



# SAFETY MATTERS

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# EH&S Training Leads the Way in RASCAL Improvements

By Pam Shively, Associate Manager, Safety Training Programs

You asked for training improvements (some you didn't ask for, but we did it anyway) and we made it happen! EH&S has joined with the Training Center Work Group to make your RASCAL training experience better. The Group consists of the Office of Research and Compliance, EH&S, RASCAL, the Office of IACUC, and the Institutional Review Board.

Changes the Work Group are working on include user preference tips, such as allowing the user to adjust due dates for RASCAL refresher courses to synchronize their training schedule. Coming soon, providing users with a dashboard and one monthly email to inform them of due dates for protocols and expiring training courses instead of separate emails for each. And enabling users to save progress in training modules. These are the improvements the Group is working on currently, but we will continue to make improvements as needed.

As for the improvements for EH&S courses, we have made many in the recent past:

1. All courses are now resumable.
2. Most courses have closed captions and voiceovers and we are working to make all our courses available with these features.
3. Courses with closed captions and voiceovers have speed controls. If you like to listen at a faster pace or if you like to slow it down so you can understand it better, you have the ability!
4. Many of the courses have the test embedded in the training. At the end of the course, you are taken to your RASCAL transcript without having to go searching for your certificate. Once again, the goal is to make this available on all the courses.
5. "How To" videos are being embedded into our courses.
6. Many of our courses have "Resources" attached to the training. Items discussed throughout the course may be found on any slide.

Another improvement to assist our users is our new Training FAQ sheet. The EH&S Training Team would like to thank Hadelene Hanonik and Calista Bryant, Research Safety Team, for working with us to make the FAQ. There is also a new C-14 FAQ available. For these and more FAQs, visit our [website](#).

While EH&S is proud to take credit for the advances in our courses, we would be remiss if we didn't give credit to Todd Stanley and his RASCAL crew of technology wizards for making many of these improvements possible.

EH&S is excited about the improvements made and will continue to improve not only our training courses, but all our client services. Please continue to reach out to EH&S with your ideas and concerns. Together we can all make Columbia University a safety leader in America's learning institutions.

The image displays three FAQ sheets from Columbia University. The first is titled 'Training' and covers topics like 'What Laboratory Safety Training is required for a Principal Investigator?' and 'Why is TC695 showing as expired but TC695B is current in LION?'. The second is titled 'Certificate of Fitness (C-14)' and details the process of applying for a new permit, including steps like 'Complete Training Requirements' and 'Apply and pay for permit'. The third is titled 'Fun FAQ!' and explains that the Training Finder uses a series of research-related questions to create a personalized short of required and recommended training courses.

**Beyond EH&S** is a feature welcoming guest authors from the Columbia community and beyond. These authors will share their expertise on safety and safety related matters.

## Safe Today/Friends Forever

By Mark D. Underwood, PhD; Norman R. Simpson; Alessia Mastrodonato, PhD; and Kally Sparks, PhD,  
New York State Psychiatric Institute

I first came to Columbia University and the New York State Psychiatric Institute (NYSPI) in 1994. At the time, the Pardes building did not exist; the main building of NYSPI was what is now the Mailman School of Public Health building. There was no Lab Safety Committee and there was no relationship between NYSPI and Columbia Environmental Health & Safety. Lab safety was managed by a single safety officer. There were no chemical inventories, few inspections, and training was minimal. Safety was a product of local lab culture. How times have changed, except for the importance of local lab culture.

There have been large scale changes in labs and lab equipment, and people come and go. But perhaps the biggest changes have come in the area of “compliance” and the administrative demands on the PI and the lab staff. Where does this leave the role of “safety culture?” Does the requirement for compliance reduce our inherent self-motivation for safety? Does the need to be compliant override the motivation to be safe that used to be based on common sense, caring about our own safety and the safety of our colleagues? Being “safe” starts with hours of training, either in-person or with computer-based training, and while this training is necessary, it is definitely not sufficient! There are labs with hundreds of chemicals with risk potential that goes beyond any RASCAL training module. The real training comes in the lab and with hands on, and that gets back to the safety culture and that begins at the top.

