

# NRRPT® NEWS

## National Registry of Radiation Protection Technologists

Spring 2009 Edition

Incorporated April 12, 1976

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### Chairman's Message



Dave Biela

This past year the NRRPT reached another milestone. We exceeded the 5,000 registered mark and have almost 2,000 sustaining members. Numbers like these were only a dream of the founding members back in the early days of the organization. Also this past year the NRRPT has been asked to participate on the HPS's "Innovative Ideas to Training" team that is looking for ways to take advantage

of current technologies to bring information and training to individuals that may not be able to travel to standard training programs, or attend conference, etc. We have been asked by the Chair of the ANSI N13 committee to apply for participation on his committee so that the technologist's perspective can be represented in future rule making. We are also working with the Center for Disease Control (CDC) to establish a voluntary corps of radiation protection professionals that could be mobilized during a radiological event. These represent just some of the strives the NRRPT has made since its creation in 1976. I am so proud of my 20 plus years of participation on the Board and Panel and am thankful that I have been entrusted with the chairmanship of such a great organization.

In previous articles, I talked about the potential for long-range job opportunities within the nuclear industry due to the resurgence of nuclear energy within the United States and the manpower losses due to the aging work force. What I did not know at the time, was the need there was going to be for technicians and engineers at

Department of Energy (DOE) facilities due to the stimulus money that was released by the government. With such a great need, we in the registry, need to continue to encourage technicians to sit for the NRRPT exam and to do what we can to help them prepare for it. Be a champion of the industry! We need to encourage students at the high school and college level to get into the field. There is information available online at [nrrpt.org](http://nrrpt.org) that can be used at a career day and other events.

What is taking place within the organization and the industry is truly remarkable and I am looking forward to the years ahead.

On a sad note, Herman Cember, Health Physics educator and author and known to most people in the industry died on Saturday, March 7, 2009. Our condolences to his family.

Sincerely,  
Dave Biela  
NRRPT, Chairman of the Board

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**\*\* Attention \*\***

**We've Moved!**

As of April 15, 2009, the **NRRPT** Office re-located to:

**NRRPT**  
P.O. Box 3084  
Westerly, RI 02891  
(401) 637-4811 (ofc)  
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For further information contact us at: [nrrpt@nrrpt.org](mailto:nrrpt@nrrpt.org)

**Please continue to visit us on the web at: [www.nrrpt.org](http://www.nrrpt.org)**

## Off-Site Source Recovery Project

### Los Alamos National Laboratory

### National Security through Source Recovery

The Off-Site Source Recovery Project (OSRP) has a National Nuclear Security Administration (NNSA) sponsored mission to eliminate excess, unwanted, abandoned, or orphan radioactive sealed sources from the environment that pose a potential risk to health, safety, and national security. The Project is part of NNSA's Office of Global Threat Reduction (NA-21) and is managed at Los Alamos National Laboratory through the Nuclear Nonproliferation Division. OSRP enhances public safety and homeland security by aggressively removing radioactive materials from the environment that could pose a terrorist threat if improperly acquired.

#### Project Highlights

OSRP has removed more than 19,000 radioactive sealed sources containing more than 700,000 Curies of material from over 700 industrial, educational, healthcare, and government facilities across the U.S. since 1999.

DOE/NNSA Defense Determinations provide OSRP a final disposition pathway for  $^{239}\text{Pu}$ ,  $^{238}\text{Pu}$ , and  $^{241}\text{Am}$  sources which are sent to the Waste Isolation Pilot Plant (WIPP) in Carlsbad, N.M.

In 2006, OSRP recovered and secured the last known public sector unwanted  $^{239}\text{Pu}/\text{Be}$  neutron sources from within the U.S. (all have been sent for disposal). Recovery of U.S.-origin plutonium remains a priority of OSRP.

Developed and obtained certifications for field-sealable special form capsules and a Type A Fissile shipping container.

Support development of replacement containers for 20WC and 6M Specification Packagings.

In 2005, OSRP instrumented removal of 57,058 Curies of  $^{60}\text{Co}$  from a university campus in downtown Atlanta; and also recovered 13 heavily shielded  $^{137}\text{Cs}$  devices, known as Gammators. These Gammators were removed from a hospital, a high school, five small colleges, and six universities. Locating and recovering Gammators remains a priority for OSRP.

As OSRP continues their domestic recovery mission, new NNSA directives include recovery and repatriation of U.S.-origin sources currently located at foreign locations.

