

# PROFILES IN RADIATION PROTECTION: Ronald L. Kathren

*Laura Brady*



*Photo courtesy of Casper Sun*

Ron Kathren is fascinated with the historical aspects of the radiological sciences. Over time he has amassed an impressive collection of radiological devices, original manuscripts and books on the history of the radiological sciences. He would love to acquire even more. In the interest of preserving this history for future generations, he has made significant donations to a number of museums and educational institutions. He currently has several items on display at the Smithsonian Museum and has donated a number of items to the Health Physics Historical Instrumentation Museum Collection of

Oak Ridge Associated Universities and to the Atomic Testing Museum in Las Vegas, Nevada. His greatest gift has been to Washington State University Tri-Cities. Valued at more than a quarter of a million dollars, this collection of about 3400 items was the largest single gift of books, manuscripts, and documents ever received by the campus.

Raised in Los Angeles, Ron attended L.A. High with such luminaries as Johnny Cochran and Dustin Hoffman before attending the University of California, Los Angeles, where he received

his Bachelor of Science. He went east to earn a Master of Science from the University of Pittsburgh and then returned to California for additional study at the University of California, Berkeley.

Ron Kathren is a prolific author. Among his several books are included: *Radiation Protection* (1985), *Radioactivity in the Environment* (1984) and *Ionizing Radiation: Tumorigenic and Tumoricidal Effects* (with C.L. Sanders) (1983). He has authored or co-authored numerous articles, technical reports and book chapters, and served as the senior editor and annotator of *The Plutonium Story*, the diaries of Professor Glenn T. Seaborg, discoverer of plutonium.

He has received numerous scientific honors including the Elda E. Anderson Award for outstanding contributions to health physics, the HPS Founders Award, the Arthur F. Humm, Jr. Award of the National Registry of Radiation Protection Technologists, the Herbert M. Parker Award, and election to Delta Omega, the Society of Sigma Xi, and as a Fellow of the Institute of Physics in Great Britain. In 1995, he was named Hartman Medalist and Orator by the Radiology Centennial and was the 2003 recipient of the Distinguished Scientific Achievement Award of the Health Physics Society. He is a Life Fellow and a past president of the Health Physics Society.

***How did you get started? What got you interested in the field?***

I was 6 or 7 years old. I had a cousin to whom I was very close. We had radium dial clocks and watches and would take them into the closet and watch the light dim. We'd come out and hold it in the light and then do it again and again. I believed that radium dials were the most wonderful things. So it was only natural that I'd become interested in the transuranium elements, and especially with the re-writing of the Periodic Chart by G.T. Seaborg and his colleagues at UC Berkeley in 1940.

***Tell us about your career.***

After college I worked as an industrial hygienist with the Los Angeles City Health Department. We did the health physics work for the city; the two fields were very close back then. I moved to Mare Island Naval Shipyard spending full time in health physics, and then Lawrence Livermore National Laboratory of the University of California, sandwiching a graduate degree in between.

I joined Battelle-Northwest in 1967, with responsibilities beginning at radiological calibration and standardization, instrumentation, and dosimetry and culminating in technical and program management responsibilities in the areas of health physics, dosimetry, and reactor safety, taking a few years off to serve as corporate health physicist to Portland General Electric. While at Battelle, I also was an affiliate professor of radiological sciences at the University of Washington at the Joint Center for Graduate Study in Richland. After a brief stint at the Hanford Environmental Health Foundation, where I managed radioepidemiologic studies of workers at the Hanford site while serving as Director of Research handling radiation safety related projects, I moved the Registries research grant to Washington State University where I was appointed professor and Director of the United States Transuranium and Uranium Registries managing and performing research related to the biokinetics, dosimetry, and radiobiology of plutonium, americium, and the other actinides in man.

In 1999 after my formal retirement, I was named Professor Emeritus of Pharmaceutical Sciences at Washington State University – the first emeritus professor on the local branch campus. I formed The Kathren Group, Inc., a safety and health physics consulting firm providing consultant services to industry and government on a wide variety of radiation safety related projects, including dose reconstruction, internal dosimetry, and providing expert witnesses. I am still editor of a couple journals, including *Radiation Protection Dosimetry* and the *Journal of Low Level Radiation*.

***What in your opinion has changed in the field since 9/11?***

Since 9/11: It's been an interesting change. Over the years the field has gotten less and less scientific and more and more prescriptive. Way back, we had no computers so we did a lot of slide rule calculations, used rules of thumb and a lot of judgment. There were few standards and regulations back then. September 11 caused people to look back and realize that in an emergency we can't go to the library to look up the equation to use in any particular situation. It made us think in those terms.

It has opened the door to an opportunity to educate the public on radiation and nuclear terrorism — especially policymakers in Washington. It has spurred development of new kinds of radiation detection devices.

***Do you feel that this may be a reason for a perceived decline in health physics professionals?***

We've seen HPS membership diminish, but that's not a big deal. Because membership in a professional organization is not required, many young people now stay away from professional organizations. I believe the profession is alive and healthy.

