

For more information, please contact

Kelly Classic, HPS Media Liaison, media@hps.org, 507-284-4407 (office until June 5 and after June 15), 507-254-8444; (cellphone June 6-June 15; can also text to this number and receive written reply)
Ben Stein, American Institute of Physics, bstein@aip.org, 301-209-3091

****FOR REVIEW ****

**REDUCING FALSE ALARMS FOR BREAST CANCER,
EXPANDING A NUCLEAR-EVENT RATING SCALE,
AND DETERMINING RADIATION DOSES TO THE PEOPLE NEAR TRINITY
TO BE DISCUSSED AT HEALTH PHYSICS MEETING**

McLean, VA, July 2, 2007 – After the Trinity nuclear test in New Mexico, what were the radiation exposures to nearby residents that the government did not realize were there? On a scale of 1 to 7, what have international scientists rated nuclear incidents such as Three Mile Island and Chernobyl? What strategies are agencies employing to recover "orphaned" radioactive sources?

These and other questions will be addressed at the 52nd Annual Meeting of the Health Physics Society (HPS), which will take place July 8-12 in Portland, Oregon at the Doubletree/Convention Center. Approximately 1300 attendees are expected, with over 225 presentations throughout the week.

Health physicists promote the practice of radiation safety. They work in occupational environments such as universities, local hospitals, manufacturing, and nuclear power plants as well as in environmental areas such as radioactive waste sites. They are involved in understanding, evaluating, and controlling radiation's potential risks relative to its benefits in applications such as fighting disease, supplying energy, and increasing security.

MEETING HIGHLIGHTS

Meeting highlights include: a promising dual-technique approach to improving detection of breast cancer and reducing false alarms and unnecessary biopsies; the first estimates of total radiation dose to people living near the Trinity nuclear test; a newly expanded rating scale that ranks nuclear incidents; and procedures for recovering "orphaned" nuclear sources.

IF YOU CAN'T ATTEND THE MEETING

The HPS meeting webpage (<http://hps.org/meetings/meeting7.html>) contains links to the full program. The site contains a Virtual Pressroom (URL) which contains lay-language papers and describes several meeting highlights in more depth. Reporters who would like to attend the meeting should contact HPS Media Liaison Kelly Classic (media@hps.org). Even if you can't make it to Portland, the Virtual Pressroom and this news release are designed to make it possible to cover meeting highlights from your desk. For assistance in contacting researchers and setting up interviews, please do not hesitate to contact us.

PLENARY SESSION

HPS President Brian Dodd will open the meeting's plenary session, which takes place on Monday morning, July 9, from 8 AM-Noon. The plenary session showcases world-class health physics efforts in a wide range of areas and here are some examples. Mike R. Bailey of the UK's Health Protection Agency will provide an update and insights on the polonium-210 poisoning incident which led to the

death of ex-Russian spy Alexander Litvinenko. A senior scientist from the US State Department will provide an overview of the international radiological work that this agency performs. Khammar Mrabit of the International Atomic Energy Agency will address the radiation safety infrastructures in developing countries and discuss a proactive approach for continuously improving them.

HIGHLIGHTS OF THE SCIENTIFIC PROGRAM

The following is a sampling of some of the many noteworthy talks and posters that health physicists will present at the meeting.

I. MRI/MRS COMBO CAN IMPROVE EARLY DETECTION OF BREAST CANCER

Combining magnetic resonance imaging (MRI) of the breast with magnetic resonance spectroscopy (MRS) may help lower the number of false positives associated with MRI screening alone, and improve early diagnosis of breast cancer, according to preliminary results from an ongoing study being conducted by Rob Etnire (re182@aol.com, 702-526-7405) and his colleagues at the University of Nevada, Las Vegas (UNLV).

The American Cancer Society recently issued new recommendations for women with a higher risk of developing breast cancer; specifically, it recommends the use of screening MRI as an alternative to conventional mammography, because the former is more sensitive and can detect hidden tumors that might otherwise escape notice.

However, MRI is so sensitive that it reveals even non-cancerous suspicious growths in the breasts, resulting in many unnecessary biopsies and additional scans, not to mention heightened anxiety. In this new combined approach, any suspect lesions can be studied with MRS, with no need for an invasive biopsy. Spectroscopy can be used to test for any number of chemical compounds. In this case, it is measuring the amount of choline in suspect lesions. Elevated levels of choline are a strong indicator of cancer.

Neither MRI nor MRS uses the ionizing radiation (x rays) that is used in traditional mammography and CT breast scans, and both procedures can be completed in a single sitting. Thus far, the UNLV researchers have done MR spectroscopy on healthy patients without breast cancer as proof of principle. As expected, choline levels were low. The next step is to image patients with breast cancer to confirm that MRS can be used to detect the telltale higher choline levels. The UNLV study is being conducted in conjunction with Spring Valley Nevada Imaging Centers Amigenics and Philips Medical Systems.

