SafetyMatters

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Environmental Health & Safety

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Radiation Safety
Phone: (212) 305-0303
rso-ehrs@columbia.edu

Don't Forget to Change Your Clocks and Smoke Alarm Batteries

Daylight Saving Time Begins Sunday March 13th, 2022

How Prepared is Your Laboratory for Inspections in 2022?

By: Christopher Pettinato, *MPH, CSP* ***(Asst. Vice President)***

Benjamin Franklin famously once said, "If you fail to plan, You are planning to fail!" This quote is particularly relevant for laboratory emergency planning related to fire, a hazardous materials spill or exposure, or injury. This can also be applied to preparedness for an unannounced regulatory inspection by the US Environmental Protection Agency (EPA) or NYS Department of Environmental Conservation (DEC) related to laboratory hazardous waste management. Inspections can occur at any time. In fact, CUIMC was the subject of an unannounced hazardous waste inspection by NYSDEC in December, 2021. The consequences of enforcement action are also high, with penalties ranging from thousands of dollars to tens of thousands per violation per day. While EH&S is in a perpetual state of "inspection-readiness" for regulatory inspections, it is imperative that the research community understand and carry out their responsibilities for safe and compliant laboratory waste management.

To enhance your laboratory's preparedness for a regulatory visit and ensure a successful, penalty-free inspection, knowledge of and consistent adherence to the University's 5Ls of Hazardous Waste Management is essential. The 5Ls provide simple yet proven steps for safe and compliant hazardous chemical waste management.

Whenever an unannounced hazardous waste inspection occurs, EH&S will send an email notification to the research community requesting that every lab review their compliance with the 5Ls of Hazardous Waste Management. During an inspection, EH&S experience indicates that an inspector will interview researchers to gauge their knowledge and understanding of hazardous waste management requirements.

Knowledge of the 5Ls of Hazardous Waste Management and completing the University's "Initial Laboratory Safety/Chemical Hygiene/Hazardous Waste Training (TC4951)" will provide the necessary information to properly manage laboratory waste and respond confidently to an inspector's questions.

The 5 L's of Hazardous Waste Management

Collect:
Collect all Hazardous Chemical Waste in designated containers.

Lid:
Keep a closed, tight-fitting Lid on Hazardous Waste containers at all times, except when actively adding / removing waste.

Leaks:
Inspect Hazardous Waste containers regularly for Leaks.

Locate:
Locate & Store all Hazardous Waste containers at or near the point of the Waste's generation.

Label:
Label the container as soon as you add the first drop of waste to the container by affixing a completed Chemical/Hazardous Waste label.

It is important to answer an inspector's questions as honestly and concisely as possible; in EH&S' experience, saying too much to an inspector can result in additional and unwelcome scrutiny. EH&S will always escort a USEPA or NYSDEC inspector on campus and be a resource for anyone responding to an inspector's questions.

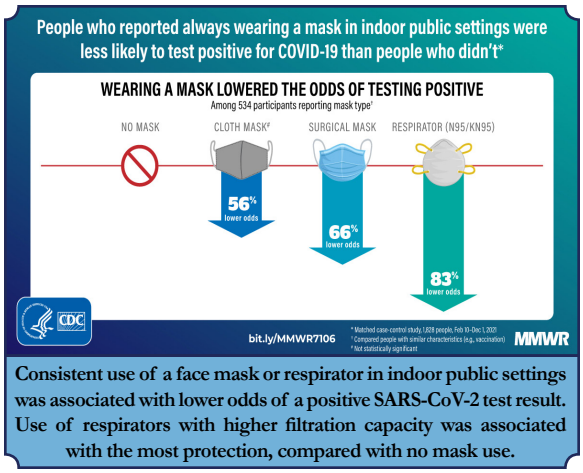
As a component of EH&S's overall inspection readiness plan, team members periodically conduct laboratory visits, known as Satellite Accumulation Area (SAAs) surveys, focused on waste management and various safety-related topics. Whenever EH&S issues an action item to a laboratory during or after a survey, it is essential that a timely correction is performed by the researcher(s) responsible for the laboratory's waste.

