Safety Slick Q2 2021

Quarterly Laboratory Safety Update

In This Quarterly Slick:

- Enter this issue's games for a chance to win a gift card for Starbucks or Blenders in the Grass!
- The Heroes of the hazardous waste stream on campus
- A Ticking Bomb - unappropriated use of aluminum containers
- Field Researchers, don't take selfies with animal subjects! Learn why
- Hey Labs, TGIF! The Green Initiative Fund (TGIF) is offering rebate for replacing old equipment!
- Not Your Ordinary Toast - try this easy and yummy recipe for a quick, delightful snack

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Training

Click here for details on upcoming EH&S courses.

Grab That Prize!

Enter our games and you have the chance to earn 1st or 2nd prize! Be quick!

Game 1. Earn 1st or 2nd prize (gift cards) by being the first or the second to answer correctly the following questions:

1. Approximately how many tons of waste does our campus generate per year?
2. What are the best waste minimizing strategies for labs?
3. What is a good container to use for your empty diethyl ether can?
4. Posting a picture of animal subjects on social media is a bad idea. Why?
5. Who likes to fish?

To improve the chances to win, read the articles below. Send the answers as soon as you can to ehs-labsafe@ucsb.edu

Game 2 is an opportunity to win for those of you who prefer a good puzzle to work on (one prize available):

Source: math club, 4th grade

Place the given dominos to form a square as shown on the picture, such that the dots on every side have the same sum. How many dots are on each side? - fill in the blank dominos and send us a shot of your solution at ehs-labsafe@ucsb.edu
The first correct answer gets a gift card to Blenders in the Grass or Starbucks.

Last issue winners

1st place winner of the **quiz "What's wrong with the picture?"** is **Kai Kristiansen**, Lecturer, CCS Physic. Here is his answer:
1) Sash too high
2) Exhaust duct disconnected on top of the hood
3) Overcrowded work area inside hood.
4) Vials are not labeled.
5) The handle on the "Flammable" cabinet is not entirely closed.

6) Don't see the use of the Variac - electrical hazard.
7) Large chemical bottles shouldn't be stored inside a fume hood (see deep right corner).
2nd prize went to **Mario Dumont**, a PhD student in John Bowers group in ECE, who gets his good lab safety practices from the diligent work of **Kurt Olsson** in the MBE lab.

The **quiz "How Does Hydrofluoric Acid Do It?"** proved to be challenging. The closest answer to the correct one was by **Julie Yu,** a PhD student in Lipshutz Research Group, Chemistry and she won the prize.
The answer is electronegativity of fluorine.
Fluorine is the most electronegative element in the entire periodic table, hence it forms very strong bonds with other elements. This property to form very strong bonds is essential for corrosiveness. For example Si-F bond is stronger than Si-O in glass, that is why HF dissolves glass.

We are extending special thanks to all of you who participated and are inviting you to play again!

From left to right: Daniel, Phil, Bruce and Jeremiah

The UCSB Hazardous Waste Stream

And how can you influence it!

Ever wondered what happens to the hazardous waste once you submit a pick-up request? For most of us, magically the waste disappears, regardless of its state or condition. No questions asked. Let's be honest - some of us have a room for improvement when it comes to hazardous management skills (see an article on this topic here). Hey, but that's not a work of magic. It takes a team of patient and dedicated individuals, who got your back.

Who are they?

