

## 230609 Meeting Minutes

Attendees: Chandrika Konwar, Nadia Suryawinata, Macu Infantes Lopez, Melissa McPherson, Kate Malecek, Ben Ben, Honami Tanaka, Milla Freeman, James Linton, Vijaya Kumar, Benjamin Yeh, Tasha Cammidge, Sarah Torres

Lunch from [HomeState!](#)

Introductions ...

Green Labs Monthly Tip: Act Label

- **Keep an Inventory of Chemicals and Equipment**
- Keeping an inventory of chemicals and equipment is not only a way to prevent over-purchasing these items, it also allows equitable access for your entire lab, and encourages potential collaboration with neighbouring labs. Buying wisely and in the minimum amount required for research questions ensure that chemicals are not forgotten or become unsafe with time.

Updates!

- Welcome to a new Certified Green Labs
  - Hoffman Lab!
  - Green Labs is throwing an event with sweet treats for all labs that are certified by April 22<sup>nd</sup> (Earth Day!) on June 23 from 1-2 pm in Chen 2<sup>nd</sup> floor kitchen, please RSVP the number of attendees (TC will send out an invitation and RSVP early next week!)
    - Will include a raffle!
  - Get CERTIFIED TODAY! To get certified, finish the easy, 30-minute [Green Labs Certification](#) and submit it to [sustainability@caltech.edu](mailto:sustainability@caltech.edu).
- -70°C/-80°C Comparison Pilot
  - From Lightning Event - Manisha Kapasiawala
    - Collect samples from several interested labs
    - Determine a robust way to compare samples
    - Store in both a -70°C and a -80°C and compare over multiple years
    - Gradinaru lab has a -70°C?
    - JL: he raised this idea with David Warren at the BBE event, we could present the data to the community to convince them with data, using machines with similar ages and same location
    - KM: Jesse Flores may have ability to look at tracking to account for blips in temperature
    - NS: Maz lab would be interested in supplying samples
    - JL: could use sterlings in Freezer Farm (TC, JL, and NS offer their -80s)
    - JL/KM: could keep samples in -20 for a control, use a TX/TL control, do protein, DNA etc, every 6 months take a sample and test it, and just extrapolate data from there
- Other project updates?
  - KM: update on Grenova: we reached out to them for a quote, it is over 100K, we want to negotiate with them for a lower quote and we may need to make a poster (which is

fine for us to do!) to get them to give us a discount. Grenova is interested in working with us, especially if we produce a poster. We do also have a high bar of detection with validation here, but we can perform the washes in an automated fashion, labs could drop off tips and get them washed and then pick them up. KMK is happy to use her robot arm to run this machine, which would make it easy to be high throughput. KM talked with her PI about providing some funds, but we would need more input.

- TC: we want to talk with DW about this project in our next meeting (next week), and we want to see if Resnick will be able to provide funds,
- JL: can we can present this to the faculty to see if there is interest?
- KM: labs that pitch in could get to use it for free for the duration of the study, and have a cheaper rate if we decide to keep it for the first year or two
- JL: is there a service contract?
- KM: yes, it is about 10k annually, less than tip expenses though, so we will recoup costs and could perhaps even pay someone to do this work (TC: work/study student would be ideal)
- KM: provost also “matches” costs of things like this, so if we can get to 50% perhaps they will be game. Want to take it to DW and see if they would be interested in leasing the machine or doing the study. Labs that pitch in could also get priority access to the machine?
- Pipette tip box recycling project
  - Vijaya Kumar and Trinity Dorger, in first month:
    - VK: Almost filled an entire 6”x5”x7” dumpster!
    - Had to separate out flexible clear plastic, looking into options of how to do that
      - Trinity says her curbside will pick this up, but it would be nice to be local
    - Also looking at other vendors to see if they will accept the flexible plastics
    - BY: how many labs use TipOne and could we promote it
    - TC: YES!
    - VK: she didn’t know off the top of her head how many labs, but later emailed that it was about 20 labs that use TipOne in BBE
- Recycling bin signage - TC
  - Printer signage for eco-friendly printer usage
  - Recycling bins inside labs (so including petri dishes, excluding kimwipes etc) – this may be a collaboration with EHS
  - Recycling bins in the hallways of BBE to indicate how to recycle properly
    - This would be a collaboration with Facilities
  - TC: want to get Biosafety approval first, but no feedback, have gotten feedback from EHS, so may just add them to the website
- Lomi Composter project update
  - One in each Chen kitchen
    - Sarah, Yvette, and myself watching/running them
  - Collaborating with Caltech Gardens
    - They are taking our soil/compost for the grounds!
  - Energy efficient
    - Use 0.6 – 1 kWh of electricity per run (~\$0.15 per use)

