisation for Economic Co-operation and Development Nuclear Energy Agency, and **Committee on Interagency Radiation** Research and Policy Coordination. Mel chaired the committee of the NCRP that authored NCRP Report 128, "Radionuclide Exposure of the Embryo/Fetus," issued in 1998. He was a consulting member of the ICRP task group that prepared ICRP Publication 88, "Doses to the Embryo and Fetus from Intakes of Radionuclides by the Mother," issued in 2002.

Mel epitomized the successful research team leader. He was generous with his knowledge and generous in sharing credit. He was skilled in experimental design and wise in bringing in outside expertise when needed. His easy-going manner gained him respect, admiration and, perhaps most important, for a research team, cooperation. He

recognized the importance of making the results of his research available to sponsors and the public by publishing frequently in the peerreviewed literature.

Mel was a true scholar, had a great sense of humor, was a good storyteller, was modest about his accomplishments, and set an example for all of us in his dealing with a series of health problems in the last few years. His hobbies included furniture making and photography and recently he had been growing gourds to make Southwest Indian-style rattles. He was an avid reader. With his family he enjoyed frequent visits to their vacation home at Seal Rocks on the Oregon coast. Mel was an active member of the Trinity United Church of Christ in Richland.

Mel is greatly missed by his wife, Shirley, two sons, one daughter, and seven grandchildren. He is also missed by his many friends and colleagues, including a few of us who shared an occasional evening of "very low stakes" poker with him. 8

#### Memorials

J. Newell Stannard, 95, Health Physics Society past president, died 19 September 2005. A complete memorial will appear in the December issue of Health Physics News.

Edwin A. Bemis, Jr., 85, one of the first 100 certified health physicists, died 14 July 2005. A complete memorial will appear in the December issue of Health Physics News.



# Outside the Corner Office

The Entrepreneurial Paradox (Part 2 of 2)

James M. Hylko

In the previous issue, the nature of entrepreneurship was discussed, creating a paradox that often arises from the seeds of success. In this issue, Mr. Seely discusses the contributing factors to this paradox and provides useful information to help entrepreneurial companies ensure future growth and a strong competitive position.

#### The Concept of Control

Companies typically do not have extensive control systems in place when they start operating. Mr. Seely commented, "The owner and a few direct-report employees take care of everything. Because of this initial control from the top, the mode of operation that develops within the work force is that top management will continue to take care of everything and continue to initiate new and brilliant ideas. It is then up to the rank-and-file to implement these ideas faithfully. If the control system in place is too oppressive, the employees within the organization may believe that initiative is neither valued nor desired."

Therefore, on one hand, the clear message is that orders are issued from the top. The organization may be in the midst of rapid and farreaching change, but the change will not be a result of initiative from below. On the other hand, there is no need for the employee to seek improvements because it will be wasted effort. We thus find the frustrated employee, in which the logical response is to either leave or accommodate the organization. In either case, the company will be unable to innovate as it should, no matter how forward thinking the entrepreneur may be, for both the entrepreneur and employee will eventually become isolated from each other. Such an approach can stymie initiative and a sense of responsibility throughout the company.

Instead of monitoring perfect adherence to clearly detailed rules, the control system should verify that directions are clear and that relevant information is communicated between management and employees. Managers can then focus their efforts on identifying opportunities and initiatives at all levels of the organization. For an employee to take the lead in innovation, such as improving a process or procedure, means accepting a larger role than can be defined through traditional "authority" systems. In turn, the pursuit of innovation must become a rewarded activity. There needs to be mutual benefit for the employee if there is to be any desire to pursue opportunities for the company.

#### Return on Investment (ROI) or Wasted Resources

A company must encourage a variety of initiatives in order for a few to succeed. Therefore, it is to the advantage of the company that

those attempts, even if they eventually go nowhere, are undertaken. If employees do not believe they will eventually succeed (like the entrepreneur did), they will not start working on something new. Mr. Seely commented on the perception that, very often, failure in a given project represents a blemish on the track record of the employee. This is the fastest way to destroy innovation within a company. If failure was not due to either incompetence or neglect, but to unforeseeable circumstances, the employee can also be viewed as an "internal entrepreneur."