Bruce Carter, the Hazardous Waste Manager, is a lucky American born in Panama. Bruce is the logical thinker of the team, with a great work ethic and as many know a very helpful individual. He plays the role of a great fisherman, who hardly catches anything. Before getting into managing the campus hazardous waste, Bruce got a degree in Geophysics at UCSB. If you have problems with cleaning a chemical spill he is there to help except for car oil leaks. **Phil Becker** is one of the Campus Hazardous Waste Program Coordinator. Having a Virginian (VA) backbone, Phil has proven to be hard working, determined and resilient. This got him a gold medal in high jumps few years ago. He is always willing to leap at the opportunity to help out the campus members. His degree in English from UCSB makes him a very challenging opponent during discussions or downing spinach-kale smoothie competitions. **Jeremiah Coleman** was born and raised in California, but what he loves the most is the adventure offered by traveling in South-East Asia where he spends every annual vacation. On Friday nights you can find Jeremiah refereeing football games. Be careful committing any fouls on the football field because he will blow the whistle on you. Jeremiah personal qualities offer the comforting combination of determination, modesty and great generosity. While obtaining his degree in environmental studies at UCSB, Jeremiah became a student worker for the Community Household Hazardous Waste program, which got his foot at the door of his current position as a Campus Hazardous Waste Program Coordinator. **Daniel Silva** is the latest addition to the team and brought to the group the experience gained from his previous workplace - the City of Santa Barbara. Daniel is local, and because he was born next to the beach, he gravitates towards what is far away. He loves snowboarding and mountain biking. This certainly reveals his adventurous and ambitious sides. And if you talk to him for a minute, you will notice his best side of all - being a loving individual. Daniel hails himself as a handyperson who carries duct tape ready to fix anything. This team is **inspired** by what they do - protecting the community and the environment. And they really enjoy interacting with you - the researchers. During the Pandemic you are certainly missed. The job, however, comes also with a lot of **challenges**. It is a **high risk activity** and can be taxing to determine the hazards of various waste streams from different research labs. Also, the campus is ever growing. It hosts more than 800 research laboratories. There is a high turnover of students who are trained in hazardous waste management and the knowledge seems to leave the lab each time a student graduates. And let's not forget the everchanging federal and state regulations. Not keeping up can be costly.

So what happens to the waste once it is picked up? The team transports the containers

back to the Hazardous Waste Processing & Storage Facility, where by law it cannot be stored for more than 90 days. Once at the facility, the materials are consolidated/mixed with compatible chemicals into 55-gallon drums (it is so important to label the waste correctly!). Some materials are packaged between absorbent material into a drum. The packaged chemicals are usually highly toxic, reactive or there is not enough volume collected within the allowable 90 days to make it cost effective to pour into larger containers. The packaged chemicals are never opened at EH&S, so your container cannot be returned. Once packaged for shipment, the waste is transported offsite by a licensed hazardous waste hauler. Waste may be sent to several EPA regulated facilities across the country for proper disposal, depending on the best disposal technology for that specific material. The disposal facilities either incinerate, fuel-blend (use to generate energy), treat, recycle, or landfill the waste. Most of the facilities are located outside the state of California, thus the transportation costs can be expensive. It is EH&S' policy to use the most environmentally sound method and the one that protects the University from future liability. Most of the campus waste is incinerated in Utah, Arkansas or Nebraska.

Few more facts:

- In 2019, UCSB disposed of 79 tons of hazardous waste.
- In 2020, UCSB disposed of only 46 tons of hazardous waste due to the COVID-19 closure.
- In a typical year it costs $163,000 to dispose of the campus' hazardous waste (EH&S labor, vehicles or safety supplies not included).
-The Chemistry Department and the NanoFabrication lab are by far the largest generators of waste by volume.
-UCSB generates more hazardous waste in comparison to campuses of similar size due to the type of research conducted on campus.

By now we hope we got you thinking! ***How can you reduce your waste?*** Waste minimization, as a matter of fact, is part of the Hazardous Waste Regulations. It is more difficult to achieve it in a research setting than in manufacturing, where an established processes can be examined and better efficiency can be achieved. The benefits of waste minimization are: 1. Cost savings, 2. Less air pollution from transportation and incineration 3. Less packaging materials used (e.g. drums, pallets, etc.), which is environmentally friendly and cost effective at the same time. And if you think that you cannot do much about it, please know: **Everyone can make a**

difference! The most effective techniques are smart purchasing (don't order more than you need) and if possible substitute chemicals for non-hazardous material.

And for those of you, who like to help even more, please:
-Check the "start date" on your waste containers! Due to the Pandemic, many researches have been absent, so some waste might be past its 9 months allowable time. If this is the case, submit a waste pick-up request, and we will be out to dispose of it!
-Peroxide formers (e.g. diethyl ether, tetra hydrofuran) must be dated and disposed of within 1 year of purchase. Old peroxide formers is a safety issue for the hazardous waste staff.
-Please don't mix solid and liquid waste. Dispose of needles in sharps containers, not in the liquid waste bottles - another hazard for our staff.
-If you see us in the hallways and need help with anything, don't be shy to ask. We are here to assist and support you.

