

NPE 2024 | **MADE
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The Plastics Show

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INDUSTRY ASSOCIATION

Doing No Harm: Developing a Sustainable Medical Device Recycling Program

May 8, 2024



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Doing No Harm: Developing a Sustainable Medical Device Recycling Program

Jay Thomas

Executive Director • Vinyl Sustainability Council

Andy Antil

General Manager • Westlake Dimex



Vision:

Connecting the vinyl value chain to continuously improve the sustainability of the industry.



Impact Category Priorities

Resource Efficiency
Emissions
People & Community

Doing The Hard Work



+Vantage Vinyl Company Verification Program

Verification of Sustainable Business
Operations
5 Priority Areas
29 Guiding Principles

Building Credibility

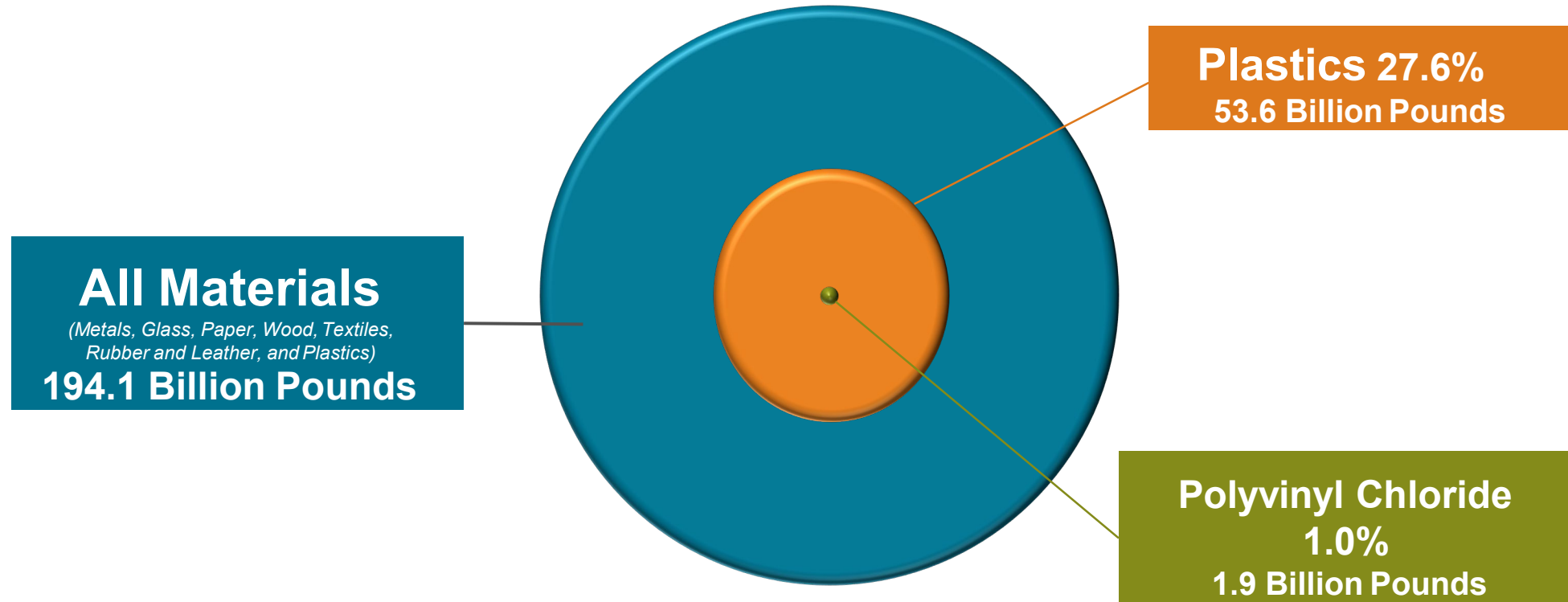


Story Telling & Brand Building

Awareness
Perception
Preference

Getting Credit

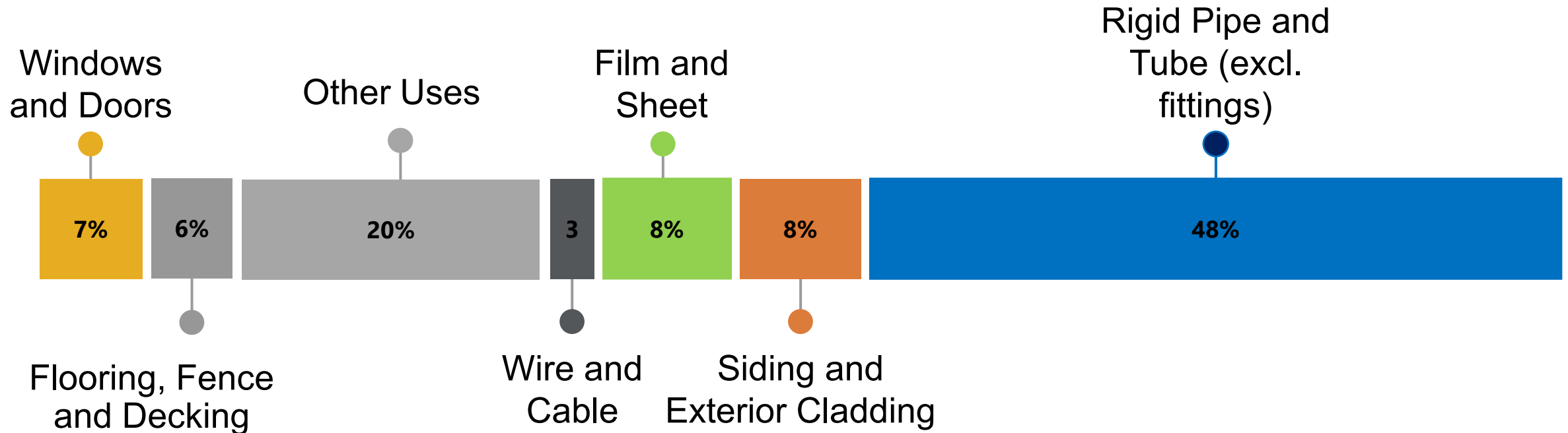
EPA Municipal Solid Waste: Landfilled PVC in Perspective



