

RADIATION SAFETY NEWS

WVU, WVUH, and Health Sciences Center

Welcome

The purpose of this newsletter is to keep all departments updated on the changes in state and federal policy governing radioactive materials. The newsletter will also serve as a way to inform all users of the introduction of new policies, or changes made by the Radiation Safety Department (RSD) to WVU existing policies and procedures. The RSD, under oversight of the WVU Provost and Vice President for Academic Affairs, is responsible for the development of the comprehensive radiation safety program adopted by WVU, WVU Hospitals, Inc., and Robert Byrd Health Sciences Center to ensure the safe handling, transportation, use, and disposal of radiological materials. We enforce all the written directives established by the Radiological Safety Committee within the scope of the USNRC license mandates and regulations, as well as oversee the safe and legal use of radioactive sources.

Newest ARU/PIs at WVU

The RSD would like to welcome West Virginia University's newest faculty members: Dr. Janet Cyr, Otolaryngology Department, Dr. Elena Pugacheva, Mary Babb Randolph Cancer Center, and Dr. Rae Matsumoto, School of Pharmacy, wishing them the best of luck in their career as part of our WVU team.



Department of Biochemistry: Dr. Janet L. Cyr, Ph.D.
 Graduate Training: University of Texas, Southwestern Medical Center.
 Fellowships: Rockefeller University, Oregon Health Sciences University.
 Research Interests: Sensory neuroscience– Process of mechanotransduction whereby cells transduce mechanical stimuli into electrical signals that are relayed to the brain. Study of the molecular basis of mechanotransduction in the best-studied vertebrate mechanoreceptive cell, the hair cell, which is responsible for our senses of hearing and balance.



MBRCC: Dr. Elena Pugacheva
 Ph.D. Russian Academy of Science, Engelhard Institute of Molecular Biology 2000.
 Postdoctoral Research Associate at the Fox Chase Cancer Center, Philadelphia.
Project #1. To investigate involvement of adhesion proteins in activation of the AurA mitotic kinase, and the role of mitotic kinases in adhesion signal transduction.
Project # 2. Determine molecular mechanisms governing cell-cycle dependent cilium disassembly in mammalian cells.



School of Pharmacy: Dr. Rae Matsumoto, Associate Dean of Research and Graduate Programs. B.Sc. in biology and psychology: Creighton University . M.Sc. & Ph.D. in psychology: Brown University. Post-doctoral training in biochemistry and physiology: Brown University & Northwestern University.
 Primary areas of interest are research and the effects of drugs on the brain.

WVUH and WVU Broad Scope License Information

- Dr. V. Rajendran, Digestive Diseases, was officially appointed and agreed to serve on the WVU Hospitals Non Human Use of Radiation and Radionuclides Committee.
- Vicki Chase, RN, BSN, was officially appointed and agreed to serve on the WVU Hospitals Human Use of Radiation and Radionuclides Committee.
- WVUH has established and maintained, through the USNRC, a fingerprinting program for WVU and WVU Hospitals . A certification letter pertaining to the Trustworthiness and Reliability (T&R) officials has been submitted to the NRC. Michelle Sukal and Patricia Gyurke were appointed as the (T&R) Officials for the NRC WVU Hospital broad-scope license, and the WVU NRC broad-scope license fingerprinting programs, respectively.

Special Points of Interest:

- RSD requires Dosimeters to be returned in a timely manner.
- ARU/PI's are financially responsible for the procurement and disposition of all radioactive materials they obtain. Tips on how to minimize waste are included.

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Liquid Scintillation Counters

From : Wikipedia, the free Encyclopedia

Liquid scintillation counting is a standard laboratory method in the life-sciences for measuring radiation from beta-emitting nuclides. Scintillating materials are also used in differently constructed "counters" in many other fields.

Samples are dissolved or suspended in a "cocktail" containing an aromatic solvent (historically benzene or toluene, but more recently less hazardous solvents have come into favor) and small amounts of other additives known as fluors. Beta particles emitted from the sample transfer energy to the solvent molecules, which in turn transfer their energy to the fluors; the excited fluor molecules dissipate the energy by emitting light. In this way, each beta emission (ideally) results in a pulse of light. Scintillation cocktails often contain additives that shift the wavelength of the emitted light to make it more easily detected.

