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**Introduction to HPRC:**  
**A Value Chain Approach to Improving Recycling in Healthcare**  
March 28 & 29, 2019 | Microplastics in the Urban Environment Conference

# Current State of Healthcare Plastics Recycling

- Healthcare facilities in the United States generate approximately **14,000 tons of waste per day**, most of which is being disposed of in landfills or by incineration.
- It is estimated that between **20 and 25 percent** of that 14,000 tons can be attributed to **plastic packaging and plastic products**.
- In addition, **85 percent** of the hospital waste generated is **non-hazardous**, meaning free from patient contact and contamination.



# About Healthcare Plastics Recycling Council

HPRC is a private, **technical coalition** of industry peers across healthcare, recycling and waste management industries seeking to...

- Collaborate across the **value chain** to improve **recyclability** and **market value** of plastic products and packaging within healthcare
- Provide **resources, tools** and **shared learnings** to manufacturers, hospitals and recyclers, enabling them to implement viable, safe, and cost-effective recycling solutions

**Baxter**



**DUPONT**

**EASTMAN**

*Johnson & Johnson*

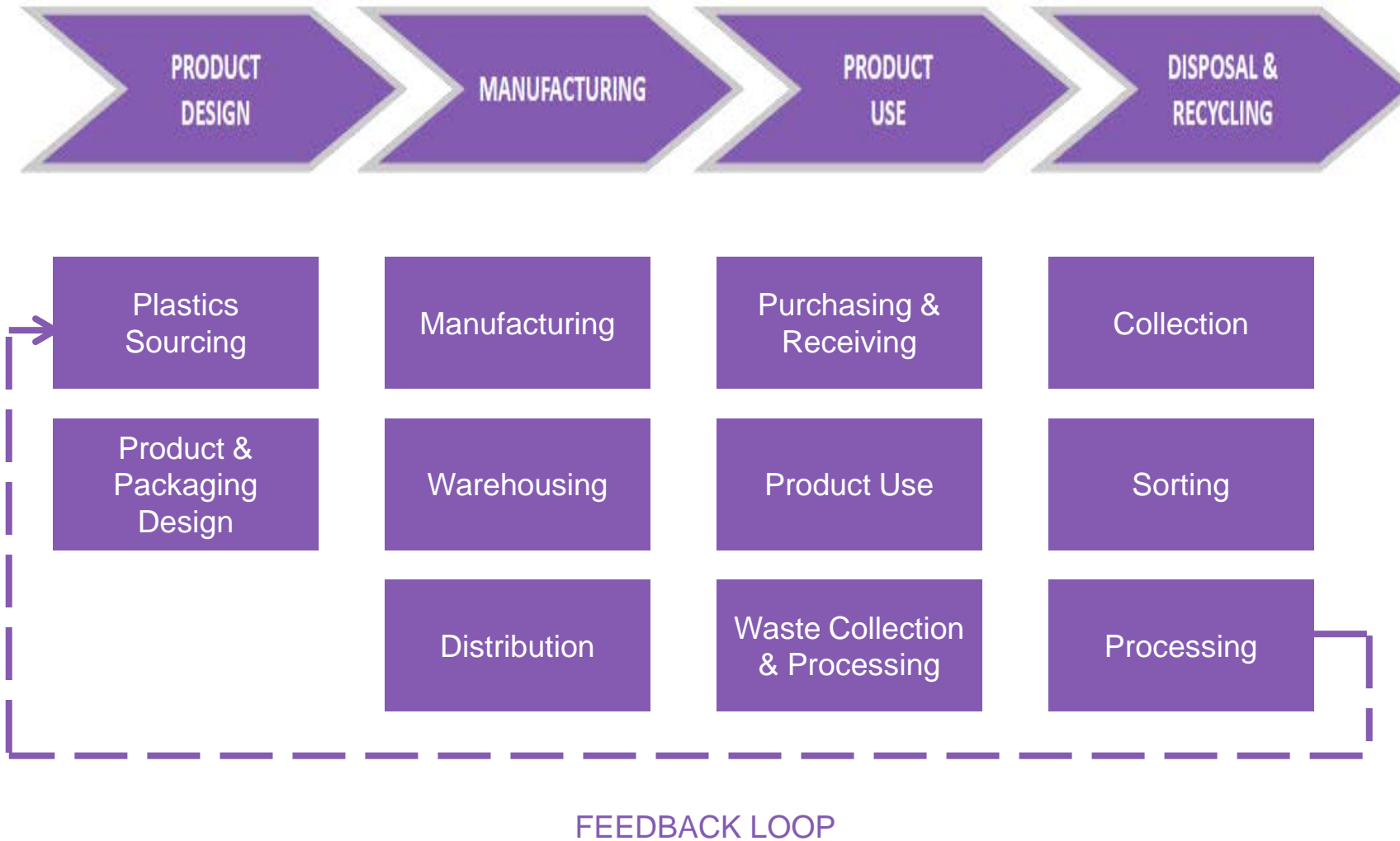
**Medtronic**

**ThermoFisher**  
SCIENTIFIC

**Nelipak**<sup>®</sup>  
healthcare packaging



# Looking at the Entire Value Chain



## Value Chain Approach

HPRC is unique in its focus on identification of plastics recycling barriers and solution development along the entire value chain.

