



"Your Imagination is Your Preview Of Life's Coming Attractions."

The Art of Falling Safely

Simple rules for hitting the ground as softly as possible

Portions of this article are re-printed from AARP The Magazine, December 2017/January 2018 by Ben Zimmerman

It's been just over a year since I took an unexpected "ride" down my back porch stairs at 6 AM. I was carrying my dog, who is no longer able to walk up and down stairs, outside when I slipped on the frost-covered top step. I didn't want my dog to get hurt, so I held onto to him and just gave in to the fall and together we fell "safely."

Falls can happen to anyone and at any age. In fact, the more active you are, the more you are at risk of falling. So while avoiding a fall is job #1, knowing how to take a fall when it's inevitable is a crucial skill. Alexa Marcigliano, a professional stunt woman, offers the following tips on the "art of falling safely."

Step 1: Stay bent

The moment you sense you've lost your balance, get ready to fall with bent elbows and knees. "When people panic, they become rigid," Marcigliano says. "Bend your elbows and have some give in your arms to soften the impact." When you're rigid, you're more likely to suffer a set of injuries called FOOSH — doctor speak for "Fall on outstretched hand." The result is often a broken wrist or elbow.

Step 2: Protect your head

If you're falling forward, be sure to turn your face to the side. Falling backward? "Tuck your chin to your chest so your head doesn't hit the ground."

Step 3: Land on the meat

"One of the things we try for in stunt falls is landing on meaty parts of our body — the muscles in your back, butt or thighs. Not bone." If you keep your knees and elbows bent and look to land on muscle, you'll be less likely to crack your elbows, knees, tailbone or hips.

Step 4: Keep falling

Your instinct will be to stop your body as quickly as you can. But your safest route is to keep rolling — in fact, the more you give in to the fall, the safer it will be. "Spread the impact across a larger part of your body; don't concentrate impact on one area," Marcigliano says.

Situational Awareness

Every workplace contains hazards, and employees need to know how serious those hazards are. That's why all workers, regardless of expertise level, should strive to improve their situational awareness. Employees who don't pay attention to their surroundings put themselves and their co-workers at risk of

Situational Awareness is simply knowing what is going on around you.

accidents/injury. Workers who've been performing the same task are especially at risk of lacking situational awareness due to those tasks becoming routine and mundane. Our situational awareness can be further reduced in times of high workload or when under pressure to meet a deadline.

The **SLAM** technique is a method workers can practice to improve their situational awareness.

The SLAM Technique

SLAM consists of four simple steps:

- | | |
|---------------|---|
| STOP | Engage your mind before your hands. Look at the task in hand. |
| LOOK | at your workplace and find the hazards to you and your team mates. Report these immediately to your supervisor. |
| ASSESS | the effects that the hazards have on you, the people you work with, equipment, procedures, pressures and the environment. Ask yourself if you have the knowledge, training and tools to do the task safely. Do this with your supervisor. |
| MANAGE | If you feel unsafe stop working. Tell your supervisor and workmates. Tell your supervisor what actions you think are necessary to make the situation safe. |

If you **see something unsafe** or spot a hazard, don't walk by — **take responsibility** to deal with it.

If you feel you are in any **immediate danger** to your health or safety **STOP** work immediately and inform your supervisor.

Be here now. Practice "**mindfulness**" — focus on the present and be aware of your surroundings, instead of being lost in your thoughts.

LABORATORY RISK ASSESSMENT

LAB RISK PERCEPTION



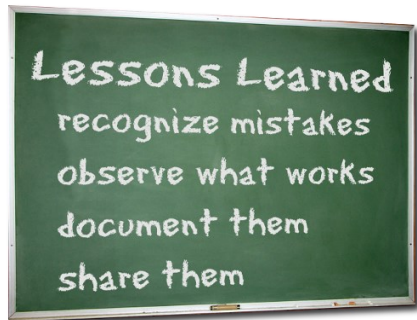
In December 2017, your W&M EH&S Team participated in a webinar presented by the University of California's Center for Laboratory Safety entitled "Researcher's Risk Perception in Academic Labs." The webinar research results focused on accident prevention through an improved safety culture. The Center was created following a [2009 fatal accident](#) that occurred in a chemistry laboratory at their Los Angeles campus (UCLA). Their research identified **hard** and **soft** facts that affect risk perception versus actual risk as well as factors that affect how safe one feels working in a lab.