In order to give employees that confidence, the organization must provide resources for first trials. For this reason, companies can have a variety of resource allocation processes. The early stages of the process can be very simple, but the complexity of the entire process is still based on the degree of uncertainty, risk, and return on investment (ROI). For example, it may not be worth allocating resources to develop an in-house training database because of the uncertainty, risk, and delay of the ROI, that is, whether it will even work, in comparison to purchasing a verified and validated off-the-shelf software program where a low-risk, immediate ROI can be achieved immediately after purchase.

However, in either high-risk or low-risk situations, the controller tends to react immediately against an (and for that matter, any type of) initiative because the purpose of the control system is to prevent wasting resources. The issue then becomes whether failed experiments are considered to be a waste of resources. But learning from failure is often more valuable than the profits and experience gained from "marginal" successes. Management must then make the difficult decision of how to control these resources without eliminating initiative. Top management must differentiate amongst personal failure, uncontrollable failure, incompetence, and negligence and have a clear idea of how to respond to these issues in a fair and professional manner. Also, trust is a critical part of the control system, since it cannot be removed from any productive, long-term human relationship.

#### Subcontracting or Consolidation

Start-up companies typically expand their employee bases in "leaps and bounds." Currently working with a once-upon-a-time start-up company, I observed our own employee base expand from just 50 employees to over 200 employees following two new contract awards. This did not occur gradually, but literally overnight. According to Mr. Seely, it is common for entrepreneurs to eventually seek stability after situations like this. After surviving the uncertainties associated with turbulent start-up activities, many companies will then try to stabilize through consolidating external operations. Activities that used to be subcontracted become internalized. This is often done under the assumptions that they are easier to control and they reduce costs. Unfortunately, the employees end

up acquiring additional responsibilities without additional support, directly impacting response capability. What used to take 24 hours can now take up to one week. This delay can be detrimental to any client-contractor relationship. Therefore, providing adequate services through subcontracting becomes highly relevant by first trying to help the small company overcome its organizational issues. The next step is to provide the entrepreneurial company with as many subcontracting services as possible so that it can concentrate on its area of expertise and respond in a timely manner without trying to manage the excessive overhead that often accompanies "professionalization."

#### Broadly Defined Objectives or "Pigeonholing"

Both the entrepreneur and the employees who work for him/her must be able to "see" what opportunities are available. This will depend, to a large extent, on motivation. Organizations can be designed by structure to put employees in a better situation to spot opportunities. To achieve this, the job position must have real-time input, where employees at all levels are in direct contact with the client and have the freedom to adjust their work according to changing demands. Employees need to be responsible for broadly defined objectives instead of making excessive use of functional areas, commonly referred to as "pigeonholing." When employees are actively involved in the decision-making process, they can then realistically assess potential opportunities, that is, seeing is believing. As innovations are introduced, old processes are discarded after becoming obsolete, and the company adapts

its strategy to the changing environment. Also, communicating these changes and the reasons behind them to the affected employees in a timely manner can prevent political infighting.

#### Conclusion

Start-up and small companies contribute to a healthy economy. But we cannot forget that, if the promise contained in these new entrepreneurial companies is to be fulfilled, many of them will have to grow beyond their initial start-up stage. However, achieving success may affect the entrepreneur's desire for change. Once the initially perceived opportunity has been achieved, the personal value of the entrepreneur has been validated. So why change anything? Consequently, the very success of entrepreneurship can result in complacent satisfaction, that is, maintaining the status quo. Furthermore, organizational rigidity (that is, the concept of control), eliminating employee initiative (that is, ROI or wasted resources), subcontracting or consolidation, and broadly defining objectives compared to "pigeonholing" can seriously impede entrepreneurial behavior in paradoxical ways.