I believe there are three reasons that could explain why there might be a decline in trained health physics professionals:

- 1 – They don't know about it.
- 2 – There is a lot of competition out there,
- 3 – There are very few academic programs in Health Physics and there is also no funding to support students via fellowships, grants, etc. like there once was.

Where there are actually academic programs in health physics they are sometimes buried under another program, such as nuclear engineering. A student typically doesn't open a college catalog and find a program in health physics and so cannot include that as one of his/her choices.

The glamour that health physics once enjoyed is gone. There is a perception that nuclear power is dying, and some people don't want to be associated with it.



*Photo courtesy of Gail Evenari*

***Do you have any recommendations for RSOs (radiation safety officers) today?***

Be honest. Be ethical. And study hard. Look back at what those folks who went before you have done. Don't reinvent the wheel. We all stand on the shoulders of those who went before us.

***What is the most important skill that an RSO can have?***

Most important?... That depends. And it really does. A good RSO who is interfacing with people should LIKE people and be interested in helping them to achieve their goals safely. Most of us are working with people (rather than purely with regulations). We should be passing along an enthusiasm for learning and science.

***Is there anything else you want to share with our readers?***

This country needs to move the education of science and math as core subjects down to the lower grades. Science education in this country is dismal. Rarely in grade school do we get into real science.

Most science teachers I have met have great limitations: they have little or no facilities to teach real science. I've never met a bad science teacher. But they are making about half of the salary they could command in industry.

***Other thoughts?***

People often look at the negatives. Science and technology are neither good nor bad. It's how they are applied and used or misused.

Too often we see people in a particular milieu and that may not be the person that they really are. We too often don't see people except in these narrow confines. We need to get out and talk to the public and be with the public so that they can see that we are not scary people...doing scary science. In my career I have given probably more than 2000 public talks.

***Personal tidbits?***

It has been my good fortune to have known and worked with many of the leaders of our profession, and I have learned much from them. But one stands out above all the others. Allen Brodsky was one of my professors at the University of Pittsburgh. He is an outstanding individual. The only way I can repay him for what he has done for me is to try to do for my students what he did for me. I have pushed them in very much the same way that Allen Brodsky pushed me. I look with pride on the accomplishments of my students. I like to say that every student I had was better than the one before and the first was better than the last. It's a closed circle. I am very, very proud of my students and what they have and are accomplishing.

***What is your favorite color?***

Color: I've never given it a lot of thought. I'll give you the standard scientific response. That depends.

***What is your favorite food?***

Food: That also depends — although I love northwest salmon.

***Pet peeve??***

A pet peeve of mine is when someone includes a web site as a formal reference in a scientific paper. Information contained on a web site can be changed easily. And the peer review process is lost.

***What is your Favorite Hobby?***

I have a number of hobbies now:

I am a master gardener and very involved with the local gardening foundation – in fact I am the treasurer of the foundation.

I have been very interested in the history of the radiological sciences. I collect radiological devices and books/manuscripts. I try to gather materials from older colleagues – things like papers on significant scientific research – in order to preserve them. I am also interested in genealogy.

I still do a lot of public education stuff: three videos on radiation; speaking engagements, and the Ask the Expert feature of the HPS.

*References to some of Ron Kathren's works that may be of particular interest to our readers are provided following:*

*Radiation Protection (Medical Physics Handbook 16), Kathren, R.L., Published by Adam Hilger, Ltd; 1985.*

*Radioactivity in the Environment: Sources, Distribution and Surveillance*, Kathren, R.L., Published by Harwood Academic Publishers; 1984.

*Ionizing Radiation: Tumorigenic and Tumoricidal Effects*. Sanders, C.L., and R.L. Kathren. (Columbus: Battelle Press/Springer-Verlag). 1983.

*Thank you, Ron Kathren, for sharing this information about yourself with our readers*

*And by the way, if you have some piece of historical significance for the radiological sciences just sitting around collecting dust in some dark corner of your home or office, Ron Kathren would like to hear from you.*

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## **LLNL Environmental RPL Dosimeter (mid 1960s)**

This is a radiophotoluminescent (RPL) glass dosimeter developed by Ron Kathren at Lawrence Livermore National Laboratory (LLNL) and used for environmental monitoring around the lab perimeter during the mid 1960s.



The case uses a slotted screw-on lid, the top of which can be seen in the photo above left. Inside is a 8 x 8 x 4.7 mm block of RPL glass. To flatten its over-response to low energy photons (a characteristic of RPL glass dosimeters), the holder acts as a graded filter. From the outside inward, it consists of a layer of lead, then brass, then teflon. The round shape was chosen to reduce the dosimeter's angular dependence. While sensitivity of an RPL dosimeter is not quite as good as you might want in an environmental dosimeter, there is no fading of the signal and it is unaffected by humidity.

**Size:** 1/2" diameter and 3/8" high

*Photo and description courtesy of Oak Ridge Associated Universities. More information is available on the web at: <http://www.ornl.gov/ptp/collection/dosimeters/ron.htm>*