Fall 2023

The Atom

Newsletter of the Division of Radiation Safety

It's Broad Scope License Inspection Time

The NIH Broad Scope license covers our approval to possess and use radioactive materials for benchtop, animal, and clinical research. The last time this license was inspected was October 2021; it is now due for inspection again. U.S. Nuclear Regulatory Commission visits are typically unannounced, so the time to get your lab inspection-ready is **NOW**.

Below are some questions you can ask yourself as you assess your lab for its level of readiness:

- Have your survey meters been calibrated within the last year?
- Have your chemical fume hoods been calibrated within the last year?
- Are lab staff adhering to the prohibition of food and drink inside posted labs?
- Are all source vials being stored securely?
- Is radioactive material, including radwaste, attended at all times when not in secure storage?
- If issued dosimetry, are lab staff wearing it? Is it for the current wear period?
- Are lab staff sufficiently performing a daily contamination monitoring check on days when

Did you know? **All** Authorized Users are required to complete an annual audit for your **radioactive material inventory reconciliation**.

Once a year, a DRS health physicist will reach out to you for a personal check-in. In addition to reviewing your RAM inventory, the health physicist will review your current record with the DRS Database and resolve any discrepancies.

This is also your opportunity to confirm your list of posted labs, assigned radiation workers and basic contact information. DRS commenced this annual activity on February 1, 2023, and appreciates your cooperation and prompt responses to our requests to schedule and complete this important regulatory task.

Please do NOT close-out RAM items on your inventory unless the entire source vial is being disposed of; even if only partially full, they still exist and need to remain on your active inventory.

radioactive material is used? Does it include the floor and their shoes? Remember that labs using only H-3 or low energy beta emitters should not be using a Pan-GM to survey.
- Are the Utilization/Disposal forms being completed to properly account for source vial inventory?
- Are only pre-approved (listed) users handling the source vials?
- Is all radioactive waste collected properly into the appropriate containers?
- Are lab staff adhering to the prohibition of liquid radwaste disposal to the sink drain?
- Are the hallways free of radioactive material sources and contaminated items (not counting approved exceptions)?
- Does your lab door have a legible and visible "Caution Radioactive Material" sign? Is it up-to-date?
- Are all lab staff wearing the proper PPE when handling radioactive material?
- Has everyone in the lab received radiation safety training?

If you have any questions about your lab's compliance status, or need additional radwaste containers or a new Caution sign for your lab door, contact your Area Health Physicist at 301-496-5774 NOW.

Be on the look-out for an email to all Authorized Users, which will be sent to alert you that the NRC has arrived for the Broad Scope license inspection – and be inspection-ready for that moment. Here's to a clean inspection!

Clean Inspection for the Cyclotron

An unannounced inspection of the Cyclotron Production license by the NRC took all of us by surprise, but the Cyclotron program came through with no violations identified.

Inspectors spent a full day interviewing staff, reviewing records, and inspecting the Cyclotron and associated hot cell spaces. As this program handles some of the largest quantities of radioactive material at the NIH, there were plenty of radiation safety topics to review.

Thanks to the superb safety culture of the PET Department, cyclotron engineers and hot cell radiochemists, the NRC wrapped up their inspection with no issues to identify and plenty of compliments for a well-run program. Kudos to the whole team!

This will avoid orphaned source vials found years later in lab freezers/refrigerators.

If you have active RAM inventory, a physical lab visit is required. Your health physicist will need to visually inspect the source vials and confirm their storage location. However, if you do NOT have active RAM inventory and no posted labs, the annual audit can be conducted via email. Even with no inventory, **we still need to perform the annual check-in with you.**

When you receive the e-mail request with your attached annual inventory audit booklet, please check to make sure that all the information in the email concerning you and your subordinate radiation workers is accurate, make any necessary corrections and then return the corrected summary via email. You will also need to sign, date and return your audit booklet to verify your concurrence with the accuracy of the information provided, which will be used to update the DRS database and ensure your 2023 annual inventory audit is completed.

We appreciate your cooperation to ensure our regulatory requirement for an annual RAM inventory reconciliation is met for each Authorized User. Please contact your Area Health Physicist at 301-496-5774 if you need to clarify requirements or to reschedule your audit.

Audits should be completed by Nov 30, 2023.

Staff Spotlight

New Hires!

DRS has some new hires we would like to introduce you to:

Justin Jensen, Health Physicist

What is your background (what/where you studied, job experience etc)?
I received my Bachelors of degree in physics at Westminster University, Salt Lake City, UT in 2014. I began my federal career in 2007 with the Transportation Security Administration, where I worked until transferring to the Department of the Navy, Pearl Harbor Naval Shipyard where I worked as Radiological Control Technician from 2015 to 2018. In 2018 I accepted my first Health Physicist position with Naval Surface Warfare Center, Carderock Division in West Bethesda where I worked until accepting the position here at NIH.