When I was in graduate school, a fellow student was weighing a chemical at the balance and the next thing she had one dilated pupil and a terrible headache. A cerebrovascular accident was ruled out first and foremost. The cause was found to be spilled atropine left at the balance and the touch of a glove to the eye, but the time needed to get to this determination felt like an eternity. That accident left a mark that I remember to this day and pass down to anyone who works in my lab and why I am unreasonably demanding when it comes to safe lab practices and the importance of personal protective equipment. No options and no exceptions. You only have two eyes.



I have collaborations and share lab space and resources with Norm Simpson, Kally Sparks and Alessia Mastrodonato; each of us bring separate experiences, yet we all follow one set of safety rules. Over the years, our collaborations have become friendships, and we genuinely care about one another. We look out for one another; we have a culture of caring and safety.

When I walk into the lab, safety is a given, friendship and mentorship are gifts. Over the years I have come to do less of the hands-on work, but I still am in touch enough to know when good practices are being followed, and to help guide mentees so they learn good practices as they gain hands on experience for their scientific futures. Once was the time that it didn't matter, practically speaking, if there was a cup of coffee on your desk in the lab, but now that can get you a citation, which means paperwork, and more training. Alternatively, you can just be safe in the lab, all the time, every day, setting examples for our next generation of scientists. When we take care of safety, we ensure that we see our futures because our eyes are safe.

Pictured: Norman Simpson, Alessia Mastrodonato, Kally Sparks, Mark Underwood

## Upgraded Oxygen Sensors

We are excited to share the news of our recent enhancement to laboratory safety: the installation of the PureAire Oxygen Deficiency Monitor. This cutting-edge sensor not only provides increased reliability but also an extended lifespan, ensuring sustained protection for our research community.



We are pleased to confirm that these upgraded sensors are being installed in or near your laboratory spaces. This proactive measure reinforces our commitment to health and safety.

Please ensure that these sensors remain unobstructed and always plugged in. In the event of an alarm, please refer to the attached oxygen sensor signage for instructions. Additionally, we have included a liquid nitrogen FAQ sheet for your reference.

Should you have any questions or concerns regarding this upgrade, please do not hesitate to contact us at [labsafety@columbia.edu](mailto:labsafety@columbia.edu).

# Carbon Dating: Unraveling the Mysteries of Time with Radiation

By Brian Kim, Health Physicist

Carbon dating, also known as radiocarbon dating, is a pivotal scientific technique that harnesses the phenomenon of radioactive decay to determine the age of organic materials. It stands as a testament to humanity's ability to decode the mysteries of time using the language of radiation.

At the heart of carbon dating lies Carbon-14, a radioactive isotope of carbon that is continuously formed in the Earth's atmosphere. Cosmic rays, originating primarily from the sun, collide with atoms in the upper atmosphere, creating neutrons. These neutrons collide with nitrogen-14 atoms, transforming them into Carbon-14 atoms through a process known as neutron capture. The newly formed Carbon-14 quickly combines with oxygen to form carbon dioxide, which enters the carbon cycle and becomes part of plants through photosynthesis.

Living organisms, in turn, absorb Carbon-14 through the consumption of plants or other animals. As long as an organism is alive, it maintains a dynamic equilibrium of Carbon-14 in its tissues, reflecting the atmospheric concentration at the time of its life.

When an organism dies, it stops absorbing Carbon-14, and the existing Carbon-14 begins to decay back into nitrogen-14 at a predictable rate. The half-life of Carbon-14 is approximately 5,730 years, meaning that after this period, half of the Carbon-14 originally present in a sample will have decayed. By measuring the remaining amount of Carbon-14 in a sample and comparing it to the initial amount or to stable carbon isotopes like Carbon-12, scientists can determine how long it has been since the organism died.

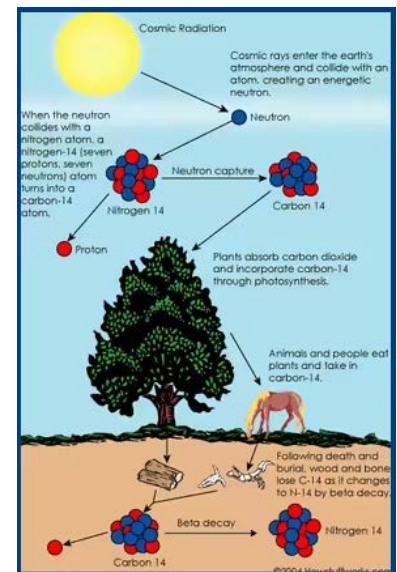
Initially developed in the 1940s by Willard Libby and his colleagues, carbon dating has undergone significant refinement with advances in technology. Today, Accelerator Mass Spectrometry (AMS) allows researchers to analyze even smaller samples with greater precision, expanding the range of materials that can be dated and improving the accuracy of age estimates.