#### International Activities

OSRP staff cooperate with the International Atomic Energy Agency (IAEA) and bilaterally with other international organizations and countries for repatriation of radioactive sources to their country of origin; particularly repatriation of U.S.-origin material.

This has included OSRP Staff visits to Argentina, Australia, Austria, Bolivia, Chile, China, Costa Rica, Denmark, Ecuador, El Salvador, France, Guatemala, Honduras, Israel, Italy, Mexico, Nicaragua, Panama, Russia, Singapore, South Africa, Sweden, Switzerland, Ukraine, and Uruguay.

#### Register Sources Online

Please register unwanted sources using the online registration instructions provided on our website:

<http://osrp.lanl.gov>

Also visit the website for additional information about activities and capabilities of the Project.

Questions about source registration may be directed to OSRP by calling toll free 877-676-1749 or sending email to [osrp@lanl.gov](mailto:osrp@lanl.gov).

Excess/Unwanted Sources?

Licensees should register all excess and unwanted radioactive sealed sources with OSRP for recovery consideration.

$^{238}\text{Pu}$      $^{90}\text{Sr}$   
 $^{239}\text{Pu}$      $^{137}\text{Cs}$   
 $^{241}\text{Am}$      $^{60}\text{Co}$   
 $^{252}\text{Cf}$      $^{192}\text{Ir}$   
 $^{244}\text{Cm}$      $^{226}\text{Ra}$

OSRP recoveries of transuranics and beta/gamma sources are generally prioritized on the basis of activity and level of security. Where numerous sources of lower activity are present at a single location, consideration is given to the total activity from a security perspective.

If OSRP cannot recover the sources directly, OSRP staff can often identify other options that may be helpful to remove sources for secure storage or disposal.

Sealed sources containing the following nuclides are included in the OSRP mission:

Contact OSRP for more information:

Los Alamos National Laboratory  
PO Box 1663, Mail Stop: J552  
Los Alamos, NM 87545  
Phone: (505) 667-7440  
Toll Free: (877) 676-1749  
Fax: (505) 665-7913  
Email: [osrp@lanl.gov](mailto:osrp@lanl.gov)  
<http://osrp.lanl.gov>

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## “ALARA...Past, Present and Future”

Have you ever wondered about the history of ALARA, such as, was this philosophy conceptualized and by whom? If so, the Hanford ALARA Workshop scheduled for August 4 - 5, 2009, at the Clarion Hotel and Conference Center in Richland, Washington may be of interest to you. One of the goals of this workshop is to promote the increased implementation of new and effective ALARA techniques in today's work environment while increasing attendees' knowledge of the availability of ALARA protective measures. It also offers a great place to network with other RRPTs and Health Physics professionals.

Several interesting and practical presentations will be given from many of the Hanford contractors including, Washington River Protection Solutions, CH2M Hill Plateau Remediation Company, and Fluor Hanford. If you or someone you know may be interested in sharing your experiences, abstracts are being accepted through the April 15.

Registration fees are \$75.00 per person and must be submitted no later than July 1st. Several vendors will be attending this event and displaying time tested and new products. If you would like additional information please contact either:

Lee Livesey @ 509-373-1975; [Lee\\_M\\_Livesey@rl.gov](mailto:Lee_M_Livesey@rl.gov) or  
Owen Berglund @ 509-376-9035; [Owen\\_D\\_Berglund@rl.gov](mailto:Owen_D_Berglund@rl.gov)



For immediate release:  
March 3, 2009 (12:00 PM)

## Medical Radiation Exposure of the U.S. Population Greatly Increased Since the Early 1980s

In 2006, Americans were exposed to more than seven times as much ionizing radiation from medical procedures as was the case in the early 1980s, according to a new report on population exposure released March 3rd by the National Council on Radiation Protection and Measurements (NCRP) at its annual meeting in Bethesda, Maryland. In 2006, medical exposure constituted nearly half of the total radiation exposure of the U.S. population from all sources.

The increase was primarily a result of the growth in the use of medical imaging procedures, explained Dr. Kenneth R. Kase, senior vice president of NCRP and chairman of the scientific committee that produced the report. "The increase was due mostly to the higher utilization of computed tomography (CT) and nuclear medicine. These two imaging modalities alone contributed 36 percent of the total radiation exposure and 75 percent of the medical radiation exposure of the U.S. population." The number of CT scans and nuclear medicine procedures performed in the United States during 2006 was estimated to be 67 million and 18 million, respectively.

