Cascade Chapter

Avalanche

The official newsletter of the *Cascade Chapter* of the Health Physics Society

Spring 2008 Issue

Annual E. Dale Trout Meeting

This year's annual meeting will take place at Oregon State University in Corvallis on May 2nd. The featured speaker will be HPS President-Elect, Dick Toohey.

Dick Toohey received his Ph.D. in physics from the University of Cincinnati in 1973. He spent the first part of his career at Argonne National Laboratory in both research and operational health physics. He has been at ORAU since 1994, where he has served as director of the Radiation Internal Dose Information Center, as Sr. Health Physicist for REAC/TS, and is currently the Director of dose reconstruction programs. He is certified in comprehensive practice by the ABHP, is a member of the National Council for Radiation Protection and Measurements, and has served as a Director, Secretary, and Treasurer of HPS. Dick has 130 publications in the open literature, and is a retired Lt. Col., US Army Reserve. He and his wife Beverly live in Oak Ridge, where they provide staff services to the resident cat.

We will also hear from four students. The titles and abstracts for each of our speakers along with meeting information can be found on the next two pages.

2008 Elections

The 2008 election is underway. You should have received a ballot with this newsletter. The ballot will close on May 2nd, 2008 at 10:00 AM. If you will be attending the chapter meeting, you can turn in your ballot during the meeting registration. If you will not be attending the meeting, please return your ballot to the secretary by April 30th in order for it to be counted at the meeting. The ballots can be sent via email or regular mail. The ballots will be counted and the winners will be announced during the May 2nd meeting. If you have any problems with your ballot contact the Secretary for assistance.

CCHPS Directory

The 2008 CCHPS directory will be available at the annual meeting on May 2nd. All members will receive a copy of the directory. Those attending the Annual meeting can pick one up during registration. Any members who are unable to attend the annual meeting will have a directory mailed to them.

President's Corner

After the 52nd Annual HPS meeting in Portland and all of the work that everyone contributed to having a great annual meeting, I was concerned about the "Annual Meeting Hangover" where the local chapter hosting the meeting would have a fall off in local meeting participation throughout the following year. I am happy to report that this has not occurred and we have had good participation at our fall and winter meetings. For those who have not attended the fall or winter meetings, the spring meeting is a great opportunity to reconnect with the Cascade Chapter membership. Keeping with recent tradition we will have the National HPS President-Elect at the meeting along with student presentations.

Though the geographic area of the Cascade Chapter is quite large, from the Canadian border to the Oregon – California border and west of the Cascade Mountains, we have a rather small Chapter with regards to membership and the membership has some difficulty attending the meetings. In order to reach out to the radiation protection community we implemented some changes to our membership which allows larger organizations (such as state agencies) to participate in the chapter as a group. The group membership allows for a single fee for the organization to register any number of participants. Also those participants are given a fee free meeting annually. Additionally we have affiliate memberships for companies that provide health physics equipment and services.

If you know of any organizations interested in either group or affiliate membership, please have them contact Phil Campbell (pcampbel@fhcrc.org).

Finally, just a reminder that the 53rd Annual Meeting of the Health Physics Society will be held in Pittsburgh, PA from July 13 – 17, 2008. Additional meeting information can be found at http://hps.org/meetings/. I am looking forward to attending a meeting without any local committee responsibilities.

HPS President-Elect Presentation

R. E. Toohey, Ph.D., CHP (Oak Ridge Associated Universities) – "*Why No One Believes Us: Cognitive Neuroscience and Radiation Risk*"

Public perception of radiation risks and their acceptability remains far from the consensus of radiation protection specialists, despite decades of individual and organizational efforts at risk communication. We have eagerly adopted the guidance of risk communication specialists, and presented the facts in a non-threatening and understandable fashion. Nevertheless we continue to encounter intense opposition to the development of nuclear power plants, waste storage sites, food irradiation facilities, and other applications of radiation and radioactive materials. We have been told such opposition is an emotional reaction that we must allow to be expressed, and then calmly and coolly respond with our understandable facts. One understandable fact is that what we have been doing simply doesn't work. The rapid development of the cognitive neurosciences, particularly evolutionary psychology, over the past twenty years or so has provided remarkable insights into this situation. Human brains come into the world with certain genetically determined methods of classifying sensory inputs called "memes," a term adopted from cultural anthropology. The "contagion" meme is a key player in response to radiological issues, as are the "justice" and "pattern-seeking" memes. Furthermore, the human decision-making faculty does not exist in Descartes' *res cogitans*, but in a hard-wired network of literal gut feelings and other body states we call emotions. Understanding and implementing these findings may lead us to more effective communication efforts, but also warn us that effecting significant behavioral changes will be a Sisyphean task.

Student Presentations

Wesley Frey (Radiation Health Physics PhD Student) – "*Use of BC-523a Liquid Scintillator for Simultaneous Neutron Spectroscopy And Gamma Detection with the Implementation of a Neutron History Reconstruction Algorithm*"

Our research group at Oregon State University has performed a proof-of-concept for an optimized plutonium detector based on BC-523a (a plastic scintillator). This detector will simultaneously perform both neutron spectroscopy and gross gamma-ray counting in order to identify plutonium as efficiently as possible. One conceivable problem with using a large, neutron-sensitive detector is that a large number of high-energy background neutrons will be counted, compromising the detector's usefulness in identifying plutonium. Current BC-523a detection systems do not have sufficient resolving power to discriminate accurately against high energy background neutrons. In order to correct this problem, a post-processing algorithm has been written to account for the current shortcomings of the scintillator's ability to perform accurate neutron spectroscopy. Furthermore, current BC-523a detection systems have a very large number of analog electronics making their field use questionable. This shortcoming will be remedied by implementing an all digital pulse processing system. The intended result is that the majority of background neutron counts in the detector will be dismissed. Because the lower level of detection for any radiation detector is based on the background count rate, by reducing the background count rate the detector's ability to identify a true positive improves.