Generally speaking, staff and researchers should request chemical waste disposal when a container is approximately 90% full. To submit a request, please fill out an Online Chemical Waste Pick-Up Request. For guidance with laboratory waste management or any questions, assistance is available from EH&S by contacting hazmat@columbia.edu.

MASK GUIDE: TIPS FOR CHOOSING THE BEST FACE COVERING

By: Gabriela Cardoso, MPH, ASP (Health & Safety Specialist II)

Masking is a proven way to help slow the spread of and protect against COVID-19. The best mask fits well and can be worn constantly, making fit and comfort the first things to consider when choosing a mask. Effective Tuesday, January 18th, cloth masks are no longer considered sufficient protection in indoor Columbia University settings. So which mask should you wear? To be confident that a mask provides adequate protection, it must be genuine. Fraudulent products that claim to be surgical masks, N95, KN95, or KF94 masks are not held to the same standards as masks that have undergone inspection by the US, Chinese, or Korean government agencies (e.g., NIOSH). Genuine surgical masks should meet the ASTM F3502-21 standard and will bear print markings on the mask to identify them.



Consistent use of a face mask or respirator in indoor public settings was associated with lower odds of a positive SARS-CoV-2 test result. Use of respirators with higher filtration capacity was associated with the most protection, compared with no mask use.

The Centers for Disease Control and Prevention (CDC) has a running list of Non-NIOSH Approved respirator masks and other protective masks that have been tested for filtration quality. The list also includes known counterfeits. Sadly, it is nearly impossible to spot a counterfeit mask. To ensure you are purchasing a product that provides adequate protection, shop from dependable sellers like: Established Retailers (eg: CVS, Walgreens), Project N95 (a non-profit that evaluates Personal Protective Equipment), or Brands of KF94 manufactured in Korea. Regardless of your choice, ensure the mask fits well and is comfortable for consistent use to ensure the greatest degree of protection. Remember, masking helps slow the spread of COVID-19 and protects the wearer and others. The following guide can be used to clarify the differences between the mask options currently acceptable on campus.

DISPOSABLE SURGICAL MASKS

Disposable surgical masks are single-use face covering with ear loops and an adjustable metal noseband. Also called procedure masks, they are widely available and provide dependable "source protection" - they are effective in limiting the amount of potentially infectious aerosols being shed by a wearer. Surgical masks that have been designed and tested to established performance standards by the American Society for Testing and Materials (ASTM) standard ASTM F3502-21, are recommended over non-tested options. When wearing a surgical mask, it is crucial to ensure that there are no gaps around the sides of the face or nose and that the material is not wet or dirty. One way to improve the fit and enhance the protection of a surgical mask is to knot and tuck or do a figure-eight on each ear loop of the mask if gaps are present.

N95 RESPIRATOR MASKS

N95 respirator masks create an extremely tight seal around the nose and mouth, using headbands and a moldable nose piece. They are designed to filter 95% of particles as small as 0.3 microns in size, hence N95. These respirators undergo rigorous inspection and certification set forth by the National Institute for Occupational Safety and Health (NIOSH). If you choose to wear an N95 mask, it is important to remember that N95s labeled as "surgical" should be prioritized for health care workers. Personnel in specific clinical patient-facing settings must follow University and/or Hospital guidance on using N95s.

KN95 & KF94 RESPIRATOR MASKS

Other respirator masks that meet international standards include KN95 and KF94 masks. KN95 and KF94 are not NIOSH approved instead, they are the Chinese and Korean government equivalent of N95 masks, respectively. Like an N95 mask, the KN95 mask is designed to create a tight seal around the nose and mouth using ear loops (instead of headbands as found on the N95 mask) and an adjustable noseband to filter 95% of aerosol particulates. Similarly, the KF94 mask is designed to create a tight seal around the nose and mouth using ear loops, an adjustable noseband, and side flaps. The KF94 filters 94% of aerosol particulates. The high demand for respirator masks has made it difficult to find authentic KN95 and KF94. It is estimated that roughly 60% of KN95s on the market are fraudulent or counterfeit models that do not meet international standards.

Markings that May be Found on Radioactive Packages

There are several types of markings Package Handlers & Transporters will use to identify the Radioactive Packages.