Companies do not fall into these traps intentionally. What happens is that companies, in the process of "professionalization," can seriously impair their entrepreneurial drive and need to watch constantly to avoid these traps. Companies that concentrate on their strengths and maintain flexibility to pursue new opportunities are far more successful, keeping in mind that the key to growth is to avoid the temptation of empire building, such that the entrepreneur does not come full circle and end up the way he/she was in the beginning-working in isolation. 8



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

Editor Kyle Kleinhans, CHP Work: 865-576-4170 Fax: 865-574-5037 Email: kk2@bechteljacobs.org American Academy of Health Physics American Board of Health Physics Web site: http://www.aahp-abhp.org

Associate Editor Harry Anagnostopoulos, CHP Work: 314-770-3059 Fax: 314-770-3067 Email: harold.w.anagnostopoulos@saic.com

#### **Call for AAHP Nominations**

Jerry Hunt, Chair, Nominating Committee

The American Academy of Health Physics (AAHP) Nominating Committee needs your assistance in finding a few good nominees interested in serving as AAHP officers.

We are seeking nominees for President-elect, Treasurer, and Director. Nominees must be current Plenary Members of AAHP (active or emeritus). The elected candidates will take office at the 2007 Health Physics Society (HPS) Midyear Meeting and serve a three-year term of office. Please contact any member of the Nominating Committee (Steven H. Brown, William P. Fitzgerald, Jeffery M. Hoffman, Jerry B. Hunt, David S. Myers, Carl J. Paperiello, Kathryn H. Pryor, Charles E. Roessler, or James S. Willison) by phone, fax, or email to volunteer or to nominate someone. Contact information for these individuals can be found in the HPS Membership Handbook or at the AAHP Web site or you may contact the chairman directly at huntjb@ornl.gov.

The Nominating Committee would also like to thank the members who came off the Committee this year: Mary L. Birch, Joel O. Lubenau, and Johnafred M. Thomas, past chairman.

#### **Continuing Education Committee Activities**

Jeffrey Kotsch, Chair

The Continuing Education Committee held three eighthour training classes at the annual HPS meeting in Spokane:

• Identification and Control of Electromagnetic Fields (0–300GHz), by John Leonowich—21 attendees

• Low Dose Effects of Ionizing Radiation, by Douglas Boreham—48 attendees

• Training Emergency Responders: Materials, Tools, and Methods for Health Physicists, by Brooke Buddemeier

and J. DiLorenzo-53 attendees

For the upcoming midyear HPS meeting in Scottsdale, the Committee will be holding two eight-hour training classes on 21 January 2006:

• Medical Internal Dose Assessment, by Mike Stabin

• Health Effects of Ionizing Radiation in the Context of Radiological and Nuclear Terrorism, by Dan Strom

The Academy and the Committee deeply appreciate the time and efforts of the presenters of these courses.

## 10 CFR Part 35, Medical Use of Byproduct Material

Mary Birch, ABHP Chair

On 30 March 2005, the Nuclear Regulatory Commission (NRC) published in the *Federal Register* (70 FR 16336) revisions to 10 CFR Part 35, "Medical Use of Byproduct Material," that eliminated the list of accepted specialty boards from the regulation and transferred the list to the NRC Web site. On 4 April 2005, the American Board of Health Physics (ABHP) received a letter from the NRC notifying it that the previous recognition of the ABHP as a specialty board for radiation safety officer would lapse on 25 October 2005 and, if the Board should decide to retain NRC recognition of its certification process, it should do so no later than mid-August 2005. The ABHP applied for

recognition as a specialty board for the certification of radiation safety officers on 29 July 2005. The NRC staff has reviewed the submittal and raised questions on compliance with the educational requirements; as a result, the Board, with the concurrence of the American Academy of Health Physics Executive Committee, has revised the educational requirements. The Prospectus will be revised to state:

"As a minimum, the applicant must submit evidence (for example, official college transcripts or certified translations of official transcripts) of earning a bachelor's or graduate degree from an accredited college or university in physical science or engineering or in a biological science with a minimum of 20 semester hours in physical science."

This change is effective for applicants applying to take the exam in 2006.

#### ABMP Certification Opportunity for CHPs

K. David Steidley, ABMP Liaison

The American Board of Medical Physics (ABMP), sponsored in part by the AAHP, has created a three-year window that expires in December 2006 to allow the entrance of baccalaureate-level individuals who are well-experienced medical health physicists to their examination for certification in medical health physics.

