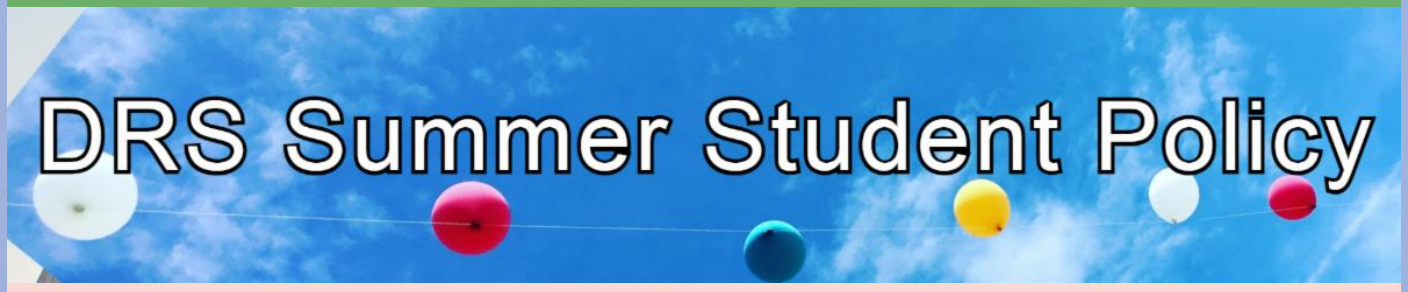
Spring 2024

The Atom

Newsletter of the Division of Radiation Safety



DRS Summer Student Policy

Welcome aboard to all of our 2024 summer students! Below are a few reminders about the NIH policy concerning minors and the use of radioactive material. See the DRS website for a more complete list of DRS Division of Radiation Safety Requirements for Minors. Also, for more information on NIH-wide policies regarding minors, see; NIH Policy Manual 3015 - Admittance of Minors to Hazardous Areas

Minors under the age of 16 are prohibited from working with radiation.

Minors who are 16 or 17 years of age are prohibited from handling source vials.

Minors must complete the application and receive signed approval from the RSO before they use any radioactive material, radiation producing devices, or sealed source irradiators.

Minors are ineligible for unescorted access to sealed source irradiators.

All minors working in a laboratory posted for Radioactive Material Use who DO NOT intend to use Radioactive Material must take the Radiation Safety Orientation training.

All minors must complete a Dosimetry Evaluation Form (DEF).

All use of radiation by an RSO-approved minor must be directly supervised by a trained adult NIH staff member at all times.

All use of radioactive material by the minor MUST be supervised by the designated Authorized User (AU).

Written consent of the student's parents/guardians is required as part of the approval process.

Prohibited from handling Volatile Radioactive Material (RAM).

Dose Limits for Minors are 10% of the limit for adults.

Wear Your Dosimeter!

For OSHA-regulated radiation sources like x-ray equipment, the requirement to wear an assigned dosimeter is stated in 29 CFR 1910.1096(d)(2). For NRC, it is stated in 10 CFR 20.1502(a).

It's now NRC precedence to inspect radiation exposure records for users expected to receive occupational doses

Did you know the NIH could be fined for you not wearing your dosimeter?

In a case that raised eyebrows everywhere in Radiation Safety Land, the U.S. Nuclear Regulatory Commission issued an institutional fine against the Indiana University–Purdue University Indianapolis (IUPUI) Medical Center in 2022 for certain users not wearing their assigned dosimeters. The fine was issued in part because the university failed to take action when lower than expected exposures were recorded, indicative of a failure to wear dosimeters. This is relevant for high exposure potential groups, where radiation is an expected part of the job. In the case of IUPUI, radiology physicians were charged with willful disregard to wear their dosimetry, and the Medical Center was charged with failure to implement a proper radiation protection program.

You can read the NRC notification here.

Note that this is an example of something that *could* happen at NIH if users aren't careful to follow important administrative requirements like wearing assigned dosimeters when working with sources of radiation. While x-ray exposure itself is not regulated by the NRC (but by OSHA), the NRC *does* have jurisdiction over all radiation exposure if the user handles any NRC-regulated source. That's why the NRC was able to inspect IUPUI and act on violations noted in the Y-90 therapy program workers' concurrent x-ray usage.

and to question the program if dosimetry records don't support that information. Here in Radiation Safety, we have always had triggers set to flag a user for ALARA investigation if their dosimeter results show a recorded occupational radiation exposure >10% of the allowable limit. An even more in-depth ALARA investigation will be triggered for users who exceed 30%, 50%, and/or 70% of the limit.

Now we have implemented an additional review to catch if high exposure potential workers – those who *should* be receiving a baseline occupational radiation exposure throughout the year – instead have dosimeter results of zero. The conclusion will be that the dosimeter(s) were not worn. Is this a problem? No, if no (or minimal) work was performed in that wear period, or if the individual was on leave, or if the radiation work solely involved low energy emitters which dosimetry is ineffective at measuring. However, yes if there was expected occupational radiation exposure and a dosimeter did not record it. The worker can expect a call from Radiation Safety if a pattern emerges. This is an important administrative review that will help keep the NIH in a good defensive position when NRC inspectors arrive. Plus, it enables Radiation Safety to maintain proper occupational exposure records and for workers to accurately know their radiation dose, for safety's sake.
The bottom line – **if you're assigned dosimetry, wear it!** Please contact the Dosimetry Department (Forrest Heinrich at 301-496-5774) if you have any questions about your dosimetry needs or your occupational exposure history.