The NCRP Report No. 160, Ionizing Radiation Exposure of the Population of the United States, provides a complete review of all radiation exposures for 2006.

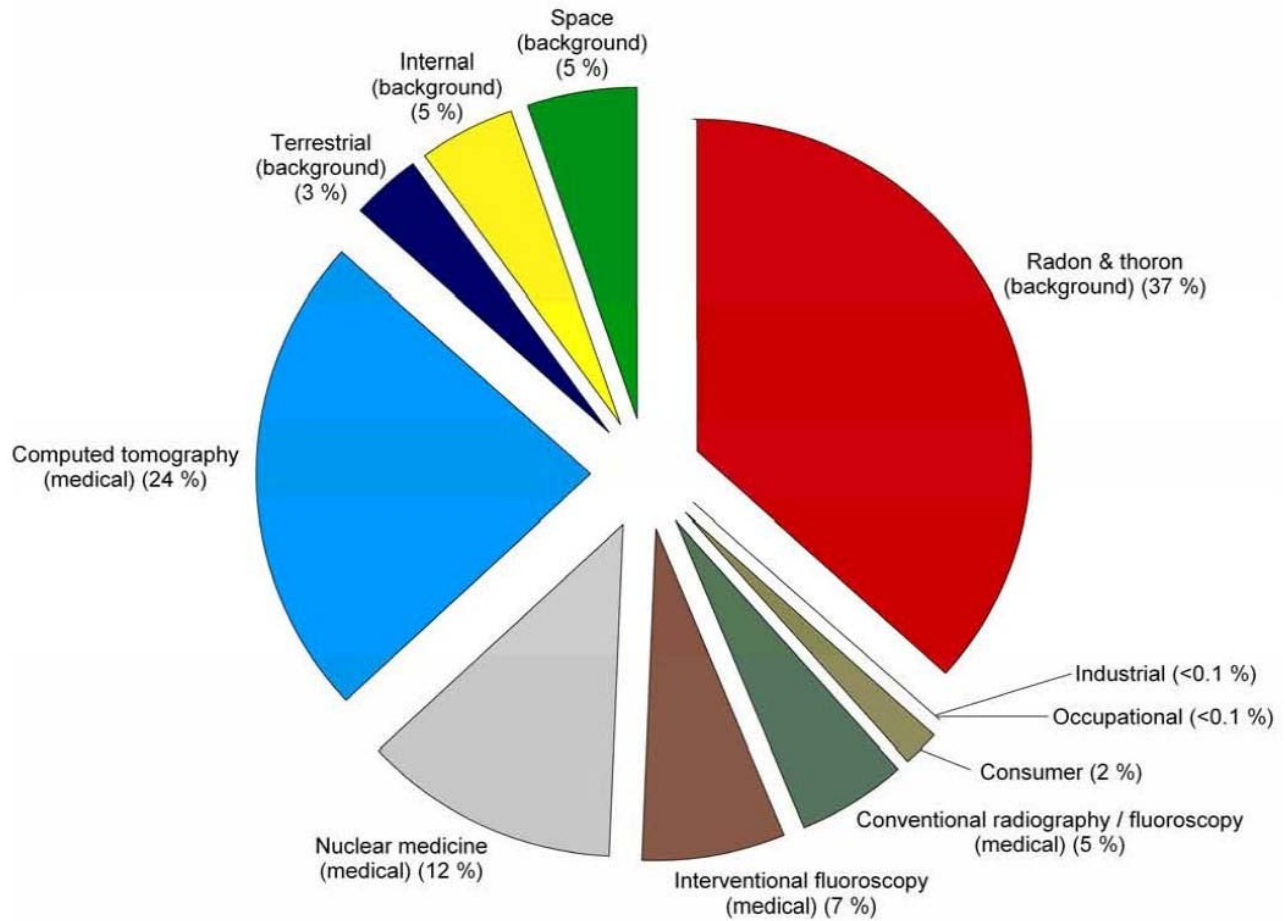
Background radiation, which in 2006 contributed fully half of the total exposure, comes from natural radiation in soil and rocks, radon gas which seeps into homes and other buildings, plus radiation from space and radiation sources that are found naturally within the human body.

Other small contributors of exposure to the U.S. population included consumer products and activities, industrial and research uses and occupational tasks.