Meeting Presentation: Tuesday, July 10, 2007, 8:45 AM PDT, Paper TAM-C.2, "Magnetic Resonance Spectroscopy for Breast Cancer."

II. NEW ESTIMATES OF TRINITY TEST'S RADIATION DOSES TO NEARBY POPULATION

Describing a new U.S. study of the world's first atomic explosion on July 16, 1945 in New Mexico, health physicist Tom Widner (TWidner@chemrisk.com) will present the first preliminary estimates of total radiation dose to nearby residents, including some who lived less than 20 miles away but went undetected by test planners. Determining this information is a goal of a Los Alamos Historical Document Retrieval and Assessment Project study led by the Centers for Disease Control and Prevention.

Although much information about the Trinity test has been documented in government reports, popular books, and the news media, there has to date been no public accounting of the total radiation doses that

local residents received from the explosion. As a result of the nuclear test, people in nearby areas were exposed to radiation by breathing contaminated air and drinking contaminated water and goats' milk.

While the total radiation dose level is still being computed up to the time of the meeting, earlier measurements of direct radiation from the blast and the resulting radioactive cloud can provide some insights. At nearby ranches around 19 miles from Ground Zero, exposure rates around 15 Roentgen per hour were measured just over three hours after detonation. This is almost 10,000 times greater than the less-than 2-millirem-per hour radiation limit that the Nuclear Regulatory Commission currently recommends members of the public should receive from external radiation sources in any public area. Widner, the director of the new study, believes if officials had known what is now known about the long-term effects of radiation exposure such as cancer, they would have much more likely ordered local evacuations, even though publicity was seen as a serious threat to the secrecy of the mission.

The multi-year study will be completed in 2009, and a final report will be issued at that time. Based on the study's results, the CDC will work with interested parties to decide whether more detailed investigation is warranted for the Trinity test or any historical activities at Los Alamos.

Meeting Presentation: Wednesday, July 11, 2007, 8:45 AM, Paper WAM-A.2, "A Review of the World's First Test of an Atomic Bomb (Trinity Site, July 16, 1945) and Potential Radiation Exposures to Residents of New Mexico."

III. NUCLEAR EVENT RATING SCALE

Just as hurricanes are rated for severity, and earthquakes have their Richter scale, so the International Atomic Energy Agency (IAEA) communicates the safety significance of nuclear events with a consistent numerical protocol. Not widely known outside the nuclear community, the International Nuclear Event Scale (INES) is the mechanism used to classify and report events to the world at large. Cynthia Jones, who is the US representative to the INES Advisory Committee and is also a senior technical advisor on nuclear security at the Nuclear Regulatory Commission (NRC), reviewed the use of the scale, and will illustrate how it is used, such as in reporting nuclear events in the US. She will also report that the scale is now being expanded to include events related to radioactive-material transportation and radiation exposure events. More than 60 countries have agreed to report nuclear events to the IAEA, most within 48 hours.

Here is what the designations mean: A scale 1 event is referred to as an anomaly; a rating of 2 is an incident (where, for example, the regulatory limit for a radiation worker has been exceeded); 3 is a serious incident; 4 corresponds to an accident with mainly local consequences; 5 an accident with wider consequences; 6 a serious accident; and 7, the highest rating, is for major accidents. On this scale, the Chernobyl accident (1986) is a 7, while the Three Mile Island accident (1979) receives a 5 rating. Jones (cgj@nrc.gov) says that US is a frontrunner in rapid reporting of events. (For additional information, see IAEA website: <http://www-news.iaea.org/news/>; INES website: <http://www-news.iaea.org/news/inesmanual/default.asp>)

Meeting Presentation: Monday, July 9, 2007, 4:00 PM PDT, Paper MPM-C.3, "Updating the IAEA International Nuclear Event Scale Reporting System."

IV. IAEA DEVELOPS NEW STRATEGIES FOR RECOVERING "ORPHAN" RADIOACTIVE SOURCES AROUND THE WORLD

The International Atomic Energy Agency (IAEA) has established a new process for developing country-specific search and secure strategies for the recovery of orphan radioactive sources, according to Carolyn Jean MacKenzie of the IAEA's Division of Radiation, Transport and Waste Safety (c.mackenzie@iaea.org). MacKenzie will present a paper detailing the newly established procedure.

Inadequate accounting for radioactive sources is a problem that spans the globe. "Orphaned" sources include radioactive waste, and radioactive isotopes used by various industries. Apart from the risk to human health, there is concern that some radioactive sources could fall into terrorist hands and be used for radiological dispersal devices (RDDs), colloquially known as "dirty bombs." In 2005 alone, the IAEA tracked 103 confirmed incidents of illicit trafficking of nuclear and radioactive materials, the majority of which involved orphan radioactive sources.

IAEA's new process is based on lessons learned from more than 20 country orphan source search and secure missions. It incorporates such measures as using administrative paper searches, bankruptcy records, and keeping tabs on industries in a given country known to use such sources.