Expected Package

Exposure Reading Limits:
At Surface: ≤ 0.5mR/hr

Radioactive I

Exposure Reading Limits:
At Surface: ≤ 0.5mR/hr

Radioactive II

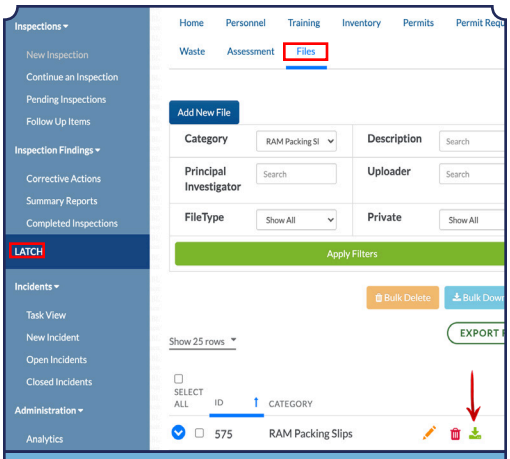
Exposure Reading Limits:
At Surface: ≤ 50mR/hr
1 Meter Away: ≤ 1mR/hr

Where in the World is My Radioactive Package?

By: Angela Meng, *MS, CHP*
(Deputy Radiation Safety Officer, Associate Director)

You've placed your order for radioactive materials (RAM) in the Accounting and Reporting at Columbia system (ARC), and all the necessary parties have approved it. Congratulations! So where is the package now? The approved requisition is routed to the RAM supplier, and a licensed commercial courier delivers the product. You can contact the supplier to obtain a tracking number, shipping status, and estimated delivery date of the shipment by referring to the requisition number on the purchase order. Purchasers can also verify the delivery address of the shipment with the supplier. Once the package arrives, the University is responsible for the RAM. The University's RAM license enables laboratories to use specified amounts of RAM for research. There is a regulatory requirement for recipients to inspect RAM packages within 3-hours of receipt during business hours. For this reason, all radioactive research packages are delivered to Radiation Safety, where a package receipt survey is performed as a service to laboratories across the University's New York City campuses. This service reduces the administrative burden on laboratories and ensures compliance with applicable regulations.

The receipt survey verifies that the correct product is received and that there is no contamination or excess radiation exposure from the package surface. A scanned copy of the packing slip will be saved in the laboratory's files in LION. Once the survey is complete and the package is ready for use, an EH&S team member will contact the laboratory by phone or email to request that the package be retrieved.



You can download your RAM Package Slips in LION within the Files Tab of your Laboratory's LATCH. Simply select "RAM Packing Slips" as the file category, and a list of all available documents will appear.

Upon receipt of the package at the lab, please keep the packing slip in the radiation safety binder. Radioactive packages carry markings that indicate that they contain RAM. Depending on the amount of radioactivity in the package, they may be marked as UN2910, White I, or Yellow II.

Before disposing of the outer package, make sure to deface or remove any of these radiation markings. RAM security must be maintained at all times, so radioactive packages should not be left unsecured or unattended at any point. If you believe your radioactive package has gone missing, please contact Radiation Safety at (212) 305-0303 immediately.

Is *Your* RAM Laboratory Inspection-Ready?

Regulatory agencies from New York State and/or New York City may conduct unannounced inspections of Columbia's radiation safety programs. Inspectors may review required records, conduct tours in the facility, observe the handling, storage, use, and disposal of radioactive materials (RAM), take measurements on radiation-producing equipment, and interview personnel in research laboratories. Radiation Safety provides guidance to all radiation-using laboratories on working with radiation in a safe and compliant manner. Still, laboratories are encouraged to use the following checklist to help remain inspection-ready:

Laboratory & Staff

- No Food & Drink Consumption in the Laboratory
- Proper Laboratory Attire & Personal Protective Equipment are Available & Worn
- Radiation & Laboratory Safety Training Certificates are Current for All Laboratory Staff
- RAM Users are Knowledgeable on Spill Response Procedure and the Principles of Radiation Protection:

As Low As Reasonably Achievable (ALARA), Time, Distance, & Shielding

Documentation

- RAM Use & Inventory are Current in LION
- RAM Packing Slips are Kept for the Life of the Material or at Least Three Years
- A "No-RAM Use" Log is Generated for Months when RAM is Not Handled
- Monthly Wipe Test Reports are Completed and Contain the:

Make, Model, Serial Number, Last Calibration, Action Level, Survey Map, & Efficiency of Liquid Scintillation Counter (in DPM)

Equipment

- A Functional and Calibrated Portable Survey Meter is Available
- Survey Meter Calibration Certificates are Maintained for the Last Three Years (If Applicable)
- Daily Constancy Checks are being Performed (If Applicable)
- Personnel Dosimeters are Correctly Used and Stored (If Applicable)
- Radiation Shielding is Intact, Labeled, and In-Use (If Applicable)

Waste Management

- Waste is Segregated by Isotope and Type
- Waste Containers are Fully Labeled, Not Overfilled, Closed with No Sign of Leakage
- RAM Signage and Labeling is Posted and Current:

Including the Laboratory Door, Work Area, Tools, etc.

Straight to the Point

By: Cody Cameron (Biological Safety Officer II)

The Biosafety Program maintains an annual log of all sharps-related injuries affecting University personnel as required by the Occupational Safety and Health Administration (OSHA) Blood-borne Pathogen Standard. On average, the Program has fifty such injuries each year. Sharps clearly present an inherent risk of injury during operation and disposal. Due to their potential to transmit blood-borne pathogens, sharps should always be handled with universal precautions. All material contaminated with human blood or body fluid is considered infectious.

Furthermore, specific behaviors have the potential to exacerbate the risk of exposure or infection while handling sharps. Such activities include bending, breaking, or manipulating the needle along with motions that involve crossing hands, recapping, passing sharps, and moving away from the area of use for disposal. Accordingly, the best practice is to dispose of the sharp immediately after its use.

Researchers should conduct careful examinations of standard operating procedures for work involving sharps to determine whether sharps are necessary. If a sharp is determined to be a candidate for replacement, its substitution would ideally remove or lower the potential risk for sharps injury. As an example, blunt needles, when available, can remove the inherent risk of injury. Since the addition of engineering controls can also reduce the risk of injury, the OSHA Blood-borne Pathogens Standard requires employers to implement use of Sharps with Engineered Sharps Injury Protections (SESIPs). These are designed with innate safety mechanisms to prevent sharps injury, usually by deploying a safety mechanism after using the sharp.

Whenever an individual sustains a needle stick or exposure to biological materials that could contain blood-borne pathogens, the employee must seek medical attention at the earliest opportunity by reporting to their respective campus' health location, Workforce Health and Safety (CUIMC), the nearest student health services, or Emergency Room outside of business hours. Post-exposure prophylaxis (PEP) may be offered to prevent HIV infection. After an evaluation, a representative from the Biosafety Office will reach out to determine the root cause of the injury. Suppose an engineered sharp

has failed while engaging the safety mechanism. In that case, the Biosafety Office can report the batch and lot number of the malfunctioned product for quality assurance testing by the manufacturer to identify the defect. EH&S will also submit a MEDWatch report to the FDA describing the defective product lot.

For additional information on reporting blood-borne pathogen exposures or needle stick injuries, please refer to The Columbia Blood-borne Pathogen Exposure Control Plan available online. Further questions regarding handling sharps or potential blood-borne pathogen exposures can be directed at biosafety@columbia.edu.

Do You have Any Questions for an EH&S Advisor?

Join Environmental Health & Safety for our monthly Open Forum over Zoom for to provide supplementary guidance and answer any questions that students, staff, or researchers may have following the completion of an of the Online RASCAL Safety Training. If you have recently attended a training course, and have questions for EH&S' subject matter experts, please join an upcoming Q&A session!

