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# Newsletter



## NEW ENGLAND CHAPTER OF THE HEALTH PHYSICS SOCIETY

Volume XXXVII No. 2  
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## **HPS Finds “Human Capital Crisis in Radiation Safety”**

*From the August 2001 HPS Position Statement  
Edited by Tara Bandini*

**A** recent survey conducted by the HPS finds that present demand for radiation safety professionals is about 130% of the supply. The Society is recommending significant financial support from Congress and federal agencies for health physics academic programs to ensure an adequate supply of qualified radiation protection professionals in the coming years.

The HPS states that the shortage extends throughout a spectrum of activities within the United States including medical practice and research, regulatory oversight, academic research, environmental protection, occupational safety, and the research and application of nuclear technologies. This growing shortage creates the potential for unnecessary radiation exposure of workers, the general public, and the environment. The situation is expected to worsen due to the expanding use of radiation in diagnostic and therapeutic medical applications and the potential for nuclear technologies to meet future energy needs.

HPS membership data indicate that demand produced by attrition is not being met by supply based upon the decline in membership. During the next five years this attrition-related demand will outstrip the supply of qualified radiation professionals by 160%.

The HPS has provided support to health physics students for many years. Much of the Society's efforts are volunteer-based and these efforts are being overwhelmed by the human capital crisis. The HPS is recommending substantial financial support of academic related health physics programs in order to avert not only unnecessary exposure, but also inappropriate expenditures of limited resources.

*Ninni Jacob*

I would like to take this opportunity to welcome you all to a new program year for the NECHPS.

First of all, our hearts go out to all the victims of the tragic events that took place on September 11. If any of our members have lost loved ones or friends, our thoughts and prayers are with you at this time. We, as radiation safety professionals, are especially called to be vigilant at this time, and to continue doing the work that we are called to do to the best of our ability.

As you are aware, our first meeting with the national President-Elect had to be postponed due to the Sept 11 tragedy. Ed Maher has planned an exciting program for the rest of this year, and I hope all of you will participate.

As President, my goals for the year are as follows:

1. Support and Organize Chapter Programs and Activities
2. Improve Management of Finances
3. Strengthen the Database and use it more fully
4. Improve Communications-
  - a) Website
  - b) NECHPS Newsletter
  - c) National HPS Newsletter
5. Health Physics Education
  - National President's initiative
  - Science teacher workshops
  - Science Fair Initiatives
  - Public Education Initiatives
6. Other Workshops
  - DOT Training
  - Participate in Radiation Safety Without Borders?
7. Compile History of Chapter

**If any of you are interested in any of the above areas, or, if you have any other ideas, please contact me at [ninni\\_jacob@brown.edu](mailto:ninni_jacob@brown.edu).**

*Greetings From the President*

## **Radiation Force Appears to Cause Ultrasound-Induced Lung Lesions**

*Submitted by Rusty Lorenzen*

WESTPORT, CT (Reuters Health) Sept 18 - Radiation force, such as a higher beam width coupled with higher pressure, appears to cause ultrasound-induced hemorrhages in the lung, reports Dr. William D. O'Brien, Jr.

"The cause of the damage appears to be mechanical in nature," Dr. O'Brien said in a university release.

Dr. O'Brien and Dr. James F. Zachary, both of the University of Illinois at Urbana-Champaign, and colleagues are conducting extensive animal studies to try to determine what levels of ultrasound intensity, and/or pressure, are safe. They presented their findings at the 17th International Congress on Acoustics in Rome, Italy.

In 144 rats randomly exposed to pulsed ultrasound, at three different pressures and four different beam widths, a greater extent of damage occurred when higher beam widths were coupled with higher pressure. "We don't yet know if a larger beam width actually causes damage," Dr. O'Brien told Reuters Health.

The research team also found that rats exposed to lower pulse durations had few lesions, while those exposed to higher pulse durations developed more lung lesions.

Dr. O'Brien's group reported a decrease in blood oxygen levels of rats with ultrasound-induced lesions in both lungs but found no blood oxygen decrease in rats with lesions in one lung. Dr. O'Brien noted that rats with only 4% damage to the lungs showed a measurable decrease in blood oxygen.

While studying lesion occurrence in more than 300 pigs, the research team found that 39-day-old pigs were least sensitive to ultrasound exposure while 59-day-old pigs were the most sensitive. Neonate pigs (5 days old) were only somewhat likely to be damaged by ultrasound exposure, but Dr. O'Brien noted that further study is needed to determine the meaning of these findings.

"The effects of ultrasound exposure are real," Dr. O'Brien said, adding that "whatever is causing the damage is common among species."