NCRP is working with some of its partners like the American College of Radiology (ACR), World Health Organization and others to address radiation exposure resulting from the significant growth in medical imaging and to ensure that referrals for procedures like CT and nuclear medicine are based on objective, medically relevant criteria (e.g., ACR appropriateness criteria).

This year marks the 80th anniversary of NCRP's founding and the 45th anniversary of its charter from the U.S. Congress under Public Law 88-376.

All Exposure Categories  
Collective Effective Dose (percent), 2006



A limited number of prepublication copies of Report No. 160 will be available during the NCRP annual meeting on March 2-3, 2009. The final Report will be available from the NCRP website, <http://NCRPpublications.org>, in both soft- and hardcopy formats. For additional information contact David A. Schauer, ScD, CHP at [schauer@NCRPonline.org](mailto:schauer@NCRPonline.org), 301.657.2652 (x20) or 301.907.8768 (fax).

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Protection and Measurements

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<http://NCRPonline.org>  
<http://NCRPpublications.org>

## Welcome New Members

Congratulations to the following individuals who successfully passed the NRRPT February 28, 2009 examination:

Dale R. Anderson  
Gregory W. Arends  
Matthew E. Ballew  
Michael W. Barber  
Phillip D. Cole  
Catherine A. Davis  
Keith F. Eason  
Drew J. Gamett  
Weston L. Gamett

Russell S. Garcia  
Joseph E. Garner  
James R. Hopkins  
James G. Lamb  
Paul M. Lane  
Stephen R. Larson  
Christopher J. Ledwich  
Matthew T. Lutek  
Tony R. McGill

David L. Neikirk  
Brent D. Nielsen  
Bjorn S. Nilsen  
Ryan D. Paris  
Michael W. Polek  
Todd O. Roberts  
Susan R. Schoen  
William H. Schuck  
James D. Shrum  
Edward J. Wolf

New Members: If you do not have access to the "Members Only" portion of the website, please contact the Executive Secretary ([nrrpt@nrrpt.org](mailto:nrrpt@nrrpt.org)). Your email address must be on file in order for you to gain access.

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## NRRPT Board & Panel Meeting

The NRRPT Board and Panel Meeting will be held July 11-14, 2009 in conjunction with the HPS Annual Meeting in Minneapolis, MN. All NRRPT members are welcome and encourage to attend. For more information regarding the NRRPT Board and Panel Meeting, please contact DeeDee McNeill at [nrrpt@nrrpt.org](mailto:nrrpt@nrrpt.org) or 401-637-4811.

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**We've only receive a few Salary Survey forms so we're leaving the form in for another issue. Please complete and return as soon as possible! The form is on pg 13.**

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## Herman Cember Memorial

Professor Emeritus Herman Cember, 85, of Lafayette, died Saturday, March 7 at Methodist Hospital, Indianapolis. He was born January 14, 1924, in Brooklyn, N.Y., to the late Arthur and Lily Shuster Cember.

He was married for 65 years to Sylvia L. Brudner Cember, and she survives. Following his graduation with a B.S. in Electrical Engineering from the City College of New York in 1949, he was awarded a National Research Council Fellowship in Radiological Physics at Oak Ridge National Laboratory. After the Fellowship he spent 10 years on the Graduate Faculty of the School of Public Health at the University of Pittsburgh, while simultaneously earning his M.S. and Ph.D. in Biophysics in 1952 and 1960. He served as an Associate Professor at the University of Cincinnati College of Medicine until moving to Northwestern, where he spent the majority of his research and teaching career, 31 years, as Professor of Environmental Health. After retiring as a Professor Emeritus, he continued to remain active as an adjunct professor at both the University of Illinois at Champaign-Urbana and at the School of Health Sciences of Purdue University.

Dr. Cember authored the most widely used textbook in the field of Health Physics currently in its 4th Edition, Health Physics, by Herman Cember (you could say “he wrote the book” on the field).

Herman is a longtime member of the Health Physics Society as well as the American Industrial Hygiene Association. He was designated as a Fellow of the Health Physics Society and the American Public Health Association. He was awarded a Fulbright Fellowship in 1972 and served as a Visiting Professor at the Hebrew University in Jerusalem. Herman has been honored with countless awards throughout his brilliant career, including the Distinguished Scientific Achievement Award in 1990 and the William B. McAdams Outstanding Service Award in 2003, both presented by the American Board of Health Physics and the American Academy of Health Physics. He was also a Past President of the American Academy of Health Physics. He was a Diplomate of the American Academy of Environmental Engineers, a Registered Professional Engineer (PE) in Illinois and was a Certified Health Physicist (CHP) and a member of the scientific research honorary, Sigma Xi.