Reminder: Contact DRS Prior to Renovations

Renovations, lab clearances, and moves are just a part of life in the biomedical research world, and especially around this time of year. If you are reading this newsletter, you are quite possibly working in a posted lab that will be doing one of these things sometime in the not-too-distant future. If you are, please make sure you and your team coordinate with Division of Radiation Safety well in advance.

It's instructive to consider the clearance of rooms, partial clearance (which are sometimes done to accommodate for renovations) and the survey of potentially contaminated equipment in a lab as processes, and not singular acts. Division of Radiation Safety operates within a complex regulatory framework and several steps could be added to these processes that may not be obvious, but are rooted in a good faith justification to keep everyone in our research community and the general public safe. Safety is everyone's responsibility.

Please ensure you do your best to coordinate moves, clearances, and surveys of any kind well in advance of your planned move date. For more information, we have a handy checklist located here.

As always, please don't hesitate to contact your Area Health Physicist with any comments, questions, or concerns. Thanks!

DRS Participates in Take Your Child To Work Day

Thank you to everyone who stopped by the Division of Radiation Safety table for Take Your Child To Work Day 2024! Health Physicists and Radiation Safety Staff ran the booth and helped visitors conduct careful radiation surveys of common and/or household items which were previously manufactured with small amounts of radioactivity like Fiestaware, watches and smoke detectors.

Visitors were able to use real Pan GM and Sodium Iodide detectors under the supervision of a Health Physicist. There were also games involving radiation trivia and of course, a healthy supply of non-radioactive candy. Thank you to everyone who participated. We will see you next year!

Staff Spotlight

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

Joshua Sanderson, Health Physicist

Christina Shipman, Health Physicist

What is your background (what/where you studied, job experience, etc)?
I recently received my bachelor's degrees in physics and in mathematics from University of Maryland in 2022. I don't have any prior experience working with radiation, but I look forward to gaining some.

What do you like to do in your spare time? (Hobbies? Interests? Family?)
In my free time, I enjoy playing video games and hanging out with friends. I also go to trivia night every Thursday with friends and family.

What do you enjoy most about being a part of the NIH community?
As someone early in my career, I appreciate being surrounded by many knowledgeable and experienced people who can offer me opportunities to learn.

What is your background (what/where you studied, job experience, etc)?
I am coming to NIH from the nuclear power industry. I previously worked as a health physicist at the Waterford 3 Nuclear Station, which is just outside of New Orleans. I was there for a little over four years. I have a bachelor's degree in physics from NYU and a master's degree in physics from Tulane University.

What do you like to do in your spare time?
(Hobbies? Interests? Family?)
My husband and I have two kids, my son is almost four my daughter is one. In my spare time I love to cook, be outdoors, travel and hang out with my family.

What do you enjoy most about being a part of the NIH community?
I am excited to be here at NIH. I have never done health physics in a research environment before and have already learned so much since being here. I think this will be great place to grow in my career. I am excited to keep learning and look forward to contributing to the important work being done here.

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 March 27, 2024, at 1101 EDT, a sample containing 20.3 mCi of carbon-14 (C-14) in 1,3-Dichloropropene liquid form (348 microliters) was dropped when being removed from a storage container. The authorized user immediately called for assistance and restricted access to the laboratory where the spill occurred. Decontamination efforts began immediately after the incident, and it was confirmed that the contamination was contained to the laboratory where the spill occurred. It was determined on March 28, 2024, at 1025 EDT that restrictions would remain in place greater than 24 hours, and that this incident was reportable under 10 CFR 30.50(b)(1).

Following the spill, a nasal swab was taken of the worker with no detectable activity, however, a urine bioassay taken the following day indicated a potential internal dose of 213 mrem. No other staff were exposed, and there was no risk to public safety or the environment.

The applicable 10 CFR 20 Appendix B annual limit for

At around 1700 CDT on March 21, 2024, the Detroit Army Arsenal's radiation safety officer (RSO) noticed a picture of two Army M58 Aiming Post Lights, which typically contain 5 Ci of tritium each, on a Reddit sub-group. The post indicated that the devices were a "going away gift" from the Army, and that the individual was no longer in the Army. The sealed sources appeared to be intact, but the RSO could not see the serial numbers.

The RSO plans on reporting this to his chain of command and to the Army Criminal Investigative Service.

On March 27, in Plainville CT, an NRC Licensee discovered three electron capture detectors (ECD) were missing on March 18, 2024. Each ECD contained 15 millicuries of nickel-63 (45 millicuries total). The last known accountability of these ECDs occurred at a leak test performed in August 25, 2020. The licensee suspects the ECDs may have been disposed of improperly.

intake for C-14 is 2000 microcuries.