Carbon dating has revolutionized fields such as archaeology, anthropology, and environmental science. It provides crucial chronological information for dating artifacts, human remains, and geological formations. By establishing timelines of human history and environmental changes, carbon dating helps researchers unravel the intricate tapestry of our planet's past.

While carbon dating is a powerful tool, it is not without limitations. The method is most effective for samples up to around 50,000 years old, beyond which the amount of Carbon-14 remaining may be too small to accurately measure.

Factors such as contamination and fluctuations in atmospheric Carbon-14 levels over time can also impact the accuracy of results, necessitating careful calibration and interpretation by trained scientists.

In conclusion, carbon dating exemplifies the intersection of radiation science with humanity's quest to understand the past. Through meticulous measurement of radioactive decay, scientists continue to illuminate the timelines of ancient civilizations, the dynamics of ecosystems, and the geological processes shaping the planet. As technology advances and methodologies improve, carbon dating remains a cornerstone of scientific inquiry, offering a profound glimpse into the rich tapestry of Earth's history.



Source: HowStuffWorks. Retrieved July 19, 2024, from <https://science.howstuffworks.com/environmental/earth/geology/carbon-14.htm>

## Meet the EH&S Staff



**Emily Chou**

**Health Physicist**

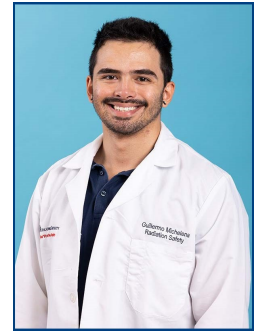
Emily Chou was born and raised in New York City, which in her opinion, is a city that has everything. After earning her Master's Degree in Health Physics at Purdue University, she joined EH&S in 2022 as a Health Physicist. Emily is a caring, playful, and family oriented person, whose personality matches a wolf. Wolves are known as ultra-marathoners, which also reflects Emily's new hobby. Having never been a runner, she is now in preparation for the 2025 New York Marathon, having already tackled the NYC Half Marathon, a team indoor marathon, the Brooklyn Half Marathon, and soon the Staten Island Half Marathon. Go Emily!

When Emily isn't working, she recovers from her running with eating and sleeping. She also enjoys spending time with her sister, usually traveling to Asia. Eating a family dinner at the table is another way her family enjoys time together, something uncommon nowadays. And of course, she loves to wind down after a hard day at EH&S playing with her cats and dog.

At EH&S Emily has become the Department's personal printing software! Her handwritten printing is so precise that she is asked to print everything from training images (see photo) to welcome cards for new employees. In fact, people have asked what kind of software EH&S uses to print labels for training presentations! Her favorite professional advice is "You'll never know unless you try. You miss 100% of the shots you don't take." Since Emily is always willing to try new adventures, she will never miss an opportunity!

**Guillermo Michelena**

**Health Physicist**

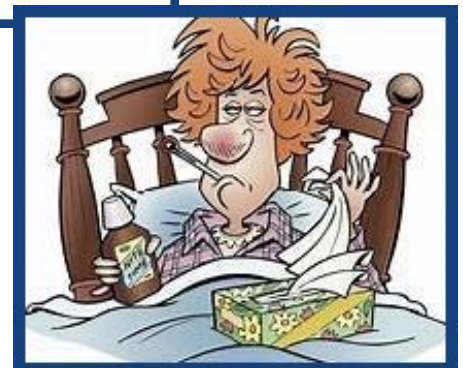


Guillermo Michelena has been with Columbia University Environmental Health & Safety for two years and nine months and his current position is Health Physicist. He is a man of few words and allows his actions to speak for him. Guillermo is always ready to help his Clinical Radiation Safety Team

as well as everyone else at EH&S. His calm and quiet demeanor is very much like a rabbit, as Guillermo brings a sense of peace and tranquility to those he encounters.