HPRC is seeking to affect plastics recycling from healthcare product design and manufacturing through product use, disposal and recycle.



# Key Stakeholders

## Healthcare Facility Advisory Board

Established to provide valuable voice of the customer insight to HPRC activities.



## Strategic Partners

We recognize that there exists many opportunities for collaboration in the plastics recycling space.



# Common Recyclable Healthcare Plastics

## Rigid Plastics



## Flexible Plastics



# Our Work: Inspiring & Enabling Recycling

## Completed

- Value Chain Mapping
- Product and Packaging Design Guidelines
- Hospicycle Toolkit
- Environmental Impacts of Recycling (LCA)
- Hospital Benchmark Survey
- Resin Identification Code Position Statement
- Materials Testing
- Regional Recycling Pilot
- Case Studies

## In Progress...

- Recycler Guidance for Healthcare Plastics
- Mixed Flexibles  
Recyclability  
Assessment
- Recycler Vendor Directory
- Circular Healthcare Plastics White Paper

Find more info at [www.hprc.org](http://www.hprc.org)

# The Challenge with Flexible Plastics

- Up to 60% of plastic waste generated by healthcare facilities is flexible material, often composed of multi-material laminates.
- Hospital Perspective
  - “There is A LOT of this stuff and no one will take it!”
- Recycler Perspective
  - “We are not sure what these materials are, how to process them or who will buy them!”

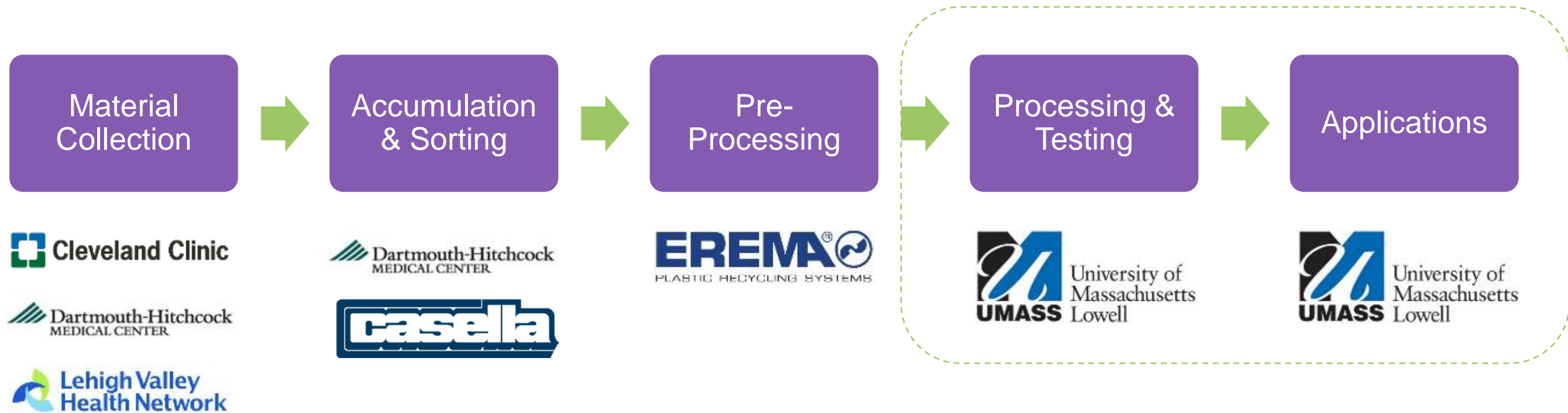




# The Project with UMass-Lowell

## A Mixed Flexibles Recyclability Assessment

- Determine viable strategies for recycling multi-material flexible plastic
- Test whether commercially available compatibilizers improve blend properties
- Identify potential end market applications for the recycled product





# The Process in Photos





# Key Learnings

## Successes

- **Material Collection:** Effective sorting processes exist (but requires diligence)
- **Pre-Processing:** Technology is effective at removing non-conforming material (the quality and consistency of pellets exceeded expectations)
- **Testing:** Conclusions suggest potential applications (and compatibilizers help!)

Current packaging materials don't pose any significant recycling challenges.

## Challenges

- **Material Collection:** With the wide range of materials, sorting process can be labor intensive
- **Pre-Processing:** Contamination remains an occupational concern when dealing with healthcare waste streams
- **Testing:** Results show potential uses for PE and PP streams, but stream consistency to attract buyers is a challenge

Assuming we can resolve consistency issue, we still need to meet volume/supply expectations.



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