Division of Radiation Safety is charged (pun intended) with ensuring anyone working on NIH campus who may be exposed to radiation is trained properly. What constitutes being properly trained is defined by a complex regulatory framework, and can vary quite a bit from worker to worker. As a result we employ certain "User Type" codes to ensure we're meeting everyone's needs. Over the years we have gotten several questions about what each user code means. In the interest of transparency here is a list of our various user codes and the training required for each. Here is a current list of DRS User Codes.

DRS Training Program
Training Requirements for the Various DRS User Type Codes:

01 RESEARCHER/LAB WORK – RSLCBT, Radiation Fundamentals; Biological Effects of Radiation; Policies, Procedures, and Regulations; Emergency Procedures; Detectors and Measurements; and Radioactive Waste

03 PATIENT CARE PERSONNEL – Various, depends on radiation use during patient care. Thus, ranges from Radiation Safety for Nurses to X-Ray Training for Patient Care and Animal Research, etc.

06 X-RAY – Biological Effects of Radiation and X-Ray Training for Patient Care and Animal Research

07 PET IMAGING| PET – RSLCBT, Radiation Fundamentals; Biological Effects of Radiation; Policies, Procedures, and Regulations; Emergency Procedures; Detectors and Measurements; Radioactive Waste; and Radiation Safety for PET Users

08 X-RAY DIFFRACTION/CAB X-RAY – Biological Effects of Radiation and X-Ray Training for Analytical and Cabinet X-Ray Units

09 IRRADIATOR/SEALED SOURCE – Managed through the DRS Irradiator Program Office. Radiation Safety for Irradiator Users and Radiation Safety for Irradiator Security - Trustworthy and Reliable

10 SHOPS/MAINTENANCE – Radiation Safety Awareness Training

11 ADMIN/SEC/CLERICAL – RSLCBT, Radiation Safety Awareness Training

13 NON-DRS CONTRACTOR – Radiation Safety for Maintenance and Contractors

19 FIREFIGHTERS – (in-person) Radiation Safety for NIH Fire Department

20 PATIENT TRANSPORTATION SERVICES – (In-person) Radiation Awareness Training

21 PATIENT SPECIMEN SERVICES – Radiation Safety for NIH Department of Laboratory Medicine Staff

22 IRRADIATOR ROOM ACCESS NON-USER – Managed through the DRS Irradiator Program Office. IC6 Protection of Radioactive Material in Quantities of Concern Information

23 NUCLEAR MEDICINE – Department of Nuclear Medicine – RSLCBT, Radiation Fundamentals; Biological Effects of Radiation; Policies, Procedures, and Regulations; Emergency Procedures; Detectors and Measurements; Radioactive Waste; and Radiation Safety for Nuclear Medicine Department Staff

24 PET RADIOCHEMISTRY – RSLCBT, Radiation Fundamentals; Biological Effects of Radiation; Policies, Procedures, and Regulations; Emergency Procedures; Detectors and Measurements; Radioactive Waste; and Radiation Safety for Cyclotron/Radiochemistry Workers

25 OBSERVER OR WORKING IN PROXIMITY TO RAD WORK – Radiation Awareness Training

27 THERAPY MACHINES – In-person – Radiation Safety Training

29 ADMIN - NO RSLCBT REQ – Radiation Awareness Training

15 DRS CONTRACTOR – RSLCBT, Radiation Fundamentals; Biological Effects of Radiation; Policies, Procedures, and Regulations; Emergency Procedures; Detectors and Measurements; and Radioactive Waste

16 CYCLOTRON STAFF – CYCRSLCBT, Radiation Fundamentals; Biological Effects of Radiation; Policies, Procedures, and Regulations; Emergency Procedures; Detectors and Measurements; Radioactive Waste; and Radiation Safety for Cyclotron/Radiochemistry Workers

17 HOUSEKEEPING – (in person) Radiation Safety for NIH Housekeeping Personnel

18 SECURITY – (in-person) Radiation Safety for NIH Police

30 ANIMAL RESEARCH – Animal Research RSLCBT - Radiation Fundamentals; Biological Effects of Radiation; Policies, Procedures, and Regulations; Emergency Procedures; Detectors and Measurements; Radioactive Waste; and Radiation Safety for Animal Researchers

31 ANIMAL CARE – Radiation Safety for Animal Care Personnel

32 OPEN BEAM ANALYTICAL X-RAY – Radiation Safety for Open Beam X-Ray Users

33 HDR/BRACHYTHERAPY – (In-person) Radiation Safety Training

Important Dates | Spring 2024

May 17	May 23	June 18
Bike To Work Day	RSC Meeting	Safety Health, and Wellness Day

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
7:00 am - 5:00 pm

After-hours/weekends:
Call NIH Emergency Communications Center:
(301) 496-5685

For more information contact:
Main: (301) 496-5774
Training: (301) 496-2255
Rad Waste Pickup: (301) 496-4451
Radioactive Shipping & Receiving:
(301) 496-3277