The samples are placed in small transparent or translucent (often glass or plastic) vials that are loaded into an instrument known as a liquid scintillation counter. The counter has two photomultiplier tubes connected in a coincidence circuit. The coincidence circuit assures that genuine light pulses, which reach both photomultiplier tubes, are counted, while spurious pulses (due to line noise, for example), which would only affect one of the tubes, are ignored.

Counting efficiencies under ideal conditions range from about 30% for [tritium](#) (a low-energy beta emitter) to nearly 100% for [phosphorus-32](#), a high-energy beta emitter. Some chemical compounds (notably [chlorine](#) compounds) and highly colored samples can interfere with the counting process. This interference, known as "quenching", can be overcome through data correction or through careful sample preparation.



**PerkinElmer
TopCount NXT Liquid
Scintillation Counter**



X-rays Often Repeated for Patients in Developing Countries

Staff Report : International Atomic Energy Agency (IAEA)

28 May 2008



The use of X-rays in medical care is growing in developing countries, and the IAEA is supporting efforts to strengthen quality assurance programs for radiography at hospitals and clinics. (Credit: IAEA)

The project on strengthening radiological protection of patients is designed to help countries apply the International Basic Safety Standards for the Protection Against Ionizing Radiation and for the Safety of Radiation Sources (BSS). Altogether 34 countries agreed to participate in the IAEA survey, though data presently are available for only 12 countries and more countries are likely to provide data in coming months.

Patients in developing countries often need to have X-ray examinations repeated so that doctors have the image quality they need for useful medical diagnosis, the IAEA is learning. The findings come from a survey involving thousands of patients in 45 hospitals and 12 countries of Africa, Asia and Eastern Europe.

"Poor image quality constitutes a major source of unnecessary radiation to patients in developing countries," emphasizes Dr. Madan Rehani of the International Atomic Energy Agency (IAEA) Division of Radiation, Waste and Transport Safety, which carried out the survey under technical cooperation (TC) projects of the IAEA.

The survey was done in phases from August 2005 to December 2006 at hospitals in the Democratic Republic of the Congo, Ghana, Madagascar, Sudan, Tanzania, Zimbabwe, Iran, Saudi Arabia, Thailand, United Arab Emirates, Bosnia and Herzegovina, and Serbia. Project counterparts in these countries worked through IAEA-supported regional technical cooperation projects that aim to help countries implement quality assurance programs for radiographic examinations, in line with international radiation safety standards.

"The use of X-rays in medical care is growing in developing countries," Dr. Rehani says. However, he adds, vital information about both the quality of X-ray images and patient doses is "grossly lacking" at many hospitals where the IAEA has helped launch quality assurance programs.

The survey found that more than half (53%) of all X-ray images evaluated through the project were of poor quality affecting diagnostic information. One consequence is that patients then are given repeat examinations, which means exposing them to X-rays again, as well as entailing extra costs. The survey included patients receiving chest, pelvic, abdomen, skull, and spine X-ray examinations.

The good news is that efforts to improve quality through quality assurance (QA) appear to be paying off. In a paper just published in the June edition of the *American Journal of Roentgenology*, Dr. Rehani and colleagues report that considerable benefits were seen regionally after introduction of QA programs. The quality of X-ray images improved up to 16% in Africa, 13% in Asia and 22% in Eastern Europe. At the same time, patient dose reductions ranging from 1.4% to 85% were achieved overall.

Regulatory Issues/US NRC Inspection

The NRC conducted an inspection at WVU, on March 10-13, 2008. The inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations throughout Nuclear Medicine, Clinical Laboratories (Irradiator), Oncology (LDR, HDR), Gamma Knife, Nursing and IC Order for radioactive materials of concern. No violations were identified. Safety inspection reports and compliance inspections were issued for WVU .