He grew up close to the beach in Caracas, Venezuela. Being calm and quiet fit his first job as a volunteer in a public library very well. The fact he is very organized also made the library a good fit for his skill set. Guillermo loves to explore New York City, finding inexpensive or free activities a good way to enjoy getting to know the city. Along with reading and eating, he finds exercise and sleeping help him wind down after a long day of providing expert radiation knowledge to NewYork-Presbyterian and to the patients.

Guillermo would like to live in Rio De Janeiro, Brazil as there are good beaches, it is warm, and it would provide him the opportunity to learn Portuguese. He would also like to learn more about nonlinear dynamics and chaos theory. His quest for professional and personal growth is admired by his colleagues at EH&S.



**Set your clocks back one hour on November 3, 2024**

# #SafetyThroughSocials: Tapping into the New Age of Outreach

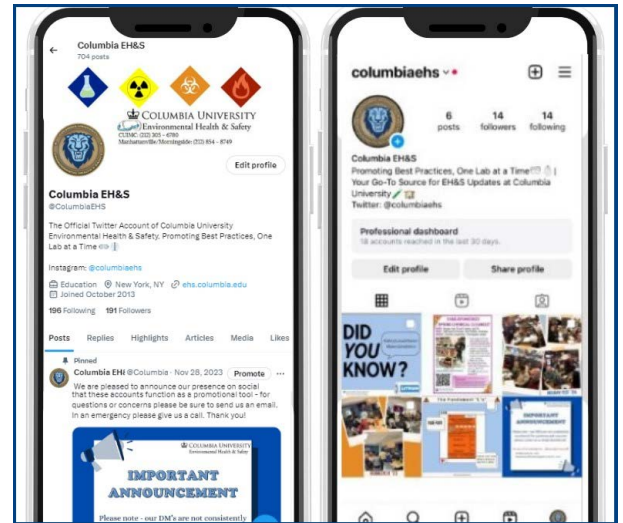
By Calista Bryant, Safety Advisor II

Environmental Health and Safety (EH&S) is thrilled to announce the official kickoff of its departmental social media! Recognizing the importance of clear and accessible communication, EH&S is diving headfirst into platforms including Instagram and X (Twitter) to connect with a broader audience and foster a culture of safety.

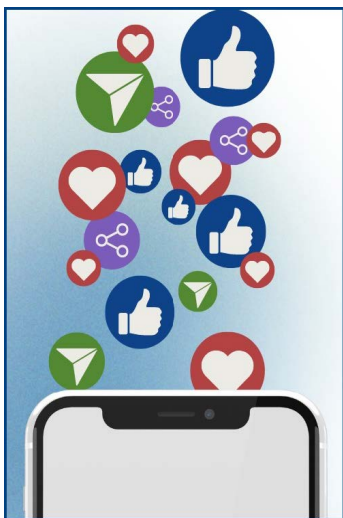
While email remains a cornerstone of communication, social media platforms like Instagram and X have also become an integral part of the landscape. Their widespread use, coupled with the fact that many users check social media daily, if not hourly, creates a powerful opportunity for information dissemination. By leveraging social media's reach and user engagement, EH&S aims to ensure that critical safety information finds a wider audience, creating a more informed and secure community.

The realm of EH&S might seem distant from the fast-paced environment of social media. However, there is a compelling reason leveraging social media to disseminate safety information is so important. Social media empowers safety professionals to:

- **Make Safety Engaging:** Traditional methods of conveying safety information may not always capture everyone's attention. Social media allows for eye-catching infographics, short explainer videos, and relatable scenarios that weave safety tips into everyday life, making the information more memorable and engaging.
- **Foster a Community of Safety:** By utilizing social media, EH&S can cultivate a vibrant community where prioritizing safety is a shared value. This platform allows for the exchange of experiences, fostering a supportive environment where the research community can all learn from each other.
- **Uplift the Efforts of the Research Community:** Social media allows for sharing success stories and best practices, inspiring others to learn from each other's experiences.
- **Promote Continuous Learning:** These platforms can be used to curate and share relevant safety articles, and other resources, promoting continuous learning and improvement within the research community.



The source for safety as you scroll. Follow us @Columbiaehs



It's Safe to say, you'll love our feed

So, what kind of content can be expected from EH&S? The department is committed to creating content that is not only informative and engaging, but also easy to understand. EH&S' accounts will be translating complex topics into clear, bite-sized pieces – perfect for a quick - and informative - social media scroll.

