

PROFILES IN RADIATION PROTECTION:

Herman Cember

Laura Brady, Interviewer

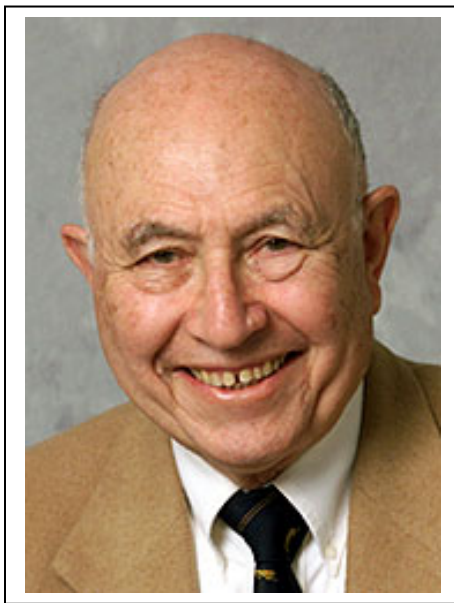


Photo courtesy of Purdue University School of Health Sciences

He is perhaps best known for his textbook *Introduction to Health Physics* that is still widely used and considered by many to be the *de facto* introductory text in the field. Dr. Herman Cember also co-authored *The Health Physics Solutions* with Thomas E. Johnson.

A past president of the American Academy of Health Physics and American Board of Health Physics, he has numerous honors and distinctions to his credit, including the 1990 Distinguished Scientific Achievement Award and the 2003 William B. McAdams Outstanding Service Award both presented by the American Board of Health Physics and the American Academy of Health Physics.

Dr. Cember continues to be a very active contributor to the field, serving on the Hanford Health Effects Subcommittee for the Agency for

Toxic Substances and Disease Registry (ATSDR), and making presentations at various conferences. His research interests are occupational exposure and the effects of inhaled radioactive aerosols on lung cancer.

On a recent afternoon, I managed to catch up to Dr. Herman Cember for a chat. He is a charming and gracious man. Here is what he had to say...

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

Everything is luck. I was going to night school at City College in New York. During the day I was an engineer for SG Frantz Company, where we made electromagnetic separators for the ceramic industry. It was 1948 and nothing was

selling. Finished machines were piling up - so much so that I was so concerned about the load on the building's floor that I pulled the plans for the building and calculated the actual load that the floor could support. I was concerned for the saloon below us on the ground floor. At any rate, I was worried about losing my job because nothing was selling.

Then the Marshall Plan passed. It was a big governmental plan to reconstruct a bombed out Europe. So we slapped on new labels and shipped our stock off to Europe. And I was *really* worried about losing my job because I couldn't see how they could afford to pay me if nothing was selling except the machines that were purchased by the U.S. government and given to the European countries for no money. I wondered what would happen to our products after the European countries were completely supplied.

Around that time the end of the semester and graduation was approaching. I had to take one more final exam, thermodynamics, before I concluded all my requirements for a degree. It was a three-hour exam and I finished in one and a half hours. Going to school at night and working during the day, I hadn't really had the opportunity to look around the campus. Since my wife was not expecting me home until later, I decided to take a "look-see" walk around the campus during my last hour as a student.

While on my walk I passed by the physics department office. There, tacked up on the bulletin board, was an announcement of National Research Council Fellowships in Radiological Physics, with a stipend of \$187.50 per month. I didn't know what Radiological Physics was so I stopped by the library and found a book called *Introduction to Radiological Physics*. It was full of talk about x-rays and things that sounded interesting and exciting. So I applied for the fellowship, and wrote a one-page essay on why I wanted to become a Radiological Physicist. I later was notified that I had to go to Columbia University to take an exam (where I met future classmate and health physicist Frank Bradley). Some time later I received a congratulatory telegram saying I had gotten the Fellowship and to report to Oak Ridge. At Oak Ridge, I learned

what the profession of health physics is all about under the superb mentorship of Dr. Elda Anderson.