Surviving with his wife is a son, Michael (wife Robin) of Skokie, IL, two brothers, William (wife Dorothy) of Atlanta, GA, and M. Nathan (wife Esther) of Nyack, N.Y.

Also surviving are 6 grandchildren: Leah (husband Shai Hadashi), Hannah (husband Jeremy Cowles), Aaron (wife Beth), Daniella (husband Tal Adar), Ariel (wife Liz) and Gabriel (wife Ilana) and 7 great-grandchildren: Benjamin and Maren Cowles, Rachel and Ethan Adar, Cecilia Zimmerman, Mathew Hadashi and Lina Cember.

He was an active member of the Jewish Community of Greater Lafayette and a member of both the Congregation Sons of Abraham and Temple Israel. His interests included stamp collecting, reading, continually learning and talking to people about anything and everything. He was one of the friendliest, kindest and intelligent individuals who ever lived and he will be missed greatly. He will be joining his beloved daughter Marilyn, recently deceased, in the “Olam Haba” (“the world to come” or heaven).

Service was at the Soller-Baker West Lafayette Chapel, 1184 Sagamore Parkway West. Rabbis Michael Rascoe and Audrey Pollack officiating. Burial at the Son of Abraham Cemetery in Lafayette. Please send memorials to: Methodist Health Foundation (notated to the Marilyn Zimmerman Memorial Fund), P.O. Box 7168, Indianapolis, IN 46207-7168.



# Radioactive Curative Devices and Spas

By Paul W. Frame

Oak Ridge Associated Universities

*This article was originally published in the Oak Ridger newspaper, 5 November 1989.*

## INTRODUCTION

The idea that certain springs have miraculous healing power is not a new one. For thousands of years, the ill and infirm have journeyed long distances seeking cures at the waters of Bath in England, Badgastein in Austria, and countless other locations.

In the United States, the most famous curative waters are those at Hot Springs, Arkansas. Indeed, the properties of these waters have been valued so highly that in 1832 Congress established the Arkansas Hot Springs as the first federal reservation, a forerunner of the national park system.

Even the military recognized the importance of these waters and established the Army and Navy General Hospital there in 1879. At first, personnel undergoing treatment were required to lie in tubs of water that was pumped in directly from the springs. However, the 140-degree temperatures generated grumbling from patients who did not appreciate what was good for them. In response, cooling towers were installed to reduce the temperature.

In 1903, the discoverer of the electron, J.J. Thompson, wrote a letter to the journal *Nature* in which he described another remarkable discovery of his, the presence of radioactivity in well water. This led to the discovery by others that the waters in many of the world's most famous health springs were also radioactive. This radioactivity is due to the presence of radium emanation - what we now call radon gas - produced by the radium that is present in the ground through which the waters flow.

Who could doubt that it must be the radioactivity that was responsible for the curative properties of the health springs? Certainly not Surgeon General Dr. George H. Torney, who wrote (ca. 1910) that "Relief may be reasonably expected at the Hot Springs in . . . various forms of

gout and rheumatism, neuralgia; metallic or malarial poisoning, chronic Brights disease, gastric dyspepsia, chronic diarrhea, chronic skin lesions, etc."

Further details were provided by Dr. C.G. Davis, who noted in the *American Journal of Clinical Medicine* that "Radioactivity prevents insanity, rouses noble emotions, retards old age, and creates a splendid youthful joyous life."

Professor Bertram Boltwood of Yale explained the scientific basis for the cures in the following way: The radioactivity was "carrying electrical energy into the depths of the body and there subjecting the juices, protoplasm, and nuclei of the cells to an immediate bombardment by explosions of electrical atoms," and that it stimulated "cell activity, arousing all secretory and excretory organs . . . causing the system to throw off waste products," and that it was "an agent for the destruction of bacteria."

Radon was believed to be so important to water that it was considered its life element. Without it, water was dead. Radon was to water what oxygen was to air.

Now that turn-of-the-century science (or at least some practitioners of it) had an explanation for the curative properties of the springs, the health spas and resorts associated with them began to do a booming business. Names were changed to include the magic terms radioactive or radium. Visitors came from near and far to soak in the waters and inhale the air. Marble palaces (still open for business) were built over the springs in Joachimstal in what is now the Czech Republic, and luxurious spas sprouted like weeds in Hot Springs, Arkansas. Good times!