Also, look for content introducing the passionate individuals who make up our team! Through regular posts and features, the community will get to know the faces behind the surveys and safety guidance delivered regularly by EH&S. This outreach will pave the way for lasting and collaborative relationships, building a more open and effective line of communication between EH&S and the research community. (For an example, check out the recent Instagram post celebrating 2023's Safety Champions!)

This is just the first step in our social media journey! EH&S has ambitious plans to expand our presence, explore additional platforms, and experiment with diverse content formats to keep things fresh and exciting.

Ready to connect and embark on this safety journey together? Follow on Instagram and X at @columbiaehs. It is important to note that direct messages are not constantly monitored. For any questions or pressing concerns, please do not hesitate to contact EH&S directly by email at [ehs@columbia.edu](mailto:ehs@columbia.edu) or by phone; CUIMC: (212) 305-6780, MV/MS: (212) 854-8749.

# Chemical Security: Safeguarding Our Communities and Environments

By Katie Bolger, Director of Research Safety Programs

Chemical security is an essential aspect of modern laboratory safety and risk management that involves protecting chemicals from theft, misuse, or accidental release. With the wide variety of chemicals used in laboratories, and their potential to cause serious harm, ensuring the security of these substances is a critical priority. This article explores the importance of chemical security, key challenges, and strategies to mitigate risks.

## The Importance of Chemical Security

Chemicals are integral to numerous laboratory functions, from organic synthesis to biological fixation and routine cleaning. While these substances are crucial for research, they can also pose significant risks if not managed properly. Accidents involving chemicals can lead to harmful exposures, environmental damage, and even fatalities. Moreover, the deliberate misuse of chemicals, such as in the production of illicit substances or as weapons, poses a serious threat to public safety and even national security.

## Key Challenges in Chemical Security

- Diverse Chemical Inventory:** Chemicals range from benign household items to highly toxic industrial substances. Managing the security of such a diverse inventory requires tailored approaches for different categories of chemicals.
- Storage and Handling:** Proper storage and handling are critical to prevent accidental releases or reactions. Inadequate storage conditions, such as improper containment or inadequate labeling, can lead to dangerous situations.
- Supply Chain Vulnerabilities:** Chemicals often pass through multiple hands before reaching their destination. Each stage in the supply chain presents opportunities for theft or diversion, making comprehensive security measures essential.
- Regulatory Compliance:** Ensuring compliance with local, national, and international standards can be complex, especially for complex laboratory and research facilities.
- Human Factors:** Insider threats, whether due to negligence or malicious intent, can compromise chemical security. Ensuring that employees are properly trained and that their access to chemicals is well-regulated is crucial.

## Strategies for Enhancing Chemical Security

- Risk Assessment and Management:** Conduct regular risk assessments to identify potential security vulnerabilities and develop mitigation strategies. This includes evaluating chemical inventory, storage conditions, and access controls.
- Secure Storage Solutions:** Implement robust storage solutions that include proper containment systems and environmental controls to prevent accidental releases. Regular inspections and maintenance are also vital.
- Access Control:** Restrict access to chemicals to authorized personnel only. Maintain a clear record of who has access to what chemicals and why.
- Incident Response Planning:** Ensure all lab members are familiar with Columbia's incident reporting and response procedures.
- Training and Awareness:** Complete the initial and refresher Laboratory Safety courses. Foster a culture of safety and accountability within the organization.

## Conclusion

Chemical security is a multifaceted challenge that requires vigilance, proactive management, and collaboration across various sectors. By addressing key challenges and implementing effective strategies, laboratories and researchers can mitigate the risks associated with chemicals. Maintaining robust security measures is essential for ensuring public safety and protecting natural resources.

### EH&S New Team Member

Chara Proud - Health and Safety Specialist

### EH&S Fun Facts

The Columbia University Dosimetry Program currently distributes 4,023 radiation badges, some distributed each month and others distributed each quarter. This includes 3,007 at CUIMC, 205 at Morningside, 18 at Manhattanville, 322 at Hudson Valley Hospital, 162 at Columbia Doctors, and 309 at Westchester Hospital.

### EH&S Work Anniversary

Carmen Hoepelman-35 years

**Editorial Staff:** Kathleen Crowley, Marianne McCartney, Chris Pitoscia, Pam Shively  
Please share questions or comments with us at [newsfeedback@columbia.edu](mailto:newsfeedback@columbia.edu)