Research Safety Team

If you have questions for our Research Safety Team regarding TC4951 or any other issue, please join us for a Q&A session on the following dates from 2:00 PM - 2:30 PM:

March 3, 2022	August 4, 2022
April 7, 2022	September 1, 2022
May 5, 2022	October 6, 2022
June 2, 2022	November 3, 2022
July 7, 2022	December 1, 2022

Please use the link below to join the Zoom Meeting:

Meeting ID: 942 5154 2518
Passcode: 724754

Research Safety Q&A

Dial by Your Location
+1 646 876 9923
US (New York)

Biosafety Team

If you have questions for our Biosafety Team regarding TC4850 or TC4950 or any other issue, please join us for a Q&A session on the following dates from 11:00 AM - 11:30 AM:

March 10, 2022	August 11, 2022
April 14, 2022	September 8, 2022
May 12, 2022	October 13, 2022
June 9, 2022	November 10, 2022
July 14, 2022	December 8, 2022

Please use the link below to join the Zoom Meeting:

Meeting ID: 922 1487 7817
Passcode: 303823

Biosafety Q&A

Dial by your location
+1 646 876 9923
US (New York)

Meet the Environmental Health & Safety Office

Kathryn Somers, MPH

Associate Director of Research Safety

Kathy Somers grew up in a suburb of Long Island near the former Grumman Aircraft Engineering Corporation, which built the lunar landing module that put Neil Armstrong and Buzz Aldrin on the moon. Unfortunately, the site also earned a place on the EPA "Superfund" site list due to soil and groundwater contamination that remains under remediation. Perhaps this proximity foretold of Kathy's future studies and her career in environmental health and safety! Her first job was as a stockroom associate and cashier at a local ROSS store, and at one time, she attended Alvin Ailey American Dance Theatre as a pre-professional dancer.

Kathy has been with EH&S for eight years but at Columbia for ten years. She began her Columbia journey in a two-year Master's Program at the Mailman School. Earlier this year, on January 1st, Kathy was promoted to Associate Director of EH&S. Kathy is motivated by intelligent and kind people who share their knowledge, a primary reason she enjoys working at Columbia. The remarkable work done by the research community inspires her to strive for excellence in all she attempts. She would like to see the United States take more accountability in global garbage management by becoming a leading partner in international regulations. Just like climate change and climate migration, she believes waste disposal poses a risk to our future.

Kathy finds inspiration from Louise Thaden, a friend of Amelia Earhart and fellow aircraft pilot. She was an aviator who set multiple records in the sky, a devoted wife and mother of two, and retired as lieutenant colonel of the Civil Air Patrol. She admires the way Louise nurtured her career and family and inspired other women to become pilots by creating with Earhart the Ninety-Nines. This organization still exists today of female pilots assembled to mentor and encourage more women in aviation. Much like Louise, Kathy inspires women to achieve at home and in the office.

When she is not working at EH&S, Kathy enjoys yoga, Pilates, and spending extra time is spent with her husband, daughter, and newborn baby boy! Family time usually involves experiencing a new place or activity (with food and outdoors, an added bonus). Warmest wishes and congratulations to the Somers'!!

Konstantinos Georgiou, MS, DABMP, CLSO

Associate Radiation Safety Officer, Manager: Clinical Radiation Safety Program

Konstantinos Georgiou, or Kostas to everyone at Columbia University, grew up amid the best carnival and nightlife in Greece, in the city of Patras. His first job was as a delivery boy in a cafeteria in Patras. After earning his Master's degree in 2015 from Columbia University, he began his career with EH&S and is currently the Manager of Clinical Radiation Safety Programs.

When Kostas is not working, he enjoys traveling, dancing, and going to the beach (during the summer). He loves taking a power nap after work so he can enjoy the nightlife of NYC. His passion for his favorite soccer team, OLYMPIAKOS PIRAEUS, has inspired him to travel to many cities to cheer for his team. The characteristic he likes most about himself is his positive attitude and optimism – traits that anyone who knows him will find immediately evident! Kostas finds motivation in his desire for self-improvement. Always having the quest for knowledge, he would like to learn even more about physics.

A true team leader, when asked what the most remarkable thing he is working on at this time, he responded, "managing the coolest team!". This instinct to "protect" his team, his leadership skills, and his determination to succeed are why Kostas identifies himself as matching a wolf's personality. Among many things Kostas would like to see change, injustice and betrayal are at the top of his list. When most people look at someone famous to inspire them, he finds inspiration in his patients. The best professional advice he has ever received and likes to pass to others: "Think outside the box." Kostas loves living in the concrete jungle where "dreams are made of," known as New York City.

Would you like a voucher to the Faculty Club?