- Rest of the time it can sit unplugged, so no power used on lights etc
- Can compost about 30% of what we dispose of in kitchen waste, doesn't smell, doesn't leak
- So far:
  - 12 gallons (45 L) compost made
  - That is 53 gallons (200 L) food waste!
- What we have learned so far
  - Removable stickers so folks don't fill the Lomi while it is running
  - Advertise more? Add signage to fridges or other garbage cans, make more flashy
  - Running 3<sup>rd</sup> and B1 levels ~2x a week, running 2<sup>nd</sup> floor ~1x a day
    - Generating about 10-15 gallons each per month?
  - May need to move B1 and 3<sup>rd</sup> floor ones to be closer to garbages
  - Types of food waste change consistency (moist waste needs longer cycle)
- Continuing work
  - Coordinate with Gardens/Dining center to incorporate compost (pickup ~1x per month)
  - Dropped off first batch last week!
- **Do we need to advertise more? How to increase use and engagement?**
  - "Help protect Caltech Gardens, compost today!" or "Keep Caltech Gardens Green, compost your food waste!"
  - More signage?
  - Email reminders?
- Sticker resources
  - Signage for equipment – Sami/TC
    - Used TechHub Cricut!
    - Will print stickers to give out in welcome packages etc
  - Ethanol/water test!
    - Went well, they are now waterproof after addition of laminate page
  - \$12/30 sheets-\$16/12 sheets
    - 2" stickers – 12/page
    - 1.5" stickers – 24/page
    - 1" stickers – 63/page
  - Sticker mule
    - \$72/10 sheets
  - Only for Green Labs Certified labs
  - Can order it through us and we will print them and drop them off!
  - Three sizes (but fully customizable) and three colours/messages (1", 1.5", 2")
  - TC: will post this resource on the website, and include the form in the follow-up email on Monday!!
  - Other resources planned like freezer cleanout signage, coming soon!
- Newsletter
  - Pilot program

- Update on Lomi composter project – update language (include “dirt” so there is less confusion)
- Update on pipette box recycling program
- Resources (including stickers and recycling signage) (signage at end of notes)
- Samples:
  - Polycarbin tips
  - Biobased tubes from Eppendorf
  - Do people like them? Feedback?
    - GS: suggested we could also get samples of reusable reservoirs from USA Sci, you keep the base and replace only the reservoir part, it is recyclable, Trinity is able to give bulk pricing, called the [Channel Mate](#)

### Pilot Program

- Pilot programs
  - Especially editing and testing submission forms – did anyone take a look at the one sent in the email?
    - Contact information/team members/student involvement
    - Title/project summary/objectives/location
    - Timeline (start date, end date, first installment of funds)
    - Funding history/budgetary requirements/budget
    - Budget management (on-going funding, repayment, cost-savings etc)
  - Created a “mock” submission as an example – Lomi composters
  - **TC: would LOVE feedback on the forms!!!!**
  - Coordinating submissions, coordinating with faculty sponsors
    - Reaching out to faculty sponsors and ensuring they have time to read submissions
      - Dianne Newman
      - Rob Phillip?
      - Victoria Orphan?
  - Make into small writeup/progress report/posters or similar format
  - Another event in November? Posters? Talk?
  -

