EXPLORATIONS OF LANDFILL DIVERSION IN RESEARCH, TEACHING, AND CLINICAL LABS

I2SL ANNUAL CONFERENCE

SEPTEMBER 28, 2016

CLEVELAND CLINIC, EMORY UNIVERSITY, CU BOULDER
TODAY

• Identify challenges and opportunities related to the diversion of solid waste materials from laboratories.

• Gain ideas for replicable innovations for diverting laboratory solid waste materials from landfills.

• Be motivated to develop tangible ideas for building connections among key stakeholders, engaging industry in innovation, and setting and achieving goals for closing the loop on the production and disposal of laboratory materials and supplies.
Overcoming Onsite Challenges to Recycle Lab Materials at Institutions

September 28, 2016
Some Common Challenges Faced for Lab Waste Diversion at Institutions

1. Inadequate space for collections
2. Need for funding
3. Support required by a mix of stakeholders
4. Finding a recycler that will take lab materials
Challenge: Inadequate space for collections

Issues:

- Older buildings with insufficient space for even typical recycling...not to mention lab recycling
- New buildings or renovations starting to include space for typical recycling, but not yet aware of space needed for lab specific recycling
Overcoming space challenges at CU-Boulder

Storing materials in labs until pick-up

Gaining trust of CU recycling
Overcoming space challenges at CU-Boulder

Working with fire marshal and building managers to find locations
Overcoming space challenges at CU-Boulder

Recycling spaces incorporated into new buildings and renovations

Good relationship with CU
Recycling benefits space for lab materials
Overcoming space challenges at other institutions

Emory University has focused on finding equipment that fits inside of labs, and adjusting processes. Lab staff empty the small footprint containers inside of labs into larger containers in service elevator or hallway spaces.
Overcoming space challenges at other institutions

Clinical Plastics Recycling

PLEASE RECYCLE HERE
Bulk white Styrofoam
Soft plastics, including plastics mixed with paper
Plastic bottles, any size
All rigid plastic, recycling symbol or not
Paperboard

NOT RECYCLABLE HERE
Glass
Biohazardous material
Paper towels
Gloves

Cleveland Clinic partners with Buckeye Industries, a vocational services program for individuals with disabilities to recycle our clinical plastics. For detailed program overview, see COMET’s Greening the Labs course.

CLEVELAND CLINIC RECYCLES. For more information visit the Office for a Healthy Environment website at portals.ccf.org/sustainability or email recycling@ccf.org
Challenge: Need for funding

Issues:

Specialized lab materials often cannot be mixed with traditional recycling

- Funding is needed for lab recycling
- But there is already insufficient funding for typical recycling
Overcoming funding challenges at CU-Boulder

Chair of MCDB offers to pay for recycling

Lab member volunteers
Overcoming funding challenges at CU-Boulder

Expand MCDB model to other departments

Method of approach is important

Offer to cover start-up costs and free trial period
Overcoming funding challenges at CU-Boulder

Adding more types of materials to truck pick-up without paying additional service fees
Overcoming funding challenges at CU-Boulder

Applying for Sustainable CU funds to cover initial costs of new lab recycling

Good relations with CU
Recycling leads to support
Overcoming funding challenges at other institutions

Emory University offers a Green Lab Incentives Fund for all labs certified under the Green Labs at Emory program. Funding is provided by Emory’s primary scientific supplier.
Challenge: Support required by a mix of stakeholders

Stakeholders:
- Environmental Health & Safety (EH&S)
- Campus recycling/waste management
- Building managers, lab department, & lab members
- Local recycler
- Office of Animal Research (for select materials)
Overcoming stakeholder challenge at CU-Boulder

Gathering input of and involving stakeholders

Addressing one hurdle at a time

Building relationships and engaging stakeholders
Overcoming stakeholder challenge at CU-Boulder

For complicated efforts:

- Roundtable of stakeholders
Overcoming stakeholder challenges at other institutions

Emory University developed its Green Lab Team in 2013, made up of representatives from EHSO, Procurement, Facilities, OSI, and lab users. Stakeholder buy-in has been successful with this model.
Challenge: Finding a recycler to take lab materials

Issues:

- Recyclers already receiving more material than they can handle
- Concern about biological and chemical hazards
Overcoming outlet challenge at CU-Boulder for brown glass

Local recycler was not interested in taking material

Rocky Mountain Bottling Company wanted to make sure glass had correct composition for Coors

Different collector found
Lab materials recycled at Emory, Cleveland Clinic, and CU-Boulder

- #6 white block foam recycling & re-use
- #5 PP pipette tip boxes & conicals
- #2 HDPE & #4 LDPE plastic film
  (Cleveland Clinic: including plastics mixed with paper)
- Plastic bottles and all rigid plastic
- Lab paper towel composting
- Metal lab containers
- Carboys for hazardous waste re-use
- Plexiglass shield re-use
- Solvent re-use (ethanol, acetone, methanol)
- Lab equipment
- Animal bedding composting
- Ice pack re-use
- Gloves in some locations
- Emory: all lab plastic, glass, metal, white paper, cardboard
GREEN LABS AT EMMOY
What to recycle in labs?