The "hard" facts influencing risk perception include technical & medical data, incident numbers and severities, and expert opinions.

The "soft" facts that influence risk perception include: 1) Risk acceptance that is voluntary versus imposed; 2) Whether risk is under one's control or under control of others; 3) Delayed or immediate adverse exposure effects; and 4) Habituation and Familiarity, i.e. known risks or risks present for a long time ("I've been doing this procedure for 30 years and nothing ever happened").

The study also noted that risk perception is independent of a researcher's age, work experience or safety training received and more dependent upon the researcher's experience with actual major lab-related injuries. In contrast, how safe a researcher feels in the lab is influenced by safety training and more importantly, how closely the PI/lab supervisor monitors and prioritizes safety in the lab. The presenter concluded that **"Greater emphasis on the importance of risk assessment is needed."**

The webinar closed with these 5 recommendations for improving your safety culture: 1) Engage leadership on all levels but especially PIs to monitor safety & discuss risks; 2) Provide risk assessment training; 3) Make incident numbers public; 4) Present severe incidents as Lessons Learned; & 5) Provide access to Near Miss/Unsafe Situation reporting.



LAB RISK ASSESSMENT

With the promulgation of the Occupational Safety and Health Administration's (OSHA) Laboratory Standard (29 CFR 1910.1450), emphasis was placed on developing a culture of safety consciousness and accountability. But it was not until 2011, when the Chemical Safety Board (CSB) released their report on the "[Texas Tech University Laboratory Explosion](#)" incident that the need for lab risk assessment became an emerging topic.

The CSB issued a total of 4 recommendations directed at the American Chemical Society (ACS) (1); OSHA (1); and Texas Tech University (2). These recommendations centered



on the need for lab risk assessment

of all hazards including physical hazards. The CSB also emphasized the need to openly share lessons learned from incidents/near misses.

The American Chemical Society responded by developing guidelines on [Hazard Identification and Evaluation in Research Laboratories](#) and OSHA revised [Appendix A](#) to the Lab Standard in which OSHA provides lab safety recommendations based upon the National Research Council's (NRC) 2011 edition of "Prudent Practices in the Laboratory: Handling and Management of Chemical Hazards."

The guidelines note that **the role of the PI is paramount** to the identification and control of hazards in individual research laboratories. **Why?** Because the lab PI/supervisor has both the procedure-specific expertise and leadership responsibility for ensuring work is conducted safely in his/her lab.

Safety is a TEAM Effort. SAFETY is not just a lab PI/supervisor responsibility. Everyone, from the PI to the lab assistants, staff and students, must take a role in ensuring their safety and the safety of their co-workers. This commitment to safety at all levels of an organization comprises an organization's **safety culture**.

How Are We Doing? Implementation of all of five recommendations is underway at W&M but we can do more! Attainment requires everyone's contribution. Want to help? Please refer to our "It's All SOP" article on Page 6. to learn more about a tool you can use to assess & manage risk.

Annual Laboratory Inspections Begin in January 2018



Your EH&S Team began conducting Laboratory Inspections in January 2018. By the end of January, we completed 42 inspections and have approximately 150 inspections remaining. Thus far the majority of findings fall into three EH&S areas: 1) Secondary Container Labelling ; 2) Equipment cords condition; and 3) Extension cord use.

Basic guidelines on Secondary Container labeling are provided in the next article below.

[William & Mary Extension Cords Safety & Use Guidelines](#) provides information on the proper use of extension cords and power strips.

The Chemical Management Process—Container LABELING

Container Labeling is a “Key” element of the chemical management process and hazard communication. Here are some labeling tips that you need to know:



EH&S will be providing you labels and guidelines for the use in the upcoming months.

- ◆ **Labels** are not to be removed from original containers or defaced
- ◆ Maintain a **SDS** for each chemical & ensure they are readily available
- ◆ A **laboratory that ships chemicals** is considered to be a distributor or manufacturer and must ensure that containers are appropriately labeled prior to shipment and a SDS is provided
- ◆ **Secondary or “transfer” containers** must be labeled with 1) chemical name spelled out (no abbreviations!) and 2) general hazard warning
- ◆ A **portable container** that is intended **for immediate use** w/in the work shift by the employee who performs the transfer of hazardous chemical from a labeled container **is exempt from labeling**. If the employee leaves the container unattended for any period of time (take a break; go to lunch) —it needs a label.