### Styrofoam Pilot Program

- UCI has a Styrofoam recycling program we can use as a model
  - After 3 weeks of collection, the filled an entire 40-yard bin!
  - Program
    - Users collected Styrofoam in designated location in building
    - Custodial staff brings bagged Styrofoam to loading dock
    - Student workers collected Styrofoam weekly and transported to 40-yard bin
    - UCI self-hauls 40-yard bin to Marko Foam bi-weekly
      - Marko Foam repurposes foam into foam cores for surfboards! (Waste to Waves program)

- They have some troubleshooting ideas (including using heavy duty bins, not cardboard bins, increasing education for users to strip and sort Styrofoam (including signage), scheduling drop-offs to accommodate large volume, know the capacity of student run program
- Closed loop program, creatively repurposing undesirable material, less waste in landfill and more cost-savings for institution!
- 
- Reduce (#1)
  - Petitioning vendors to use non-Styrofoam packaging or return shipping labels for the boxes. (petitions for vendors and Caltech are at bottom of minutes)
    - Edit the petition and ask folks here to sign it
    - Have email version citing petition for general use (GL will email our main vendors VWR, ThermoFisher, others?)
    - We can see if other labs from UCLA, UCI, etc would be willing to sign as well?
      - By asking with so many voices, it may make it easier for vendors to justify this transition.
      - I think this is something we can arrange on our own.
  - Aggregating orders between labs.
    - May involve a little work from the lab managers and/or our stockrooms and/or purchasing. This may not work for all labs but we **can have it as an option and not a requirement!**
    - We could ask that orders from VWR or Thermo get aggregated and, instead of orders being sent to our labs individually, orders are sent instead to stockrooms (which may need access to the freezer farm if they don't have a -80 available) and stored there for pickup in freezer boxes labelled specifically for each lab.
    - Manny et al. or Shelly could do this as well, and receive our frozen packages and put them into appropriate lab-specific freezer boxes (perhaps stored in the backup -80 and -20s in the freezer farms, or even in the dry ice bins that are near their offices). This may also reduce the number of packages that Manny et al. deal with on a daily basis (though it will add the extra step of putting the supplies into a fridge/freezer/dry ice box).
  - Aggregating orders within labs.
    - Lab managers could order things they know will come in Styrofoam once a week rather than every day, and order primarily from one or two vendors preferentially if possible (I do this in our lab, as I order this stuff on Mondays every week and my lab plans accordingly for this) so that it reduces the number of packages.
  - **BENEFITS:** We would benefit from this strategy by not being charged as much for shipping costs, and vendors would also reduce the amount of Styrofoam and other packing materials they have to send to us. This may allow us to work on other kinds of discounts. Manny et al. would be reducing the amount of packages dealt with per day. We would also benefit from this as we would not be potentially leaving a sensitive package out in the wild to melt over the weekend; they would be dealt with promptly and securely

- JL: email NEB to see if they take the ice packs back, NEB may want the packs anyway (even those that aren't NEB)!
  - KM: NEB very willing to work on sustainability initiatives, so may be open to this plan
  - NS: could also ask ATCC, and LabCore to participate
  - VK: if you order from Amazon there is an option to have fewer packages, so we could ask if ThermoFisher etc could have a button similar to that in TechMart,
  - VK: could we ask TechMart to add a button to indicate if we want the orders aggregated (doesn't even necessarily need to be EPS packaged orders!)
  - VK (email after meeting with notes):
    - Offer option on TechMart to pool orders that need EPS packaging (arriving on one or two set days every week):
    - Pack and label each order into an individual (sustainable) bag;
    - Place multiple bags into each EPS box for shipping to mailrooms/stockroom;
    - Mailroom/stockroom staff unpack the boxes and leave the individual orders in freezer/shelf for pick up
    - This could be extended to all other orders too, not just the ones that need foam boxes.
    - PS: According Max Christman facilities does not have the staff to handle special recycling programs...this was in response to me asking if we could set something up for our labs to recycle pipet tip boxes. I didn't ask specifically about #5 plastics so I will check with him on that. And look for vendors if #5 are not recyclable at Caltech
- Reuse
- Asking vendors that have stockrooms on campus (VWR, Thermo) to take back the Styrofoam boxes if we drop them off and reuse them.
    - Alternatively, we can ask for return shipping labels to ship them back to the vendor (regardless of if they have a stockroom).
  - We could store some Styrofoam and shipping supplies etc near the mail rooms.
    - I know labs will still likely keep a stockpile of Styrofoam boxes in their rooms anyway – does anyone think differently? If so, I feel this might just become a dumping ground that labs will utilize and then Manny et al. will have to deal with when it becomes a monster.
    - This is a good option, but I think Manny et al. will need help managing it and there will need to be “rules” and solutions for them if the pile gets too large.
    - I think the reduce/recycle options are better long-term solutions.
- Recycle
- We will likely still receive SOME Styrofoam, even if we institute the above plans.
    - We could invest in a Styrofoam compactor and recycling program (which Vijaya has looked into and priced out for us already!).
    - This option will also likely require a full-time GL employee to help organize, a place to store the Styrofoam while it awaits vendor pickup, arrangements for Styrofoam pickup, and staff to help crush the Styrofoam.
    - As per VK:
      - #6 PS...no program at Caltech for these
      - Transport to recycling facilities