## A PROBLEM AND A SOLUTION

There was a down side to the euphoria: radon cannot remain in the water very long before it decays or escapes

into the air. Because of this, water bottled at the spring does not survive. Its “life element” is lost before it can be consumed. Radioactive water must be drunk at the spring to be effective. How then could the poor and infirm benefit if the costs and effort of traveling to the springs were prohibitive?

The solution came with the invention of devices that could be used in the home to add radon to drinking water. In this country, the first and most popular was the Revigator, based on a patent taken out in 1912. Although its inventor, R.W. Thomas, was not related to Thomas Edison, he was claimed to be of equal genius, at least in the sales brochures of the Revigator Company. This company, headquartered in San Francisco, was large enough to maintain numerous branch offices across the country. Revigator sales reached several hundred thousand, a remarkable record in view of its relatively high price, \$29.50 (in 1929).

The Revigator itself was a “radioactive water crock.” A jar made of radium-containing ore, it held several gallons of water, came with its own spigot, and had the following instructions on the side: “Fill jar every night. Drink freely . . . when thirsty and upon arising and retiring, average six or more glasses daily.” The radon produced by the radium in the ore would dissolve overnight in the water. In effect, it served as a “perpetual health spring in the home.”

Many similar devices were also available. Among the better known were the Thomas Cone, the Zimmer Emanator, and the Radium Emanator. However, these devices were placed in the water instead of the water being placed in them. They had the advantage of being less expensive than the Revigator and were small enough to fit in a suitcase. With one of these, you could enjoy the benefits of radon on the road as well as at home.

As one might expect, the American Medical Association (AMA) was concerned that the public was being fleeced by charlatans. To prevent this the AMA established guidelines (in effect from 1916 to 1929) that emanators seeking AMA approval had to generate more than 2  $\mu\text{Ci}$  of radon per liter of water in a 24-hour period.

Few devices (even the famous Revigator) could meet these exacting standards.

## RADIUM-CONTAINING PRODUCTS

While almost everyone recognized the efficacy of radon in water, many felt that the ingestion or application of radium (the parent of radon) would be even more effective. And so, in the 1920s and early 1930s, it was possible to purchase radium-containing salves, beauty creams, toothpaste (radon was thought to fight dental decay and improve the digestion), ear plugs, chocolate bars, soap, suppositories, and even contraceptives.

Radium-containing pads that were applied to the body were especially popular. One brand, Degnens Radioactive Solar Pad, was said to get its energy from the sun and had to be charged in sunlight for several minutes prior to use. Its \$19.50 (U.S.) price tag was reasonable and it came with a money-back guarantee.

Too good to be true? That is what the manufacturers of a high-priced competitor, the Radiendocrinator, thought. Their literature warned the unwary about such radioactive pads and claimed that charging in the sun was “the purest of nonsense. There is not a shred of truth known to modern science that substantiates such a theory.”

In comparison, the Radiendocrinator was made of refined radium, encased in 14-carat gold, and shipped in an embossed velvet-lined leatherette case - all for only \$150. In general, the Radiendocrinator was meant to be placed over the endocrine glands. Giving one example as to how their Radiendocrinator might be used, the manufacturers advised men to “Wear the adaptor like any athletic strap. This puts the instrument under the scrotum as it should be. Wear at night. Radiate as directed.”

For the sufferers of respiratory ailments, there were pads worn over the mouth and/or nose, e.g., the Radium Nose Cup and the Radium Respirator. Their efficacy was beyond dispute; the radium purified the inhaled air by adding radon to it! To quote the manufacturer of the radium respirator (Radium Health Products), “Radium: scientists found it, governments approved it, physicians recommended it, users endorse it, we guarantee it, SURELY ITS GOOD.”

Needless to say, a few individuals took advantage of the public's faith in the healing powers of radium. One such individual was J. Bernard King, manufacturer of the Ray-Cura. This was a quilted pad that King said would emit radium emanation into the diseased portions of the body to kill the germs. More specifically, he claimed it would cure cancer, epilepsy, tuberculosis, and numerous other diseases.

Ultimately, these false claims caught up with him. Foremost among those cited by the federal authorities when they halted its distribution in 1929 was King's claim that the pad contained radium ore, when in fact it was filled with ordinary soil.