Remember: Contact Environmental Health and Safety, tel 404.727.5022 or ehs@emory.edu, with questions about disposal of bio-medical waste, non-alkaline batteries, and fluorescent bulb disposal.

ALL REGULATED MATERIALS IN RED BAGS AND RED BOTTLES MUST BE EMPTY AND FREE OF HAZARDOUS MATERIALS.

INCLUDING: Chemical Biological Radioactive Material

Co-mingling Bin

Plastics
- Plastic water bottles (NO bags)
- Bottle caps, disposable cups
- Ziploc bags, plastic straws
- Plastic utensils

Mixed Paper/Cardboard
- Includes uncoated paper, uncoated paper labels, corrugated boxes
- Envelopes, plastic
- Plastic
- Corrugated cardboard in designated container/pile location

Glass
- Uncoated, non-metallic, non-laminated, non-coated
- Appliance, wine bottles, uncoated

Metal
- Aluminum cans (NO food)
- Steel—aluminum drinking cans. Recycle bin for larger cans

White Paper Bin

- Uncoated, non-metallic, non-laminated, non-coated
- Office paper
- Envelopes
- Plastic

Cold Pack Bin

- Cold packs

Compost Bin

- Biodegradable materials
- Non-plastic

Remember, it is always best to reuse or repurpose materials, then...

PLEASE RECYCLE!

Contact Emory with any questions regarding repurposing lab supplies, equipment or Styrofoam containers:
Deena Feher@emory.edu 404.727.5275
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For more information please visit:
fs.emory.edu/recycling
Landfill Diversion in Research and Clinical Laboratories

DOWNSTREAM Discussion

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Emory’s Sustainability Vision

Sustainability is related to the quality of life in a community—whether the economic, social, and environmental systems are providing a healthy, productive, and meaningful life for community residents, present and future.
2025 Sustainability Goals

**Energy**
- Goals: 50% reduction per square foot
- Current: 27.2%

**Food**
- Goals: 75% local or sustainable
- Current: 46.4%

**Waste**
- Goals: 95% diversion from landfill
- Current: 50%
Lab Recycling models: 3 institutions, 3 ways

- Emory University co-mingled model
- Cleveland Clinic downstream sorting model
- CU Boulder separated recycling model
What to recycle in labs?

WHITE PAPER

No mixed paper, paperboard, napkins or paper towels

Emory Recycles

If you don't know, please contact us
Deena.Keclen@emory.edu  404.727.9275  Claire.Wall@emory.edu  404.712.8921
What to recycle in labs?

COLD PACKS

No Styrofoam or packing materials

sustainability initiatives

EMORY RECYCLES

IF YOU DON'T KNOW, PLEASE CONTACT US
Deena.Keefer@emory.edu 404.727.9325 Claire.Wall@emory.edu 404.712.8921
What to recycle in labs?

PAPER TOWELS FOR COMPOSTING

No Hazardous Materials

sustainability initiatives
IF YOU DON'T KNOW, PLEASE CONTACT US
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What to recycle in labs?

CO-MINGLED RECYCLING

PLASTIC
(including 1 to 6)

MIXED PAPER

METAL

GLASS

RINSE CONTAINERS AND DEFACE LABELS

sustainability initiatives

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Lab Recycling Process Map

Step 2: How do I recycle my non-regulated materials?

START
Lab has a non-regulated material for disposal.

Is the material plastic?
Yes
Is the material Styrofoam?
Yes
Return to vendor if possible OR dispose in regular trash.
No
Place in Comingled recycling bin.
END

No
Is the material tin?
Yes
Place in Comingled recycling bin.
END

No
Is the material glass?
Yes
Dispose in regular trash.
END

No
Is the material aluminum (includes foil)?
Yes
Place in Comingled recycling bin.
END

No
END
2 current challenging waste streams that incorporate all 3 sectors being discuss today:
• Upstream
• Onsite
• Downstream
To date at Emory

Upstream: Suppliers : Reduction : Take-back
Onsite : Collections : Reuse?
Downstream: partnerships for REUSE, new possibilities for recycling

Challenges

- Durability
- Perception
- Transportation
- VOLUME
University of Wisconsin
Boxable

Video credit goes to Brooke Marten, UW student
Takeaways

- Broad conversation with solutions from manufacturers, suppliers, recyclers
- Extended producer responsibility = closed loop system
- Perception/liability
- Recycling innovations that address cost
Questions _Contact Us

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Discussion

Please share a brief description of an innovation in upstream, onsite, and/or downstream that your institution is doing.

How has your institution overcome the barriers presented today or others?

What can your industry do to support higher diversion rates and better flow of materials through research and clinical laboratories?