- Foam Fabricators in Compton
  - Foam Zone, Ontario (pick-up offered for \$225/load in a 40ft truck)
  - Dart Container Corp in Corona, CA (this is where UCI drops off their load)
    - Collection and transportation
- Foam densifier
  - INTCO Recycling, Ontario, CA
  - “INTCO Manufactures and Sells GREENMAX Foam Compactors/Densifiers and Foam Recycling Machine, Buys Compressed EPS/EPE foam Blocks and Pellets all over the world, and turns them into frame products”
  - Cost, operation and maintenance
- Talked with Sonita, ThermoFisher rep, yesterday about establishing a pilot program with them, including:
  - Asking them to continue transitioning to more sustainable packaging
  - Order aggregation, possibly utilizing the stockroom
    - Not sure if stockroom will handle the order distribution or if mail rooms will
    - Will require access to -20 and -80
    - Not sure how to implement this in TechMart – will labs or purchasers do this, how to input address for aggregation, and how to indicate you do not want to participate in aggregation
    - Orders aggregated weekly...?
  - Send-back/dropoff program for Styrofoam and ice packs
  - Incentives for participation
  - Sonita is bringing to her team now, so we will keep group in the loop
  - KM: can leverage this relationship and if they are willing to do this program, we can use this to encourage other vendors to do the same
- Made Styrofoam signage (below)
  -
- Green Labs Certification
  - Takes ½ hour
  - Very simple!
  - See <https://greenlabs.caltech.edu> for the form
  - Get a plaque!
  - Green Labs will give you bins and signage for your lab!

#### For next time

- Photos!
- Work on Action Plan
- Slack?
- Anything Else?

**Next Meeting June 9th 12pm Chen 240**  
**Bring a friend and get a RocketBook!**

### LAB RECYCLING GUIDE

Please separate recycling and follow EH&S Guidelines for biohazardous, radioactive, chemical, and electronic waste

Recycle here:

Triple-rinse your bottles, collect rinsate as hazardous waste, deface/remove the label.

No broken glass, glass pipette tips, or pyrex glass.



Glass Bottles      Plastic Bottles



Petri dishes      Weigh boats      Centrifuge tubes      Pipette tip wafers  
Reservoirs      Conical tubes      Pipette tip boxes (NO PIPETTE TIPS)

Flattened cardboard and cartons      Packing materials      Paper, envelopes, and magazines      Aluminum/tin cans, scrap metal

No kimwipes, PCR plate seals or seal paper, paper towel, or pipette tips.

**Not Recyclable:**

Biohazardous or radioactive materials or sharps      PCR plate seals, plastic baggies, gloves, pipette tips      Kimwipes or paper towel      Pyrex glass

**Electronic Waste**

Electronic waste is recycled at e-waste recycling points

Check out the Green Labs website for more tips and tricks to make your lab more sustainable!




### RECYCLING GUIDE

Follow EH&S Guidelines for biohazardous, radioactive, chemical, and electronic waste

Recycle here:

Other Recyclables: Unsure? Recycle here if clean!