Now eligible in this window are those certified by the ABHP with five years of experience in medical health physics. The ABMP will waive the Part I (General Medical Physics) exam requirement for physicists who are already certified by the ABHP. Candidates without their health physics boards but with a BS degree from an accredited university in physics, medical physics, health physics, or another appropriately related field and with 15 years of experience in medical health physics may also apply. The experience for medical health physics must be obtained as a provider of services in a health care facility.

The ABMP tests the candidate's experience and practical knowledge in the area of current radiation protection standards for both ionizing and nonionizing radiation. Part I is a multiple-choice test on general medical physics while Part II covers topics in medical health physics. Part III is a three-member panel oral test of two hours duration.

More information may be obtained at the Web site (http://www.abmpexam.com/). The MHP panel chair, K. David Steidley, PhD, will be glad to take questions at 973-322-5625.

#### ABHP Examination No. 1 – June 1960

As promised in last month's "CHP Corner," a 10-point question from the first ABHP exam is listed below. Candidates were required to answer 15 out of 20 10-point questions, plus a 50-point essay in an exam time limit of three hours.

- 1. a) Why is <sup>90</sup>Sr an exceptionally toxic radioactive poison?
  - b) Why is it that different types of radiation have varying degrees of relative biological effectiveness?
  - c) What are the initial events in tissue leading to the biological effects of radiation?
  - d) What chemical products are thought to be formed during the irradiation of water?
  - e) What are the principal physiological effects of chronic whole-body exposure to gamma rays?

# Health Physics Society 51st Annual Meeting & Exhibition

# **Call for Papers**

June 25-29, 2006 - Providence, RI



The deadline for submitting abstracts for the 2006 Annual Meeting is January 20, 2006.

Please submit your abstract through the HPS web site http://birenheide.com/hps/2006AM/abstracts/

> Submittal & Presentation guidelines can be found at http://hps.org/newsandevents/meetings/meeting5.html

For International Poster Session instructions go to www.hps.org/newsandevents/meetings/



Health Physics Society 1313 Dolley Madison Blvd. • Suite 402 • McLean, VA 22101 703-790-1745 • Fax: 703-790-2672 • Email: hps@burkinc.com www.hps.org The Display Ads, Short Course listings, and Placement Center are available in the hard-copy version of *Health Physics News*.

#### **Editorial Staff**

Editor: Genevieve S. Roessler

Editorial Associate: Mary A. Walchuk

Managing Editor: SHARON R HEBL 19890 FISH LAKE LN ELYSIAN MN 56028 Phone: 507-362-8958 or 507-362-4176 Fax: 507-362-4513 Email: hpsnews@frontiernet.net

Associate Editors: Ralph L. Andersen, rla@nei.org Cynthia G. Jones, cgj@nrc.gov Andrew Karam, paksbi@rit.edu Edward E. Lazo, lazo@nea.fr Dade W. Moeller, dademoeller@cconnect.net

Contributing Editors: Paul W. Frame, framep@orau.gov James M. Hylko, jhylko@weskem.com Mark L. Maiello, maiellm@wyeth.com Gary H. Zeman, ghzeman@lbl.gov

#### Officers of the Society:

Ruth E. McBurney, President Brian Dodd, President-elect Raymond A. Guilmette, Past President Richard R. Brey, Secretary Richard E. Toohey, Treasurer David J. Allard, Treasurer-elect Richard J. Burk Jr., Executive Secretary

#### Health Physics News Contributions and Deadline

Almost everything the Managing Editor receives by 20 November will be printed in the January issue.

#### HPS Disclaimer

Statements and opinions expressed in publications of the Health Physics Society or in presentations given during its regular meetings are those of the author(s) and do not necessarily reflect the official position of the Health Physics Society, the editors, or the organizations with which the authors are affiliated. The editor(s), publisher, and Society disclaim any responsibility or liability for such material and do not guarantee, warrant, or endorse any product or service mentioned. Official positions of the Society are established only by its Board of Directors.

