

## **Science Teachers Visit UC Berkeley Campus For Refresher Course In Radiation**

High school science teachers from all over California got the chance to be students again at a Berkeley workshop on nuclear science. About 30 chemistry, physics, math, and biology teachers spent February 22, 2002 learning about radiation and trying out experiments to bring back to their classrooms.

“I like to relate what I teach to my students lives, so finding out more about radiation and health science will be helpful”, says Casey Gadwood, a life-sciences instructor at Alhambra High School in Martinez.

The teachers settled into 120A/B Bechtel for a full-day program that began with a brief intro to nuclear science from NE professor and chair Per Peterson, the workshop’s lead instructor. Peggy McMahan from Lawrence Berkeley National Laboratory (LBNL) then took the group on a breakneck journey that began with Henri Becquerel’s 1896 discovery of radiation, then zoomed fast as a neutrino through the structure of the nucleus; antimatter; isotopes; alpha, beta, and gamma decay; and much more.

As in any high school, those sitting in the front rows scribbled notes and asked the most questions. But the roomful of teachers came alive when Joel Cehn, a health physics consultant, walked them through a basic cloud-chamber experiment. Dry ice combined with an alcohol-soaked blotter paper created a cloud in a Coleman stove case, in which the teachers placed uranium-rich pebbles. When the lights were turned out, faint vapor trails emanated from the pebbles. Some participants actually climbed on the tables to point flashlights into the cloud chamber, the better to see the smokelike wisps of radioactive decay.

Next the teachers watched a demonstration of radiation from Brooke Buddemeier, Lawrence Livermore National Laboratory (LLNL) health physicist; heard a cancer medical research lecture by Christine Hartmann-Sintar, director of LLNL’s Seaborg Institute; toured LBNL’s Advanced Light Source; learned a new Geiger counter experiment; then discussed California’s role in energy from fusion with Peterson.

The workshop was a collaborative effort by volunteers from the Berkeley NE department, LBNL, and LLNL, as part of the Science Education program of the Northern California chapters of the Health Physics Society (HPS) and American Nuclear Society (ANS). In addition to two Geiger counters and a cloud chamber setup, each teacher took home a tremendous amount of instructional material. But the group paid only for travel expenses, thanks to a grant to ANS from the U.S. Department of Energy, Office of Nuclear Science and Technology, and individual and organizational contributions to the ANS and HPS chapters.

February 22, 2002

The **Science Teacher's Workshop** held at the University of California—Berkeley campus.

Sponsored jointly by the American Nuclear Society (ANS) and Northern California Chapter of the Health Physics Society (NCCHPS).



A tour of the Advanced Light Source was in order, courtesy of LBNL.



Greg Jones provides instructions on how to use the radiation detection instruments that will eventually go back to the classrooms with the science teachers.



Brooke Buddemeier explains (and demonstrates) the many sources of radiation



A full class practicing with radiation detectors. After all practice makes perfect!

**The volunteers who educated the educators included:**

- Mark Mitchell, Organizer
- Peggy McMahan, LBNL
- Per Peterson, UC-Berkeley
- Joel Cehn, Independent Consultant
- Brooke Budemeier, LLNL
- Greg Jones, LLNL
- Christine Hartmann-Sintar, LLNL