2017 Chemical Inventories by Crystal Taylor

Every year the Safety Office requests a chemical inventory from each location on campus with chemicals or other materials that have Safety Data Sheets. This is a requirement of the OSHA Hazard Communication Standard, as it's our “Right to Know” the hazards of the chemicals that we're working with and around!

This year the Virginia Office of the State Inspector General (OSIG) will be conducting a Chemical Inventory Management performance audit of a sampling of Virginia's colleges and universities. We could be on this list!

The following departments/areas have sent in **100%** of their inventories... **THANK YOU!**

Chemistry
Biology
Psychology
Vivarium
Population Lab
Housekeeping

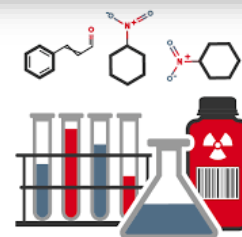
To date, we have received an inventory from **72%** of those requested.

If you've been asked for a chemical inventory and haven't sent it yet, it's NOT TOO LATE! Please submit your Inventory to Crystal at cmtaylor02@wm.edu.

OSHA – Employee Right to Know

- **Hazard Communication Standard** 1910.1200
- **Lab Standard** 1910.1450

“Employers must develop systems to identify chemicals and the associated hazards in the work place, which must be communicated to employees”



CLASS Is In SESSION

Safety Lessons Learned

SWEM PLANT DIESEL SPILL

by Teresa Belback

On Tuesday, September 5, 2017, a diesel spill occurred in the parking lot on the north side of the Swem Library as a day tank for a large generator was automatically refilling. The system failed to shut off due to a faulty relay and began to overflow. Fortunately, the spill was observed by a student and reported within 10 minutes of the occurrence. Facilities Management (FM) personnel immediately responded to the scene.



While FM personnel worked to contain the spill, FM Work Control contacted a spill response contractor to assist with the remediation.

Remediation efforts included:

1. Removal of 4" of diesel contaminated asphalt from the parking lot
2. Removal of contaminated soil surrounding the generators and subsequent application of a bio-remediation product to provide in-situ treatment of the remaining diesel in the soil
3. Vacuuming residual fuel from the impacted storm drain and placement of absorbent booms in the creek at the outfall location
4. Cleaning the concrete pads which support the generators

Due to the preparation, responsiveness, and cooperative efforts across several departments, including Facilities Management, W&M Police, Parking Services, Procurement, and the Swem Library staff, the impact of this spill was minimized and recovery efforts were in place the same day of the event.

The W&M Environment, Health & Safety Office submitted an incident report with remediation actions taken to the Virginia Department of Environmental Quality (DEQ). DEQ accepted our corrective actions taken and sent us a closure letter on November 29, 2017.

Did you know:

- Our FM personnel are trained to respond to spills using strategically placed spill kits across campus?
- Due to FM's fast response, less than 2 gallons of fuel spread into a nearby storm drain and was contained at the outfall?

MATERIALS & EQUIPMENT COMPATIBILITY

As part of your work planning process, it is important to review the materials and equipment you will be using to ensure that they are: 1) in good working condition; 2) are compatible w/each other; and that the materials and equipment are compatible with the environment where they will be used.

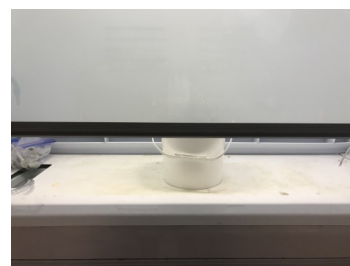
Polypropylene Fume Hood & HF Use

In 2011, a polyethylene (HDPE) fume hood w/ scrubber was purchased specifically for hydrofluoric acid (HF) use. HF is highly reactive towards many materials and has the ability to dissolve/etch glass. It is however compatible with plastic which is why we limit its use to fume hoods w/ plastic interiors.

In 2016, while performing an annual fume certification, we noted that visibility through the HF hood's sash was significantly impaired. Upon further assessment, EH&S determined that the sash was made of glass instead of polycarbonate and the HF acid had etched the interior side of the sash giving it a opaque, frosty appearance! **Lesson Learned:** Evaluate compatibility of all equipment components w/materials to be used prior to purchasing/starting work.