Look for EH&S' digital signs on Columbia University campuses. If you answer a question regarding the slide using the QR code...

YOU could be a WINNER!

Spring is in the Air! Stay Safe with The Proper PPE!

The Right Way

- Eye Protection
- Long Pants
- Gloves
- Buttoned Lab Coat
- Closed Shoes

The Wrong Way

- Shorts
- Sandals or Opened Shoes
- No Eye Protection
- No Gloves

Questions?

Check Out The EH&S PPE Policy for More Details

Extinguish Your Panic!

By: Angie Tse, MEng (Senior Safety Advisor)

Pop Quiz: What is often Red and White, and found in every Laboratory on Columbia's Campus?

If your answer was "fire extinguisher," pat yourself on the back. This vital piece of emergency equipment is something that one would never want to use and a constant reminder of a very real hazard.

It is important to remember that a fire extinguisher should only be used by personnel trained in laboratory safety and only as a first response in fighting an incipient fire. Knowing the location and type of fire the extinguisher is a good start to preparing for this scenario. However, if the extinguisher is called upon, how does one know that it is ready to quench the blaze? The key is familiarizing oneself with the local device.

Fire extinguishers within the laboratory are inspected monthly by dedicated staff and yearly by an FDNY-licensed company. A cursory check of your extinguisher can reveal vital information to keep everyone safe between inspections.

Laboratory Emergency Equipment Checklist

KNOW WHAT TO DO AND WHERE THINGS ARE!

One tends to do under stress what one has practiced. When an emergency occurs, it is critical to know where the nearest fire extinguisher, fire alarm box, exit(s), telephone, emergency shower/eyewash, first aid kit, etc. Developing and practicing an emergency plan can help staff lean where and how to use the emergency equipment within the lab.

- ☐ Fire Extinguisher(s)
- ☐ Emergency Shower(s)
- ☐ Eyewash Unit(s)*
- ☐ First-Aid Kit(s)
- ☐ Spill Kit(s)*
- ☐ Sand Bucket(s)*

*If Applicable

The above checklist provides some examples of emergency equipment that are commonly found in laboratory spaces across the University.

Email LabSafety@columbia.edu If You Spot ANY of the Following Issues:

1. **Extinguisher Tag Missing or Out of Date:** **Every extinguisher provided by Facilities or EH&S on campus should be tagged with a slip as shown by the (A) marker on the diagram. This tag should identify the year and month of the extinguisher's last annual maintenance. If your tag shows the extinguisher was last checked over a year ago, it is not only a safety concern but also a compliance issue. The FDNY will check for the last inspection date when they inspect any space.**
2. **Pressure Gauge Not "In the Green":** **If your unit has a pressure gauge, label (B) on the diagram, the marker should always be in the green section of the meter. Under or over-pressurized extinguishers may malfunction and fail to help extinguish a fire in emergencies. Faulty units sometimes leak and slowly depressurize.**
3. **Pin or Tie Missing:** **Label (C) on the diagram, this pin should only be removed when an extinguisher is used. A zip-tie acts as an indicator to show that the pin was not removed. If the pin is missing or the zip-tie is broken from your unit, immediately contact EH&S as this suggests the extinguisher may have discharged, regardless of whether the extinguisher appears empty or partially full.**
4. **Material on Hose:** **Another sign that the extinguisher was purposely or accidentally discharged, includes the presence of extinguishing media on the unit. Media is commonly found at the tip of the hose and can be in the form of a powdery substance. If an extinguisher is partially discharged, a clogged hose could be a problem for subsequent use!**
5. **Bumps and Bruises:** **If there is physical damage to the extinguisher, whether it is a large dent or a protrusion, the integrity of the extinguisher may have been impacted. Rust on the unit is also a sign that the extinguisher should be re-inspected to ensure it is still in good working condition.**

Laboratory spaces at the University should have at least one ABC Fire Extinguisher, similar to the one shown above. Do you know where the fire extinguishers are in your lab?

SafetyMatters Editorial Staff:

Kathleen Crowley, Robert Giordano, Chris Pitoscia, Pam Shively

View Our Newsletter Online at: Research.Columbia.edu/SafetyMatters-Newsletter
Please share questions or comments with us at newsfeedback@columbia.edu