Waste Storage Handling

Changes in regulatory guidelines and escalating decommissioning costs have forced West Virginia University administration to adopt a new criterion that would amend the financial assurance requirements in the areas of decontamination, decommissioning and radioactive material waste disposal under the institutions' radioactive materials broad scope license and WVRHP materials license. Authorized radiation users (ARU/PIs), and new applicants requesting non-human use of radiation and radionuclides materials authorization, are required to provide a written commitment to WVU that ascertains funding is available for all elements of radioactive material final disposition under their Radiation Safety Committee application approval. The ARU/PI's department head must also ratify this commitment whereby indicating that any costs not covered by the ARU/PI's research grant will be the financial responsibility of the stated department. This is a straight forward way to ensure adequate funding is available for timely radioactive waste removal and decommissioning. In addition, all radioactive waste disposal costs are to be considered and added as a direct charge on grants and contracts when financial support is sought for the purchase of radioactive materials.

SUGGESTIONS ON HOW TO MINIMIZE WASTE

1. Use radioisotopes with a half-life of less than 90 days whenever possible.
2. Order only the quantity of radionuclides required for the experiment.
3. Do not discard non-contaminated trash into radioactive waste containers.
4. Survey potentially contaminated items (e.g. disposable gloves, trays, absorbent papers) in the work areas. If there is no contamination, they can be disposed of in regular trash after completely removing any radiation warning symbols and/or markings. Prior to discarding, double check to ensure that all radiation labels are properly defaced.

The Radiation Safety Department thanks you for your cooperation in integrating its policy.

Canada Fires Head of Nuclear Regulator

CBCnews.ca, January 2008

The Canadian government fired the country's Nuclear Safety Commission President, Linda Keen, over how she handled the closure of a reactor that makes two-thirds of the global supply of medical radioisotopes. Keen refused to allow a 50-year-old reactor at the Chalk River facility in Ontario to reopen after a maintenance shutdown in November. Legislation was passed through Parliament that overruled Keen and ordered the reactor to be restarted. The nuclear safety commission had been long aware that a safety upgrade to Chalk River's nuclear reactor was incomplete, yet did nothing until November, when it suddenly raised the alarm and pressured for the reactor's closing, Atomic Energy of Canada Ltd. has charged.

The Harper government directly blamed Keen for unnecessarily imposing November's closing of the Chalk River nuclear reactor and the resulting domestic shortage of life-saving medical isotopes for cancer and cardiac diagnosis and other treatment. The government has named Michael Binder, currently an assistant deputy minister within the department of industry, as interim president of the nuclear safety commission.



Financial– Assurance Policy

Each ARU/PI is financially responsible for the procurement and disposition of all radioactive materials they obtain under their Non-Human Use of Radiation & Radionuclide Committee authorization. All waste processing, supplies and disposal costs will be directly billed to the ARU/PI. Payment must be submitted to the Radiation Safety Department within 30 days of invoice receipt.



The reactor facility in Chalk River, Ont., is pictured in this photograph from 1985. Medical isotopes produced there are key to diagnosing and treating various cancers. (Canadian Press)

Training

All Radiation Protection Training for WVU Research Laboratories is available online at the WVU SOLE website. Successful completion of online testing is required in order for any laboratory radiation worker and Authorized User to actively use radioactive materials within an authorized laboratory (**Note: This also includes sealed source irradiators and portable gauges containing radioactive materials**). Principle Investigators, and potential users under their direct supervision, must complete this course regardless of their past training history at other institutions.

All Authorized Users and laboratory radiation workers will then be required to complete each section applicable to them of this training course **every other year thereafter**, to ensure laboratory is in compliance with institutional Radiation Safety and NRC guidelines. It is the responsibility of each individual to keep track of his/her own training history.

New York Nuclear Plant Shutdown Triggered By Digital Camera

Newsday.com June 11, 2008

BUCHANAN, N.Y. (AP) _ An emergency shutdown of a reactor at the Indian Point nuclear power plant was caused by signals from a worker's digital camera, a newspaper reported Wednesday.

Federal regulators said radio frequencies from a camera too close to a control panel interfered with a boiler pump that provides water to four steam generators, The Journal News reported on its Web site.

Water levels dropped because of the March 23 incident, and Indian Point workers had to shut down the reactor two days before a scheduled refueling shutdown. No radiation was released.