Visibility through sash impaired due to etching from HF acid use. Can you see the white bucket?



White bucket is barely visible through the sash due to etching.

Visibility restored after glass sash was replaced with a HF acid-resistant polycarbonate sash.



Aqua Regia: 3 HCL: 1 HNO₃



Last year, we repaired several fume hoods due to the degradative effects of aqua regia (AR) on metal parts. We learned that by making these 4 process changes we can safely use AR for most applications in our hoods. The process changes are: 1) don't make more AR than what you need for your procedure; 2) use AR the same day that you make it; 3) neutralize AR immediately after you finish your task; & 4) never store AR for later use.

Fire Safety Training

Article By: Sandra Prior

Throughout each year, your EH&S Team, along with our W&M Police and Williamsburg Fire Department partners, provides the W&M community fire safety training in support of various activities that include Summer Lab Worker Safety, Resident Assistants Orientation, Fire Extinguisher Training for Student Residents, Fireplace Training, Freshman Orientation, and Fire Drill "Tool Box" training. We hope you will enjoy viewing our gallery of fall & winter fire safety training events.



Summer Lab Worker



Fireplace Training Hall Council



Parent & Family Orientation Connections Fair



Resident Assistants Orientation Fire Safety



Resident Fire Extinguisher Awareness



Colonial Williamsburg House



FIRE EVACUATION PLANS

Article By: Ryan Wright

October 2017 was fire safety month and each year the National Fire Protection Association (NFPA) promotes a fire safety theme. Last year's theme was **"Every second counts: Plan 2 ways out."** This theme is extremely important because it reinforces that everyone needs to have an escape plan. W&M faculty, staff and students should know the escape routes for their building. The best way to find this information is by reviewing your building evacuation map.

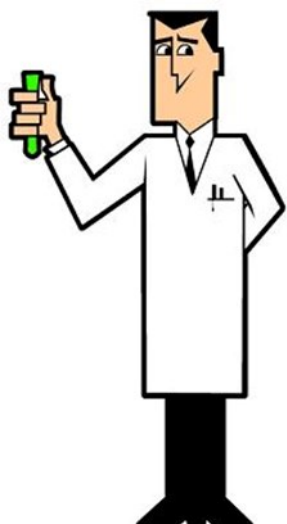
When the fire alarm is activated, never question the alarm, evacuate the building immediately. Be sure to close doors on your way out to prevent the fire from spreading. Once you have evacuated the building, go to your assembly area and remain outside until emergency responders, the W&M Police, or an EH&S Team member (if it is a fire drill) gives the approval to re-enter.

The EH&S Office is in the process of reviewing all building evacuation maps to ensure they are current. We are also adding assembly area locations. In the interim, if you are not sure of your assembly area location, you can look it up in your [Building Emergency Plan \(BEP\)](#) or ask your [Building Emergency Coordinator \(BEC\)](#).





Laboratory Coats Exchange



In the coming weeks our lab coats vendor will be changing. Orders for new or extra lab coats is on hold until the new vendor takes over. EH&S staff have been conducting inventories of the lab coats on hand for return to the current vendor. This includes both white and blue lab coats. We are still missing 81 lab coats. Please check your area for any lab coats that may have been misplaced.

Blue lab coats are treated with a flame retardant and worn when working with pyrophoric, combustible, and flammable materials. White lab coats are worn during less hazardous lab settings to protect your clothes and arms. A protective lab coat offers the wearer the following benefits:

- Does not melt onto skin
- Self-extinguishes/resists ignition
- Provides thermal insulation from the fire's heat
- Reduces burn injuries/increases the chances of survival
- Resists breaking apart and exposing skin
- Reduces potential for chemical burns



EH&S began taking receipt of new lab coats on February 1, 2018.

Based on requests from faculty and staff in the sciences, efforts have been made to increase the lab coat choices available. Faculty and staff put in their order in the late fall and the new order includes 493 lab coats of four different types depending on the chemical and physical hazards present as well as personal preference. We are in the midst of the changeover as the initial delivery of lab coats arrived February 1st. We will contact lab coat owners to schedule a time for their changeout.