We THANK YOU for making our job safer by not mixing incompatible chemicals and managing your waste right!

A Ticking Bomb:

Using aluminum solvent bottles as hazardous waste containers creates a serious explosion hazard!

DO NOT USE for collecting chemical waste!

The dangers of using Aluminum solvent bottles as hazardous waste containers has received recent attention due to an explosion in a (non-UC) academic laboratory (Craig A. Merlic and Imke Schröder, ACS Chemical Health & Safety, 2021, 28(1), 34-37). These aluminum containers most often originally contained diethyl ether, and are tempting for use as waste containers as they are sturdy and Aluminum is usually thought of as a corrosion-resistant metal. However, under certain conditions (presence of transition metals, strongly alkaline conditions,...) reaction with aluminum to create aluminum oxides and hydrogen gas can occur. This creates a serious explosion hazard.

Diethyl ether is usually packed in aluminum containers. Don't reuse them. Please, instead, recycle!

EH&S Respond:

- We have added the following language to our disposal procedures and updated it on our website: *"Do not use aluminum "ether" containers to store waste. Do not store corrosives in steel containers."*
- We will conduct outreach when out in the laboratories to instruct researchers to stop using these containers to store waste.
- We will no longer pick up waste stored in aluminum containers. We will ask that the waste be transferred to a plastic or glass container.
- In high-volume departments, we will provide recycle bins to promote the recycling of empty aluminum containers.

For questions and concerns, please feel free to contact Alex Moretto (EH&S Research Safety (amoretto@ucsb.edu), Bruce Carter (EH&S Hazardous Waste Program), bruce.carter@ucsb.edu), or your preferred EH&S contact.

"Even scientists take selfies with wild animals. Here's why they shouldn't."

In this article posted in The Conversations, Dr. Ward-Page, CEO, Lead Scientist - eOceans, Dalhousie University, discusses the ethical and moral problems associated with scientists taking and posting selfies with wild animals.
"Scientists who work with animals operate under different rules from those that the public is supposed to follow." writes Dr. Ward-Page and urges all field researchers to lead by example.
Every project which involves handling of animals is reviewed and approved by the campus IACUC committee. The committee makes sure that the proposed methods for handling animals are humane and as less disruptive to the animal as possible. IACUC would only approve of pictures being taken of animals if they are scientifically necessary, and definitely not a selfie style.
Additional concern of scientists taking selfies with research animals, is the likelihood of sharing them publicly online. This might lead to negative attention from animal rights groups, which could result in harassment of researchers and public records requests.

Remember! If you like to share pictures of research animals without people in them, please always do it through official UCSB channels, like The Office of Public Affairs & Communications!

Hey Labs, TGIF! The Green Initiative Fund (TGIF) is offering rebate for replacing old equipment!

Lab managers, have you heard of The Green Initiative Fund (TGIF)? TGIF is driven by students whose goal is to "reduce the University's impact on the environment. "

TGIF is offering $4,000 rebates (while funds last) to labs that recycle their old ULT freezers and buy an Energy Star model! For replacing other old equipment with new energy efficient items (commercial refrigerators, washers and dryers, dishwashers, etc.), TGIF are offering an efficiency rebate of up to $1,000.
So here is your nudge for replacing that old piece of..... energy sucker!

Learn More about TGIF Rebates

Not Your Ordinary Toast

try this easy and yummy recipe for a quick, delightful snack

The following healthish recipe which will satisfy your sweat tooth is courtesy of Brown Cow Yogurt.
This amazing **apple toast** topped with yogurt and garnished with something crunchy is surprisingly good! Simply slice an apple (make sure it is washed), spoon yogurt on each slice, (the maple flavor is a must- so good!) and sprinkle toppings of your choice - nuts, chocolate chips, granola, sesame seeds, mochi chunks, sliced banana or combination of several favorite toppings - the ski is the limit! You will love it, indulge it and benefit from the probiotics, vitamins, protein, calcium, fiber content of this snack. As for the sugar - well, that you will have to run off ;-). Enjoy!

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