The Nuclear Regulatory Commission said plant owner [Entergy](#) Nuclear investigated the incident, determined it was initiated by someone taking photos and reported it to the NRC.

"The direct cause was radio frequency interference from the camera," NRC spokesman Neil Sheehan said. "All that had to happen was for the camera to be on."

Entergy, which uses cameras to document its equipment and was taking photos as part of its preparation for the scheduled March 25 outage, has changed its photography procedures because of the incident, Sheehan said. He also said that the NRC was confident the radio frequency interference close to the control panel can't be caused from far away.

Entergy and the NRC said information about the camera incident would be passed to other nuclear plants, which have experienced similar woes, such as when camera flashes caused the release of Halon gas at the [Haddam](#) Neck Plant in [Connecticut](#) in 1997.

The community surrounding the Indian Point plant, in Buchanan, about 35 miles north of midtown [Manhattan](#), should be reassured the March 23 shutdown was not caused by a plant equipment issue, Entergy spokesman Jim Steets said. He also added "It's a good thing to learn from" .

Dosimetry

Radiation Safety recently distributed a notice to all Radiation Dosimetry Department Coordinators throughout WVU/WVUH, providing them with a list of required dosimeters that were not returned to the RSD for evaluation of occupational dose received during the month or quarter, depending on your dosimeter. Under Federal Regulation 10 CFR 20.2126(a) and State Regulation 64 CSR 23.6.41.e, a record must be kept of Occupational Dose Radiation Workers. In order for this to happen, dosimeters and TLDs must be returned to RSD for evaluation. If a lab or department fails to return dosimeters in a timely fashion, they will be cited by the RSO for failure to use radiation monitoring device or return monitor to RSD as stated in the RSM, Ch. 8, Sect. 8.4.2, Paragraph 6.

Radiation users are required to start using the new dosimeters at the beginning of the applicable quarter. Old dosimeters need to be collected and returned to the RSD Office no later than the 10th of the first month of the next quarter (or the next month), depending on whether you have a quarterly or a monthly dosimeter, if they are not received by that time they will be considered delinquent.

RSD would like to thank you for your continued diligence in maintaining this program.





Radiation Safety Department On-Call Pager Number

West Virginia University

Radiation Safety Department
G-139A Health Sciences North
PO Box 9006
Morgantown, WV 26506-9006

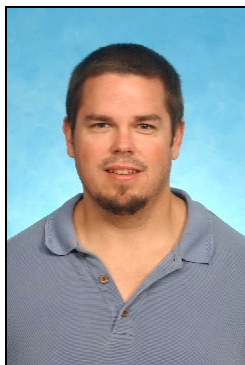
Radiation Safety can be contacted 24 hours a day, 7 days a week by using our *on-call pager number (304) 987-1586*. In case of an emergency, or if you need to contact RSD after regular business hours, please use this number. To ensure a quick response, make sure you enter the entire number you wish to be reached at . Thank you.

Phone: (304)293-3413
Fax: (304)293-4529
Pager : (304) 987-1586

- Nasser Razmianfar, Ed.D. - Director and Radiation Safety Officer
- Stephen Root, M.S. - Senior Radiation Safety Specialist
- Dawit Woldemikael, M.S. - Senior Radiation Safety Specialist
- Joseph Chad Mason, M.S. - Senior Radiation Safety Specialist
- Rhonda Stevens - Administrative Secretary Sr.

Visit our website at : <http://www.hsc.wvu.edu/rsafety/>

Meet Our Newest Sr. Radiation Safety Specialist



Joseph Chad Mason Sr. Radiation Safety Specialist
From New Martinsville, West Virginia
Graduated from WVU in
1997 with a Bachelor of Science in Environmental Science
2000 with a Master of Science in Safety and Environmental Management
2005 Master of Arts in Secondary Education

Was hired by the WVU Radiation Safety Department (RSD) in April of 2007
Prior to working for RSD, was a science teacher for Wetzell, Tyler, and Monongalia County Schools

Joseph Chad Mason
Sr. Radiation Safety Specialist

Welcome Chad