Joshua Robinson (Nuclear Engineering MS Student) – "*Construction of a Facility for Neutron Depth Profiling and Prompt Gamma Activation Analysis*"

A facility for Neutron Depth Profiling and Prompt Gamma Activation Analysis is being constructed at the Oregon State University Triga Reactor. Currently the collimator which will be used to collimate the neutron beam and reduce the fast neutron component of the beam has been installed in beam port # 4 of the reactor. My talk will focus on the design of this facility including the collimator, shutter, detector and beam stop, with some preliminary result from the partial completion of this facility. Also some possible applications and descriptions of Prompt Gamma Activation Analysis and Neutron depth profiling will be discussed.

Alex Brown (Radiation Health Physics MS Student) – "*The Effect of Temperature on the Extraction of Plutonium(IV) Under UREX/PUREX Conditions*"

This research will focus on the effect of various temperatures, acid and nitrate concentrations on a plutonium, tri-*n*-butyl phosphate (TBP), and nitric acid system. The system to be studied will be under similar conditions found in the plutonium and uranium recovery by extraction (PUREX) process and will also incorporate acetohydroxyamic acid (AHA) as a potential reducing and complexing agent of plutonium.

Sean Jones (Radiation Health Physics MS Student) – "*XEPHWICH Detection Systems*"

The XEPHWICH system is a phoswich type (multiple scintillator) radiation detector designed to detect several radioxenon isotopes with the goal of identifying covert nuclear explosions. The XEPHWICH system is designed with the sole purpose of replacing the Automated Radio-xenon Sampler/Analyzer (ARSA) in the United Nation's (UN) Comprehensive Test Ban Treaty's (CTBT) International Monitoring System (IMS).

This study consists of two stages, computer simulation and laboratory experiment. The use of DETECT2000, a Monte-Carlo optical simulator, was the method by which optical performance and potential improvements to the XEPHWICH design were investigated. The laboratory experiment conducted in this study validated the modeling methods used in the study and investigated the effects of light capture efficiency on XEPHWICH system output. The experiment consisted of exposing the NaI(Tl) layer of the XEPHWICH to a lead collimated Cs-137 beam at varying locations, and comparing the differential energy spectra observed.

2008 Dale Trout Annual Meeting

The 2008 Dale Trout Annual Meeting will be held **Friday May 2nd, 2008** at the LaSells Stewart Center at Oregon State University in Corvallis, OR.

Agenda

9:30 Registration/Breakfast – Sponsored by Global Dosimetry Solutions and ICX Radiation
9:30 Executive Committee meeting
10:00 Ballot Closed
10:15 Chapter Business Meeting
- Appointment of New Officers
- Treasurers Report
- New Business
- Old Business

11:00 Presentation – Richard Toohey Ph.D., CHP (President-Elect, HPS; Oak Ridge Associated Universities) – *"Why No One Believes Us: Cognitive Neuroscience and Radiation Risk"*
12:00 Lunch
1:00 Student Presentations
2:00 Break
2:15 Student Presentations

Food

Breakfast goodies provided by Global dosimetry Solutions and ICX Radiation will be available in the morning during the registration period. Come early and enjoy coffee, juice and goodies.

Lunch will be a fajita bar which will include:
- *Chicken and Veggie Fajitas with fixings*
- *Rice*
- *Green salad*
- *Rolls*
- *Coffee, lemonade or iced tea*
- *Chocolate covered strawberry*
- *Brownies*

If you do not want to order the lunch please indicate that on your registration form.

Goodies will be provided during the afternoon break as well.

Registration

Please send your registration form to the chapter secretary before April 30th. If you would like to pay your 2008 dues at the same time, please indicate that on the form.

Cost

The CCHPS is picking up most of the cost for lunch. Prices for the meeting are:

	Meeting Only	Lunch & Meeting
Member	$10	$15
Non-member	$15	$20

Directions to the meeting:

LaSells Stewart Center is located at the corner of 26th Street and Western Boulevard in Corvallis, OR.

The physical address is: 875 SW 26th Street, Corvallis, Oregon 97331-3101 (Google)

From I-5: Highway 34 to Corvallis, left on 4th Street, right on Western Boulevard, right on 26th Street
From the North on 99W: turn right on Western Blvd., right on 26th Street
From the South on 99W: turn left on Western Blvd., right on 26th Street
From Highway 34: turn on 26th Street
Printable directions and map(PDF)

Parking

The LaSells Stewart Center features ample parking across the street in the Reser Stadium parking lot. **The campus parking lots are pay lots from 7 am to 5 pm Monday through Friday.** Parking permits are available from automated kiosks in the lots and from the Parking Services office in Adams Hall. The full-day price is $5.

Cascade Chapter Officers:

President:	John Gough
President-Elect:	Marge Slauson
Secretary:	Philip Campbell
Treasurer:	Mike Zittle
Member-at-Large:	William Tuttle

Secretary Contact Info:

Mailing Address:
Philip Campbell, ARSO
Environmental Health and Safety
Fred Hutchinson Cancer Research Center
1100 Fairview Avenue North, J3-200
PO Box 19024
Seattle, WA 98109

Email Address:
pcampbel@fhcrc.org

Phone:
(206) 667-4044

Fax:
(206) 667-4048