What do you like to do in your spare time? (Hobbies? Interests? Family?)
In my spare time I enjoy hiking local trails (slowly expanding out), spending time with friends and family, and hanging out with my dog (Ted). I also enjoy playing video games every now and again. I have one son (Kayne) that lives in Salt Lake City, UT. He recently received his Realtor's License.

What do you enjoy most about being a part of the NIH community?
I am greatly looking forward to the opportunity to grow and develop within this community of brilliant people.

Mike Spady, Health Physicist

What is your background (what/where you studied, job experience etc)?
Originally from Oregon, I have spent the last 20 years working in Maryland. I have worked for the National Institutes of Health (NIH) in the past, the Food and Drug Administration (FDA), and the National Institute of Standards and Technology (NIST) in the field of Health Physics. I have been awarded a B.S. in Environmental Management and also an M.S. in Occupational Safety and Health with a concentration in Environmental Management from Columbia Southern University.

What do you like to do in your spare time? (Hobbies? Interests? Family?)
In my spare time I enjoy yoga, meditation, traveling, camping and hiking. I have a son named Luke that I adore and I love being a father, it's my greatest honor and responsibility.

What do you enjoy most about being a part of the NIH community?
The things I enjoy most about NIH are the diversity of the staff and the many different scientific disciplines leading the way in biomedical research. I also appreciate that the NIH campus offers so many amenities for the staff and the community feel on campus is amazing!

Erin Myers, Health Physicist

What is your background (what/where you studied, job experience etc)?
I have a bachelor's degree in psychology from Loyola University of Chicago and did the natural sciences track. I'm originally from Los Angeles, and before my junior year in college, I did an internship with the Radiation Safety Department at UCLA. After graduation, I was offered a job at UCLA as a Radiation Safety Technician. A couple of years later I received my master's degree in counterterrorism. I moved to Maryland and became a Health Physicist for the University of Maryland Baltimore (UMB). During my time at UMB, I also worked at the Naval Research Lab on various counterterrorism projects. After working at UMB for 10 years I was ready for a new challenge and applied to be a Health Physicist at NIH.

What do you like to do in your spare time? (Hobbies? Interests? Family?)
In my spare time I love to travel and learn about different cultures. I love hiking and trying local wineries and breweries. I try to spend as much time as I can with my family and enjoy taking family road trips. I'm obsessed with most animals, especially dogs. We have a very goofy pit bull named Diamond! I'm a lifelong cheesehead (Go Pack Go!!) and will be busy watching football most Sunday afternoons!

What do you enjoy most about being a part of the NIH community?
Although I'm new to NIH, I've truly enjoyed the people here and the real sense of community. I appreciate the importance my department has placed on continued learning and training, and I'm really looking forward to growing my career here at NIH!

Jeremiah Zio, Admin Support

What is your background (what/where you studied, job experience etc)?
I began my college career at Johnson & Wales University in Miami where I acquired my associates degree in Business Administration and Management. Following that, I transferred to University of West Florida in Pensacola, where I attained my BS in General Marketing and Global Marketing. Before graduating from UWF, I had to study abroad for one year.

I chose Nottingham Trent University in Nottingham, UK, East Midlands. I graduated from UWF with my BSA in Business and Marketing in 2018. My background job history is mainly finance, managerial, and data entry.

What do you like to do in your spare time? (Hobbies? Interests? Family?)
I enjoy writing/composing songs and poetry. Also, drawing or painting in my spare time. I have published at least 20 tracks and have created dozens more. Traveling and leisure time is a must for me to help alleviate myself from the daily stressors of life.

What do you enjoy most about being a part of the NIH community?
NIH is a renowned agency of the government with many cogs working compositely as one machine. That being said, so far, I've felt nothing but warmth and kindness from the staff. Working here will definitely enlighten me with knowledge that could serve me positively for the rest of my life.

New Roles:

We've also had some staff move up in our organization recently.
Please join us in welcoming them to their new roles:

Dustin Gibbs, Chief
Materials Control and Analysis Branch

Olumide Owoade, Sealed Source Manager
Materials Control and Analysis Branch

Don't Let This Happen at the NIH!

Don’t Let This Happen at the NIH!

The following is a collection of recent enforcement actions taken by the NRC against other radioactive materials licensees and event notification reports made by licensees to the NRC.

Let’s make sure these things don’t happen at the NIH!

· On April 18, 2023, a recycling yard in Denver flagged a load of scrap metal as potentially radioactive. The load was returned to the point of origin and was separated. At that time, a radium-226:beryllium source was identified. The source container was mostly intact. The markings on the source container indicate the activity as 5 mCi radium-226:beryllium; and the reference date as 04/30/1963. It is still unknown how the source ended up at the recycling yard.