Aluminum / tin cans, scrap metal      Recyclable plastics      Recyclable glass

Bottles and Cans: Cash Redemption Value Only



Glass      Aluminum / tin cans      Plastic

Mixed Paper: Flattened and empty



Flattened cardboard and cartons      Packing materials      Paper, envelopes, and magazines

**Not Recyclable:**

Biohazardous or radioactive materials or sharps      PCR plate seals, plastic baggies, gloves, pipette tips      Kimwipes or paper towel      Pyrex glass

**Electronic Waste**

Electronic waste is recycled at e-waste recycling points

Check out the Green Labs website for more tips and tricks to make your lab more sustainable!



**Vendor Styrofoam Petition**

- We are writing to you today to voice our support for transitioning shipping packaging from currently non-sustainable options, such as Polystyrene (Styrofoam) boxes or packing peanuts, to more [sustainable](#), [recyclable](#), or [compostable](#) options that are [just as effective](#) as Polystyrene.
- Polystyrene has [massive effects on our planet](#) and [does not biodegrade](#). It is made from fossil fuels that are non-renewable and chemicals that can leach into and [contaminate our environment](#). Animals [ingest this material](#) and can be poisoned or killed. Polystyrene is considered a possible carcinogen by the [National Institutes of Health](#). This material is [not able to be recycled](#) in Pasadena and its sale and distribution has been [banned](#) in Pasadena as of [April, 2023](#).
- We as scientists are acutely aware of [the negative impact](#) our research often has on the environment. By working towards a more sustainable future, and by asking for more sustainable resources for our research, we are eager to add fuel to this proverbial fire to continue the success of our sustainable programs and initiatives.
- Numerous vendors are choosing to adopt more sustainable practices and sustainable shipping packaging. We purchase products from you regularly and by making sustainability a priority, you will allow us to confidently source our laboratory reagents and materials.



- If your team is not able to transition to sustainable shipping packaging immediately, we would like to request a send-back program so that your company can reuse Polystyrene packaging. This would benefit your company as you will have to produce/purchase fewer Polystyrene shipping containers. This will benefit our campus as the end-of-life waste challenges of this non-recyclable material will not be a burden on our custodial and waste disposal teams, which currently are not able to recycle the material.
- Thank you.

#### Caltech Styrofoam Petition

- We, the staff, students, and faculty at Caltech, sign below to support the reduction of Polystyrene (Styrofoam) waste at Caltech.
- Polystyrene has [massive effects on our planet](#) and [does not biodegrade](#). It is made from fossil fuels that are non-renewable and chemicals that can leach into and [contaminate our environment](#). Animals [ingest this material](#) and can be poisoned or killed. Polystyrene is considered a possible carcinogen by the [National Institutes of Health](#). This material is [not able to be recycled](#) in Pasadena and its sale and distribution has been [banned](#) in Pasadena as of [April, 2023](#).
- Signers of this petition commit to asking vendors to reduce their reliance Polystyrene and transition to more [sustainable](#), [recyclable](#), or [compostable](#) options that are [just as effective](#) as Polystyrene, and/or participating in send-back programs to re-use their Polystyrene containers. Signers will also commit to aggregating our orders when possible, choosing vendors that offer more sustainable shipping solutions, and investigating Polystyrene recycling, reduction, or re-use programs on our campus.
- We as scientists are acutely aware of [the negative impact](#) our research often has on the environment. By working towards a more sustainable future, and by asking for more sustainable resources for our research, we are eager to add fuel to this proverbial fire to continue the success of our sustainable programs and initiatives.
- Please sign below to show your commitment to this initiative.

# STYROFOAM RECYCLING GUIDE

Follow EH&S Guidelines for biohazardous, radioactive, chemical, and electronic waste

## ONLY CLEAN, WHITE #6 EPS FOAM



## PLEASE DO NOT INCLUDE:



Check out the Green Labs website for more tips and tricks to make your lab more sustainable!



Sustainably printed on 100% recycled paper!