As many as 300 radioactive sources have been recovered in Georgia since the mid-1990s, a legacy of the region's sharp economic decline after the break-up of the Soviet Union. In 2006, MacKenzie was part of a team that located a powerful source of cesium-137 in a pile of dirt in an abandoned factory. They also found a second smaller source in a box of nuts and bolts in a private home, just one thin wooden wall away from the family bedroom. Cesium-137 is a common radioactive isotope used by industries to check materials for flaws, and for making industrial measurements.

IAEA continues to work with its Member States and multiple partners worldwide to promote safe recovery and storage of nuclear materials.

Meeting Presentation: Wednesday, July 11, 2007, 8:45 AM PDT, Paper WAM-D.2, "Global Orphan Source Recovery Strategy and Implementation."

V. BETTER TRAINING FIRST RESPONDERS FOR REAL-LIFE RADIATION INCIDENTS

Addressing problems that revealed themselves in early post-9/11 training exercises, the Washington State Office of Radiation Protection has created a well-regarded, full-time training program that has already taught over 3,500 responders to better handle radiation emergencies.

In the 2003 federal training exercise known as TOPOFF 2, a simulated dirty bomb attack left all the volunteer victims dead before they even reached the hospital. Many of the responders, particularly fire and rescue personnel, did not understand radiation or how to use their radiation instruments when they arrived at the scene.

In efforts to improve emergency response, the Washington State program brings together diverse groups such as the National Guard, fire and rescue, and local health agencies. In addition to teaching them the basics of radiation, instrumentation and self-protection, the program stresses "interoperability"—helping these different organizations learn each other's protocols and procedures, and determine how to resolve differences in a training environment.

The training program has detonated 5 vehicles over the last two years to simulate dirty bombs. Then, the team hides sealed objects (standing in for contaminated victims and items) which are sprayed with very low levels of a radioactive isotope known as technetium-99m (Tc-99m). The real radiation signals ensure a genuine response from trainees (who are wearing the appropriate radiation shielding).

The Washington team is also now working with EMS staff to change hospital patient acceptance protocols in Washington State. Current protocol requires radiation victims to be decontaminated before entering the hospital. The team is designing recommended procedures that would allow contaminated victims to be admitted immediately when their lives are at stake. (For more information, please contact presenter Allen W. Conklin, Al.Conklin@DOH.WA.GOV.)

Meeting Presentation: Monday, July 9, 2007, 3:30 PM, Paper MPM-D.1, "Training First Responders in Washington State to Respond Safely to a Radiological or Nuclear Attack or Accident"

VI. FIGHTING FEAR WITH FACTS

By arming communities with a few simple facts, health physicists can minimize much of the fear and anxiety associated with natural and manmade events involving radioactive materials. Using information as a counter-terrorism weapon is the subject of a presentation by Doug Van Cleef (doug.vancleef@ametec.com), an employee of ORTEC, a manufacturer of specialized radiation detection equipment.

According to Van Cleef, the first thing to communicate is that radioactivity is not synonymous with death. While high-dose exposures to radiation can cause serious health effects and fatalities, health effects are too small to be observed or nonexistent for low exposures, such as the exposures which are most likely in the event of a so-called "dirty bomb" or RDD (radiological dispersion device). This is in contrast to the very high radiation from much less likely nuclear weapons detonations, which are often discussed in the same context as RDDs. Van Cleef even suggests that fear and angst from a dirty bomb could result in more deaths from car accidents during the evacuation than from the actual radiation.

Even among the various candidates for dirty bomb materials, he points out, those those that have the greatest potential for harm (such as strontium-90, found in large thermal-electric generators) are the most difficult to conceal and transport, while the 'easier to conceal' dirty-bomb candidates (such as cobalt-60, used in oil exploration devices) would emit radiation levels that are hundreds or even tens of millions of times lower. Van Cleef is proposing the development of a presentation for first responders on these topics, in order to inform communities and their emergency response organizations about these issues.

Meeting Presentation: Wednesday, July 11, 9:00 AM PDT, Paper WAM-3, "Information—Counter-Terrorism For Health Physicists."

ABOUT THE HEALTH PHYSICS SOCIETY

The Health Physics Society consists of over 5,500 radiation safety professionals whose activities include ensuring safe and beneficial uses of radiation and radioactive materials, assisting in the development of standards and regulations, and communicating radiation safety information.

The Society is a nonprofit organization formed in 1956. Its primary mission is excellence in the science and practice of radiation safety. The Society has members in 44 countries, and has established 45 chapters and 14 student branches. Visit www.hps.org for more information.

REPORTER'S REPLY FORM

52nd HPS Meeting, Portland, OR

July 8-12, 2007

Please return this form to Kelly Classic at media@hps.org

___ I would like to attend a portion of the meeting.

Portion: Day, Time:

Phone number where you can be reached over the weekend:

I would like to interview researchers mentioned in this news release.

Please put me on a mailing list to receive information on future HPS meetings.

Other request:

NAME:

AFFILIATION:

STREET ADDRESS:

CITY, STATE:

EMAIL ADDRESS:

PHONE NUMBER:

###