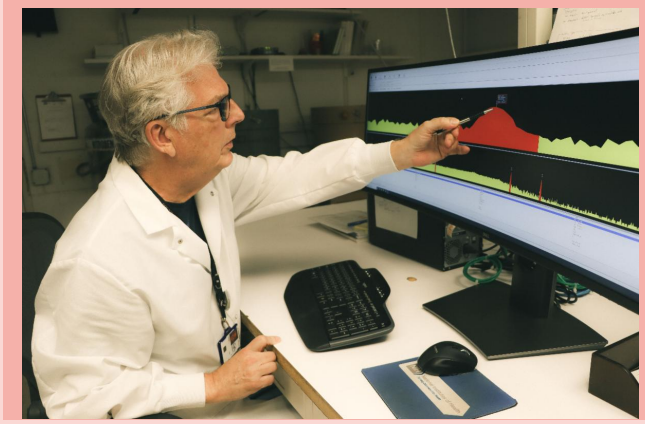
· A Radiation Safety Officer (RSO) filed a notification to regulators, concerning a possible excessive exposure. According to the RSO, an industrial radiographer had his December badge come back with a dose of 8000 mrem. The December badge was sent to Landauer with a set of March badges. The RSO states that the radiographer leaves his badge in his work bag with other tools. The radiographer thinks his bag was used by someone else while performing industrial radiography, leaving the bag near the exposed source. It is believed this is how the badge got exposed.

· A technician was performing a lung scan on a patient and accidentally grabbed the wrong dose. The patient received 4 mCi of Tc-99m before the technician realized her mistake. The prescribed dose was 10 mCi of Tc-99m tagged for a lung scan while the administered dose of Tc-99m was tagged for the liver. The total body effective dose equivalent to the patient was 80 mrem. The radiologist and the patient were both made aware of the incident.

National Radiation Protection Professionals Week

November 6-10, 2023

We in the Divison of Radiation Safety take a lot of pride in our work and in our profession. Therefore it is with great excitement that we announce the celebration of National Radiation Protection Professionals Week, November 6-10, 2023. This week-long event honors the discovery of x-rays by Wilhelm Roentgen on November 8, 1895, as well as Marie Curie's birthday on November 7, 1867.



DRS provides the workforce for a robust program that helps ensure medical uses of radiation are safe, lab research using radioactive material is compliant with all reguations, radiation devices are secure, and non-radiation workers are protected from sources of radiation exposure. Thanks to these efforts, we are all able to safely enjoy the many beneficial uses of radiation in biomedical research.

The Radioactive Buzz

The Royal Swedish Academy of Sciences has decided to award the Nobel Prize in Physics 2023 to:

Pierre Agostini
The Ohio State University, Columbus, USA
Ferenc Krausz
Max Planck Institute of Quantum Optics, Garching and Ludwig-Maximilians-Universität München, Germany
Anne L'Huillier
Lund University, Sweden

"for experimental methods that generate attosecond pulses of light for the study of electron dynamics in matter"

Experiments with light capture the shortest of moments

The laureates' experiments have produced pulses of light so short that they are measured in attoseconds, thus demonstrating that these pulses can be used to provide images of processes inside atoms and molecules.

In 1987, Anne L'Huillier discovered that many different overtones of light arose when she transmitted infrared laser light through a noble gas. Each overtone is a light wave with a given number of cycles for each cycle in the laser light. They are caused by the laser light interacting with atoms in the gas; it gives some electrons extra energy that is then emitted as light. Anne L'Huillier has continued to explore this phenomenon, laying the ground for subsequent breakthroughs.

In 2001, Pierre Agostini succeeded in producing and investigating a series of consecutive light pulses, in which each pulse lasted just 250 attoseconds. At the same time, Ferenc Krausz was working with another

The three Nobel Laureates in Physics 2023 are being recognised for their experiments, which have given humanity new tools for exploring the world of electrons inside atoms and molecules. Pierre Agostini, Ferenc Krausz and Anne L'Huillier have demonstrated a way to create extremely short pulses of light that can be used to measure the rapid processes in which electrons move or change energy.

Fast-moving events flow into each other when perceived by humans, just like a film that consists of still images is perceived as continual movement. If we want to investigate really brief events, we need special technology. In the world of electrons, changes occur in a few tenths of an attosecond – an attosecond is so short that there are as many in one second as there have been seconds since the birth of the universe.

type of experiment, one that made it possible to isolate a single light pulse that lasted 650 attoseconds.

The laureates' contributions have enabled the investigation of processes that are so rapid they were previously impossible to follow.
"We can now open the door to the world of electrons. Attosecond physics gives us the opportunity to understand mechanisms that are governed by electrons. The next step will be utilising them," says Eva Olsson, Chair of the Nobel Committee for Physics.

There are potential applications in many different areas. In electronics, for example, it is important to understand and control how electrons behave in a material. Attosecond pulses can also be used to identify different molecules, such as in medical diagnostics.

Source: NobelPrize.org

Important Dates | Fall 2023

Oct 25

Radiation Protection Computer Code Analysis and Maintenance Program tour of Molecular Imaging Program, NCI

Nov 16

Radiation Safety Committee Meeting

Nov 30

Last day for Specialty Radworker Groups to complete Refresher Training

National Institutes of Health
Division of Radiation Safety
9000 Rockville Pike
Building 21
Bethesda, MD 20892
https://drsportal.ors.od.nih.gov

Hours of Operation:
Monday - Friday
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