### THE CLOSE OF AN ERA

In many ways, the public would have been much better off if all these products were as fraudulent as the Ray-Cura.

A case in point is Radithor. This product, a liquid, came in half-ounce bottles with each bottle guaranteed by the manufacturer to contain 2  $\mu$ Ci of radium. Eben Byers, the well-known Pittsburgh industrialist, U.S. amateur golf champion, and a man-about-town, could attest to the veracity of the manufacturer's claims. He was so convinced of the product's worth that he averaged three bottles a day - at least until he died of radium poisoning in April 1932.

His widely publicized death as well as the deaths occurring among the radium dial painters helped cool the public's appetite for these radioactive cure-alls. Manufacturers of these devices countered by cautioning against excessive doses of radium and recommending moderation.

Nevertheless, the heydays of the late 1920s and early 1930s were replaced with an appreciation of the potentially lethal properties of radium. An era was drawing to a close.

### OLD SOLDIERS NEVER DIE

Radioactive quack cures, like old soldiers, never die. They just fade away. Despite legal restrictions, many

continued to be manufactured into the 1940s and 1950s. For example, the radium contraceptives mentioned earlier were advertised and sold as recently as the early 1950s by a Denver company.

That these old products continued to be used into the 1950s might be considered mildly curious. What is astounding is that similar, but entirely new, products have continued to be developed in the 1960s and 1980s!

The 1960s saw the production of the Gra-Maze Uranium Comforter in La Salle, Illinois. It was a quilted pad containing uranium ore and was meant, of course, to be placed on whatever part of the body was ailing. Unlike Bernard King's Ray-Cura, on which it was based, this device made no false claims. It really did contain uranium! Unfortunately, this wasn't enough to keep it out of trouble with the authorities. Production ceased rather abruptly in 1965 following a search and seizure operation by federal agents.

About the same time, a similar fate befell the operations of the Ionic Research Foundation in Winter Park, Florida. The main product of this company was the Ionic Charger, a device intended to add radon to drinking water. As the manufacturer pointed out to his customers, people have "been brainwashed by bureaucratic screaming about fallout and the truth of the famous spas has been lost sight of." His literature claimed many things for the product, even stating that its use would have a "sedative effect on the nervous system" and that "highly strung individuals ... become less irritable and lose their distressing tendency towards insomnia." Oddly enough, one of these devices was discovered in the early 1970s in the basement of the Department of Energy (then the Atomic Energy Commission) building in Oak Ridge, Tennessee. Whether it was actually used there is not known and any cures have gone unreported.

Another interesting item from the 1960s was the Lifestone Cigarette Holder. It was 4 in. long, made of gray mottled ceramic, and contained a small quantity of radium. Inhaling the smoke over the radium was said to diminish nicotine, make the tobacco sweeter and milder, and "protect users from lung cancer, promise them beautiful faces, and excellent health."

In 1985, an importer in Kansas managed to distribute 20,000 Endless Refrigerator/Freezer Deodorizers at U.S. \$10 each before the inevitable visit from federal agents. This deodorizer, which is still manufactured today, is made of green plastic into which has been mixed thorium-containing monazite sand (thorium's 10 billion-year half-life is reasonably close to endless). Users are instructed to hang it in the refrigerator where the emitted radiation is said to purify the air by destroying odors.

Another device from Japan is the NAC Plate. Its outward appearance is similar to that of a playing card, but with one important difference: it contains low-grade uranium ore on one side. The plate is intended to be slipped into a package of cigarettes where the radiation "denatures and reduces nicotine, tar, and harmful gas" and that with the NAC plate "you enjoy . . . the golden moments of watching (the) smoke rise slowly" and "with your nerves relieved and refreshed you can get back to work."

Regrettably, this fine product is not available in our country although an importer did contact the Nuclear Regulatory Agency and the Food and Drug Administration about it in 1983. The replies from these agencies suggested that permission to import the NAC plate could probably be obtained, but the matter seems to have been dropped.

Were the NAC available, one might be inclined during the golden moments of watching the smoke rise to reflect on the fact that the NAC plate is the modern version of the Lifestone Cigarette Holder. Upon further reflection, its origins might be discerned in the Radium Nose Cup, Radium Respirator, and ultimately, the radon-containing mists rising from the hot springs.