"We are not concerned with current clinical use of ultrasound in medicine because ultrasound is highly regulated," Dr. O'Brien told Reuters Health. He believes, however, that these and other studies are providing increased evidence that there is a potential for greater lung damage at higher ultrasound frequencies.

## ***"Science Teacher Workshop" Workshop at the Annual Meeting in Cleveland, Ohio***

*By Margaret McCarthy*

The official wording of the title of the workshop for the teachers is "Science Teacher Workshop." At the annual meeting in Cleveland I attended a workshop on workshops hosted by the Texas Chapter on Monday evening. The national Chairman of the Science Teacher Workshop is Ian Hamilton from Texas A&M, who coordinates the material for presentation. That material is then distributed through the Chairmen of the local chapter Science Teacher Workshop Committee. During my sabbatical time from November to March, I was in email contact with the committee. In addition to the email, there were monthly teleconferences [which I was not part of due to my location]. The committee updated the CD, which was then distributed at the Wednesday session. I was able to spend ample amount of time to offer my suggestions and perspective and thus the NECHPS has been noted as contributing to all the media forms. This two hour informal workshop allowed me to meet other chapter workshop leaders.

On Wednesday, the entire afternoon and one independent session from our national committee was devoted to presentations relating to Public Education. I thought that my talk on obtaining professional development credits for the teachers went reasonably well as I received requests for copies. It is difficult to present in 12 minutes. I had invested much time into the preparation of the slides. The summary of the this overall effort is that there is ample material to present a half-day or one day workshop and a full supply of meters available to chapters. Our national committee is settling down to expand on SOPs to assist newcomers. I am planning to attend the mid-year February 2002 meeting in Orlando.

On a personal note, my thesis advisor from Pittsburgh, Allen Brodsky, received the Robley D. Evans Commemorative Medal at the Tuesday Awards Banquet and is a member of the Public Education Committee.

## New Carcinogen Report Includes Radiation, Viruses, Cooking by-Products

From a NIEHS Release; Edited by Tara Bandini

**J**uly 24, 2001 – The National Toxicology Program at the National Institutes of Environmental Health Sciences, announced that it plans to review three viruses, three forms of radiation, two substances formed in cooking, and a variety of industrial exposures for possible listing in the eleventh edition of the federal Report on Carcinogens, which will be published in 2004.

The Report is prepared every two years and is mandated by Congress to help assure that substances or conditions that are likely to cause cancer are properly recognized by the public and regulatory agencies. Substances may be listed as “known” or as “reasonably anticipated” human carcinogens.

The 16 nominations for planned review are:

1-Amino-2,4-dibromoanthraquinone; a textile dye.

2-Amino-3,4-dimethylimidazo[4,5-f]quinoline (or MeIQ); formed in food during heating or cooking and found in cooked meat and fish.

Cobalt Sulfate; used in electroplating and electrochemical industries; as a ceramics coloring agent; a drying agent in inks, paints, varnishes and linoleum, and as a mineral supplement in animal feed.

Diazoaminobenzene (DAAB); promotes adhesion of natural rubber to steel, also used as intermediate in pesticides, dyes, and industrial chemicals.

Diethanolamine (DEA); used in preparing liquid laundry and dishwashing detergents, cosmetics, shampoos and hair conditioners, as well as in the textile industry.

Hepatitis B Virus (HBV); a DNA-enveloped virus transmitted through contact with blood and blood products or other body fluids.

Hepatitis C Virus (HCV); an RNA-enveloped virus transmitted in blood as is HBV.

High Risk Human Papillomaviruses (HPVs); non-enveloped viruses that infect genital mucous membranes.

X- and gamma rays; used in medical diagnosis and treatment.

Neutrons; may affect neutron radiotherapy patients and passengers and crew of aircraft.

Naphthalene; used in many industrial chemicals as well as most moth balls and toilet bowl deodorants.

Nitrobenzene; used in the production of aniline (a dye component)

Nitromethane; stabilizer added to halogenated solvents and aerosol propellants.

Phenylimidazopyridine; formed in food during heating and cooking and found in cooked meat and fish.

4,4'-Thiodianiline; an intermediate used in production of several dyes.

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## EPA ISSUES NEW MIXED WASTE RULES

Provided by Philotechnics, Ltd.

The EPA has recently issued **40 CFR 266 Storage, Treatment, Transportation, and Disposal of Mixed Waste**. These rules will become effective this fall for generators who are regulated by the Federal EPA. If a State program regulates your facility you should verify that your state has adopted these regulations.

The regulations reinforce a generator's ability to perform in-container mixed waste treatment. Additionally, the EPA is exempting certain mixed waste from RCRA Subtitle C regulation including permitting, transportation, and disposal.