After the Fellowship I spent 10 years teaching and researching as a faculty member at the University of Pittsburgh Graduate School of Public Health. In addition to my teaching and research responsibilities I served as the RSO for the university. I also continued my formal education while at Pitt. However, one was not allowed to study in the same school in which one was on the faculty, so I enrolled in the Graduate School (a different school within the university) and earned a Masters and a PhD in Biophysics.

The University of Pittsburgh was the first university in the country to offer courses in Health Physics that were not supported by the U.S. Government. I was hired by Dr. Thomas Parran to teach health physics before the school even had its first student. Dr. Parran, who had been the Surgeon General of the U.S. Public Health Service during President Roosevelt's administration, was appointed Dean of the newly established Graduate School of Public Health. Many years earlier Dr. Parran's wife had been diagnosed with breast cancer and underwent a radical mastectomy. She then was given radiation therapy at doses high enough to severely damage the nerves in her arm. Dr. Parran told me that if he ever would have the opportunity to determine a curriculum for physicians, he would include a course in radiation biology and dosimetry. And so, thanks to Dr. Parran, Health Physics instruction at the Graduate School of Public Health was born.

* *GSPH (Graduate School of Public Health) was founded in 1948 with a \$13.6 million grant from the A.W. Mellon Educational and Charitable Trust. The school opened its doors in 1950 as the 13th public health school in the nation.^[1]*

I continued my research into heavy metal toxicology and lung cancer from inhaled radioactive dust. During the course of this research, we were the first group to produce the same type of lung cancer in rats from inhaled radioactive dust as that seen among uranium miners. I also developed a mathematical model for mercury metabolism in rats.

I later joined the Kettering Laboratory at the University of Cincinnati's College of Medicine where I continued my research. Some time later, Northwestern offered me a full professorship and a substantial salary increase. The University of Cincinnati doubled the salary increase to tempt me to stay on but was unwilling to make me a full professor because, to be a full professor in the Department of Medicine where I was located, you had to be a medical doctor and I was just a PhD.

So off I went to Northwestern, where I continued my research and organized and directed a graduate program in Health Physics. I retired from Northwestern as Professor Emeritus after 32 years of service.

Some time later an opportunity arose at Purdue to fill in for a professor of health physics (Dr. Wayne Kessler) who had died. I became an adjunct professor, an affiliation that continues until today.

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

We must be concerned with first responders understanding enough about radiation to discriminate between low-level radiation and harmful radiation doses, and we must continue development of instrumentation that will allow first responders to make this type of determination.

Do you have any recommendations for RSOs today?

RSOs would benefit greatly by being literate in the field of industrial hygiene. I am seeing many places where the job function of the RSO is being combined with that of the industrial hygienist. Certainly to remain the most marketable today, an RSO should know something about industrial hygiene.

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

The ability to develop quality interpersonal relationships is critical. You need to build up trust or they (radiation users) won't respect you. You must be trustworthy or they won't listen to you. Make yourself useful, not just an enforcer of the rules. Some of the questions you will get have little to do with radiation safety. Provide useful help. If you are simply the policeman, they will not respect you or what you say. Acquiring technical competence and skill in written and oral expression and the ability to develop quality interpersonal relationships is critical.

On the Lighter Side...

Favorite Color?

Beige along with purple and white (Northwestern's school colors)

Favorite Hobby?

Reading and Stamp-collecting

Favorite Food?

Bagels with cream cheese and lox

Personal Tidbits?

Dr. Cember has been married to the same wonderful woman for 61 years and Sylvia and Herman Cember are still going strong. During his time at Northwestern and for several years after moving to Indiana, Dr. Cember and his wife bought season passes and traveled far to attend football games. To this day, Dr. Cember is an avid Wildcat football fan.

Although Dr. Cember retired in 1996, don't let that fool you. This is the first year since 1950 that he hasn't had teaching responsibilities (due to health issues). He has been and continues to be a very busy man. I managed to catch him at home recently during the one day he had between commitments.

Thank you, Dr. Cember, for sharing this information about yourself with our readers.

References

1. <http://www.publichealth.pitt.edu/about/history.html>

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