#### **Reprint Policy**

Except as noted otherwise, the copyright for each piece is owned by the author. Permission to reprint must be obtained directly from the author or designated copyright owner.

HPS Reference Library: http://www.min.uc.edu/nuclear/hpspep/peplib.html

HPS ADMINISTRATIVE SERVICES

- 1313 DOLLEY MADISON BOULEVARD SUITE 402
- MCLEAN VA 22101

Phone: 703-790-1745; Fax: 703-790-2672; Email: hps@BurkInc.com

HPS Home Page URL: http://www.hps.org

Article II, Section 1, of the Bylaws of the Health Physics Society declares: "The Society is a professional organization dedicated to the development, dissemination, and application of both the scientific knowledge of, and the practical means for, radiation safety. The objective of the Society is the protection of people and the environment from unnecessary exposure to radiation. The Society is the successary exposure to addition. The Society is the protection of people and the environment from unnecessary exposure to radiation. The Society is the protection of people and the environment from unnecessary exposure to radiation. The Society is the successary exposure to radiation. The Society is the protection of people and the environment from unnecessary exposure to radiation. The Society is the successary exposure to radiation and explicit to the benefits derived." *Health Physics News* is intended as a medium for the exchange of information between members. *Health Physics News* is published monthly and is distributed to the members of the Society as a benefit of membership. Subscriptions for nonmembers are available. Libraries, institutions, commercial firms, government agencies, and any person not eligible for membership may obtain a subscription. A small inventory of recent back issues is maintained by the Society at the Office of the Executive Secretary to supply copies to new members not yet on the mailing list. Inquiries about back copies and about subscriptions should be directed to the HPS Secretariat.

#### \*\*\* CHANGE OF ADDRESS, PHONE, FAX, OR EMAIL INFORMATION \*\*\*

If you have a change of address, phone or fax number, or email address you may now make those changes via the Health Physics Society (HPS) Web site (www.hps.org) in the Members Only section. The changes will be made to the Web site database and will also automatically be sent to the HPS Secretariat so that changes will be made on the Society database.

If you do not use the Internet make your changes through the HPS Secretariat.

Please make any changes or corrections BESIDE YOUR MAILING LABEL (on the reverse side of this notice). If you have any change in your phone number, fax number, or email address, please note it near the label.

## **Odds and Ends** from the Historical Archives

Paul Frame

#### **ORNL** Chirper

A shiny stainless steel case the size of a cigar tube, a flashing light, and a chirping audio output, what more

could you ask for in a monitor? Designed at Oak Ridge National Laboratory



(ORNL) in the late 1950s, it employed a miniature GM tube, a speaker, and transistorized electronics. With the



exception of the light and battery, all the components were securely encased in an epoxy block.

The following story was told to me by one of the developers of this device, Frank Manning. During Senator John Fitzgerald Kennedy's tour of ORNL in 1959 (made shortly after he announced he would be running for the presidency), he

visited the instrumentation group where he was shown the newly developed dosimeter. After the visit, the lab folks noticed that the dosimeter had disappeared, presumably swiped by the future president. Another story was that JFK carried one of these with him when he went overseas to meet with Khrushchev. The concern was that there might be some type of attempt to expose the president to harmful levels of radiation. This might sound farfetched but it was also the time when the CIA attempted to kill Castro with exploding cigars.  $\bigotimes$ 

HEALTH PHYSICS SOCIETY 1313 Dolley Madison Blvd., Ste 402 McLean, VA 22101

/ents 18-23 June 2006 bcoming

39<sup>th</sup> Health Physics Society Midyear Topical Meeting http://hps.org/newsandevents/ meetings/meeting9.html 22-25 January 2006

Scottsdale, Arizona

2006 HPS Summer School "Medical Health Physics" http://nechps.org/SS06/ss06.html

**Brown University** Providence, Rhode Island

51<sup>st</sup> Annual Meeting of the Health Physics Society http://hps.org/newsandevents/ meetings/meeting5.html 25-29 June 2006 Westin Convention Center

Providence, Rhode Island

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

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

PRESORTED STANDARD US POSTAGE PAID ROCHESTER MN PERMIT NO 289