Not so long ago, I met a health physicist from Bechtel while having lunch in a local restaurant. We got to talking

about the radioactive monazite sands on the beaches of Kerala in India since he had lived there and was quite familiar with them. In the course of the conversation, he mentioned that the Japanese had been performing remedial action on the beaches and were sending the wastes to Japan!

What a revelation! Could it be that the Japanese have found the answer to radioactive waste disposal, i.e., incorporate it into consumer products and export it around the world? Technically, this procedure is known as "dilute and disperse."

Today, flea markets are the only places where there is the remotest chance to obtain a radioactive device designed to purify the air, apply to the body, or add radon to drinking water. However, those well enough to travel have a couple of options at their disposal.

The first is to bathe at the spas of Hot Springs, Arkansas. True, the "radioactive water" signs have disappeared but enough visitors still go there to warrant the recent opening of additional facilities. [at Saratoga Springs in New York, radioactive water signs can still be found]

The other option is to visit the uranium health mines in Boulder, Montana, where the air is radioactive and they are proud of it. In fact, the largest of the six operating mines even calls itself "The Free Enterprise Radon Health Mine." Its brochures attract visitors with the phrase "the unmedical approach to arthritis." Presumably such wording avoids classification as a medical claim and the legal constraints that would go along with it. The mine's billboards employ another claim few operations would care to make, but one I would certainly have a hard time resisting: "As seen on 60 Minutes."

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## Congratulations!

Congratulations to our new NRRPT Fellow members: Mark Bayless, Eddie Benfield and Dale Perkins were recommended to receive Fellow status by our Awards Committee.

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## NRRPT Salary Survey 2008

The NRRPT Board of Directors is looking for your support and a few minutes of your time to complete this very important salary survey. In order to provide our membership the kind of information and support needed in today's changing nuclear environments we (The Board) feels strongly that a yearly study of Radiation Protection Technologists is needed. With new plant construction, an ageing work force, and an increasing demand for personnel in all fields of health physics, salary and vocation information are very important to our membership. Information collected during this survey will remain confidential

Thank you for taking time to fill out this survey.

Sincerely,  
Bob Wills

NRRPT, Board of Directors

1. Experience by Education Level: Pick the highest level you have obtained

- a High School
- d Associate Degree
- c Bachelor's Degree
- d Master Degree
- e PhD

2. Years employed in radiation protection

- a <6
- b 6 to 15 years
- c >15 years

3. Are you also a CHP

- a Yes
- b No

4. Job Responsibility

- a Technician
- b Supervisor
- c Professional Staff / Radiological Engineering
- d RPM/RSO
- e University RSC
- f Medical RSC

5. Field of Employment

- a Federal Government
- b State Government
- c Medical Facility

d Consulting Firm

e University

f National Laboratory

g Government Contractor

h Nuclear Power Utility

i Other Commercial

j Other Research

6. Location of Employment:

- a Contractor US Wide
- b North East
- c Mid Atlantic States
- d South East
- e Mid West
- f South West
- g West Coast

7. Salary Range per year

- a < \$15,000
- b \$15,000 to \$30,000
- c \$30,000 to \$45,000
- d \$45,000 to \$65,000
- e \$65,000 to \$85,000
- f \$85,000 to \$100,000
- g \$100,000 to \$150,000
- h > \$150,000

Please return form to Bob Wills (robert.wills@gel.com)  
or the NRRPT Office (nrrpt@nrrpt.org) or fax to:  
401-637-4822.

**2009 USA  
NRRPT Exam Dates**

**August 1, 2009**

Deadline for application: June 12, 2009

**2009 Canadian  
NRRPT Exam Dates**

October 13, 2009

Deadline for application: September 4, 2009

Application Fee: \$250

Retake Fee: \$125

Late Fee: \$50

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Remember.....

Job openings can be placed on the "Private Side" of the NRRPT website

Email information to the Executive Secretary's office ([nrrpt@nrrpt.org](mailto:nrrpt@nrrpt.org))

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**\*\* Write an Article for the NRRPT Newsletter \*\***

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## Detroit Edison Fermi 2

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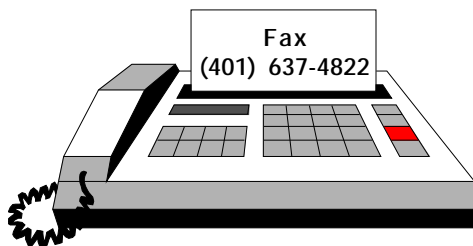
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