For many small non-utility waste generators, the greatest benefit may be the ability to decay short half-life wastes without regard to the 90-day storage limit imposed by the EPA. Once the waste has been decayed, it will again be regulated as RCRA waste and be subject to storage time limits. The waste will then be disposed of as hazardous only at a much-reduced cost.

## NECHPS Sponsors Science Fair Award

By Doug LaMay

On May 5<sup>th</sup> of this year, Rusty Lorenzen had the pleasure of presenting a \$350 award to Mr. Minh Nguyen at SciFair 2001, the 52<sup>nd</sup> Annual Massachusetts State Science Fair. The award was presented to Mr. Nguyen on behalf of the New England Chapter of the Health Physics Society in recognition of his project: “The Correlation Between Letter Size and Reading Comprehension”. Although not specifically related to Health Physics (not every contributor can select prize criteria), Minh's project would make any HP proud with its prominent use of the chi-square statistic.

Minh is currently a junior at Boston Latin School.

**NECHPS MEETING NOTICE**

Joint Meeting with the American Nuclear Society, Northeast Section

Date: Thursday, October 25, 2001

Location: Papa Razzi Restaurant  
16 Washington Street, Wellesley, MA

Time: 5:30 p.m. Registration/Cash Bar  
6:30 p.m. Dinner  
7:00 p.m. Guest Speaker

Topic: Yucca Mountain

Speaker: Chris Kouts, DOE YMSCO

Menu: Italian Buffet – a selection of pastas, meats and vegetables, coffee/tea and dessert

Cost: \$25.00 Members, \$35.00 Guests, and \$15.00 Students

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DIRECTIONS TO PAPA-RAZZI: SEE REVERSE SIDE OF SHEET

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Registration Deadline is October 22, 2001.

Cancellations must be made before October 22, or you are responsible for payment.

Name: \_\_\_\_\_ Phone: \_\_\_\_\_

Dinner Choice (pick one): Fish or Chicken

Mail registration (with check to NECHPS) to: Ed Maher  
42 Tuttle Drive  
Acton, Massachusetts 01720

Register online at [www.nechps.org](http://www.nechps.org) ; call Ed at (978) 568-2785; OR

E-mail Ed at [efmaher@dukeengineering.com](mailto:efmaher@dukeengineering.com)

## **EMPLOYMENT OPPORTUNITY**

### **University of Massachusetts Lowell Radiation Safety Officer**

The University of Massachusetts Lowell is seeking a Radiation Safety Officer who will be responsible for planning and implementing a radiation safety program on the Lowell campus. The RSO will be responsible for supervising all Health Physicists and provides guidance to professors, students and to university personnel in the use of radiation producing sources. The RSO reports directly to the provost of the university.

**Qualifications:** Master's degree in Radiological Health or Health Physics. Minimum of three years experience in radiation safety with knowledge of non-ionizing radiation sources. Teaching and research experience and ability to prepare reports on radiation safety and usage. Considerable knowledge in the operation and calibration of portable radiation detection equipment. Considerable knowledge of federal and state regulations on radiation safety and usage. Considerable knowledge in radiation and containment surveys and transportation of radioactive materials. Ability to carry out analyses of hazardous materials.

**Examples of Duties:** Supervising radioactive waste disposal; administering and testing radiation emergency procedures; providing personnel dosimetry; instructing radiation users on Radiation Safety and Control; engaging in continued research with assistance of graduate students; providing instrument calibration; preparing Radiation Safety Guides and other documentation required by the USNRC and Commonwealth licenses for approval by the Radiation Safety Committee.

The deadline for applications is **October 18, 2001**. Please send resume to:

Gunter H.R. Kegel  
Radiation Laboratory  
UMass Lowell  
One University Ave.  
Lowell, MA 01854

## Directions to Restaurant Papa-Razzi in Wellesley

**From the west** take the Mass Pike to I-95 South

**From the north** take I-95 South

From I-95 South take the **RT-16 WEST exit**, exit number **21A** (one exit south of the Mass Pike and 128/95 interchange) towards WELLESLEY.

**From the south** take I-95 North

From I-95 North take the **RT-16 exit**, exit number **21B**, towards NEWTON/WELLESLEY. Turn **RIGHT** onto WASHINGTON ST.

Head west for about 0.6 miles -- the restaurant will be on your left.

There is parking alongside the restaurant which is normally full. If you drive through the Pappa Razzi parking lot there is additional municipal metered parking. In addition there is parking diagonally across Washington Street on the westbound side in the Grossman's parking lot (the Grossman's is closed).

Phone: 781 235 4747