It's All S-O-P

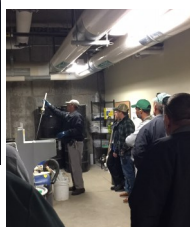
No work at William & Mary is completely without risk; therefore, all work requires forethought, planning, and in many cases prior authorization. Identification of work hazards and understanding their risks is an essential part of this process. For laboratories, OSHA's Laboratory Standard requires principal investigators to develop Standard Operating Procedure (SOP) "relevant to safety and health considerations to be followed when laboratory work involves the use of hazardous chemicals." This is especially the case if your lab operations include the routine use of "[select carcinogens](#)," [reproductive toxins](#) and [substances which have a high degree of acute toxicity](#)." (29 CFR 1910.1459(e)(3) (viii)). The sections to be addressed when writing the SOP are essentially the basic elements of a **risk assessment**. And, while the OSHA Laboratory Standard specifies the requirement for SOPs for work involving hazardous chemicals, laboratories should also develop SOPs for use with any piece of equipment or operation that may pose any **physical hazards**. To date, EH&S has worked with faculty to develop SOPs for materials science, MakerSpace equipment, ISC3 roof access, Andrews Foundry operations, forklift operations, used oil transfer and safety aspects of select student study abroad projects. In addition to hazard assessment and mitigation, the SOP defines the authorization process, required training, emergency response and backing out procedures to restore a system to a safe state. The SOP process supports the college's commitment to achieve the highest standards of safety and quality. If you would like to know more about how to write an SOP, EH&S has an SOP template and guidelines to help you.



Mercury-Containing Lamps Disposal



The Virginia Department of Environmental Quality (DEQ) issued [Universal Waste Lamp Crushing Guidelines](#) in 2017 which formalized mercury-containing bulb crushing activities. W&M was also required to notify the state of its bulb crushing activity and comply with a more stringent set of standards. EH&S assessed W&M's Universal Waste lamp crushing practices in light of the new standards. We found that overall we

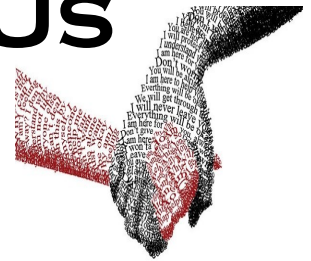


were doing well and that there were only a couple areas that needed to be addressed. The primary change to the facility operations is that the bulb crushing facility is now under the oversight of Facilities Management (FM) Operations & Maintenance and access to the facility is limited to FM electricians only. We ask that customers who have used lamps for recycling submit a service request.

Universal Waste Lamp Crushing & BulbEater® Operation training

Please do not drop off your used lamps in the hallway outside the crusher room or store them in your work area. If you have questions or need assistance with used lamp recycling, contact Crystal Taylor at 221-6450.

IT TAKES US, TO BUILD US



Meet Your Newest EH&S Team Members



Started April 2017
 Graduated from Louisiana Tech
 Most recently worked at VSU as a project manager & contract administrator
 Experience in hazardous waste remediation, asbestos remediation, industrial hygiene, environmental laboratory methods

Teresa Belback
 Environment, Health & Safety Officer



Started April 2017
 Graduate of W&M, BS and MS in Chemistry under Gary Rice (pre-ISC)
 Process Chemist in chemical manufacturing at BASF and most recently EHS Specialist at VIMS

Crystal Taylor
 Environment, Health & Safety Specialist



Vacant
 Fire Safety Officer

We will begin our search for a Fire Safety Officer this Spring. We look forward to completing our team!

In the interim, if you need fire safety assistance, call 221-2146.



Ryan Wright
 Environment, Health & Safety Specialist

Started August 2017
 Graduated from Old Dominion University
 Most recently worked at Colonial Williamsburg as a safety inspector
 Experience in fire safety, asbestos remediation, industrial safety, waste handling

“Make Each Day Your **Masterpiece**”



TO DO Today. And repeat.

- Be kind.
- Be considerate.
- Be respectful.
- Be honest/authentic.
- Think beyond yourself.

Make The Right Call

EHS Office	Phone
Director, EH&S	(757) 221-2146
EH&S Officer	(757) 221-2288
Fire Safety Officer	(757) 221-2146
EH&S Specialist	(757) 221-6450
EH&S Specialist	(757) 221-1523