Source: U.S. EPA Municipal Sustainable Materials
Management Report for 2017

U.S. and Canada 2022 Vinyl Markets by Process

Domestic Resin Consumption: 11.5 Billion Pounds



Source: 2023 American Chemistry Council Resin Report

Titus Secondary Recovery Study for VI

- Conducted in May 2020 in Los Angeles, California
- Found less than 0.25% vinyl in secondary MRF feed from curbside recovery
- >15 different products found – pipe, fittings, films, blister packs, **IV bags**, clamshells, jars and lids, security packaging, gloves, inflatables, hotel/credit cards, wires, etc.



Industry Recycling Benchmarks

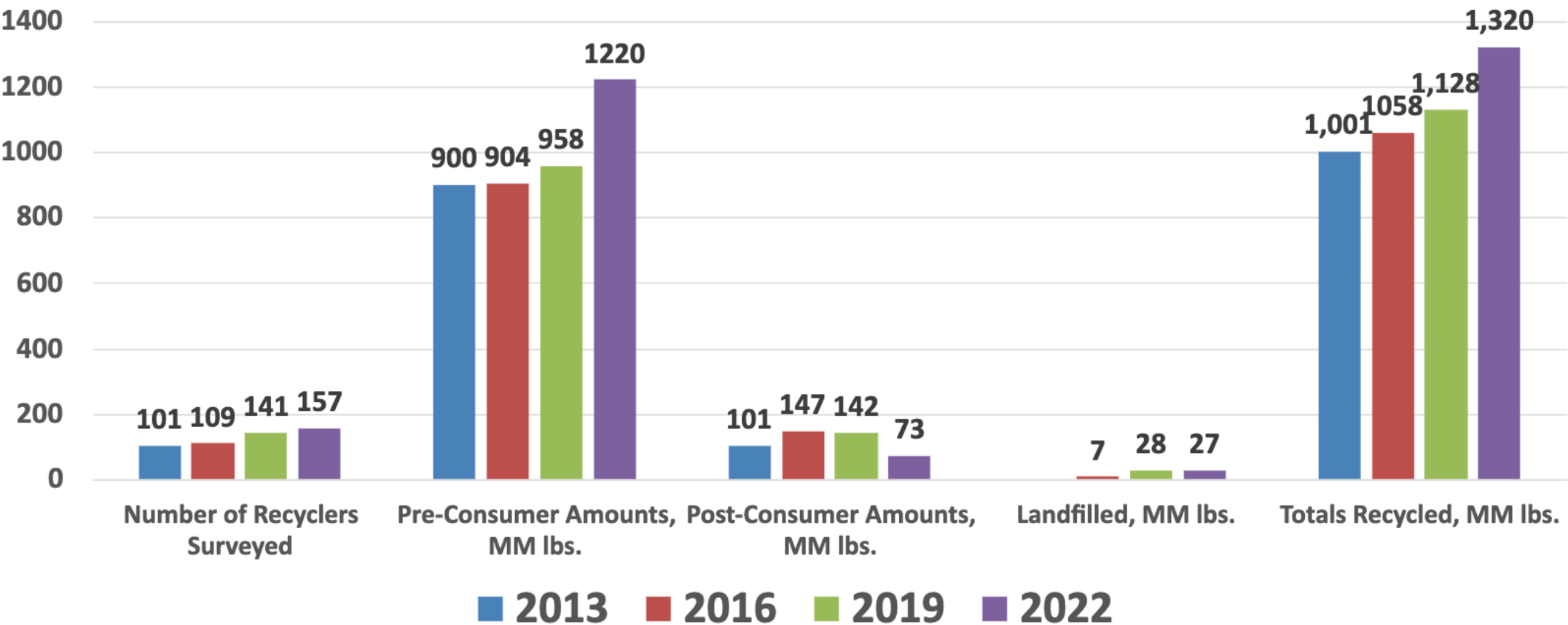
Recycling rates for all PVC materials is comparable to commonly recycled packaging. The Vinyl Institute (VI) assessed the recyclability of all PVC materials at the end-of-life, not just certain components. PVC compares favorably to EPA recycling rates for common post-consumer packaging materials.



Note: PVC recycling rate is estimated as Total Recycled Volume / (Total Recycled Volume + EPA Estimate for Municipal Solid Waste + VI Estimate for Construction & Demolition Waste)

U.S & Canada Vinyl Recycling Summary

Triannual Survey Results, 2013 – 2022



Source: Vinyl Institute Recycler Surveys

THE VINYL INDUSTRY RECYCLING ROADMAP

THE START

THE JOURNEY

THE GOAL



VIABILITY™

VINYL INSTITUTE
RECYCLING GRANT PROGRAM

VSC



**\$3 Million in Grant Funding for
PVC Recycling Infrastructure**

**Help Us Meet Our Industry's
Post-Consumer Recycling Goal
and**

**We'll Help You with Funding to
Get It Done.**



PVC Medical Device Recycling



PVC Medical Device Recycling Around the World

- Australia and New Zealand
- United Kingdom
- South Africa
- Guatemala
- Columbia
- Thailand
- Canada
- United States



Typical Recycled Products



Ventilation Masks



Nasal Canula



Anesthesia Masks

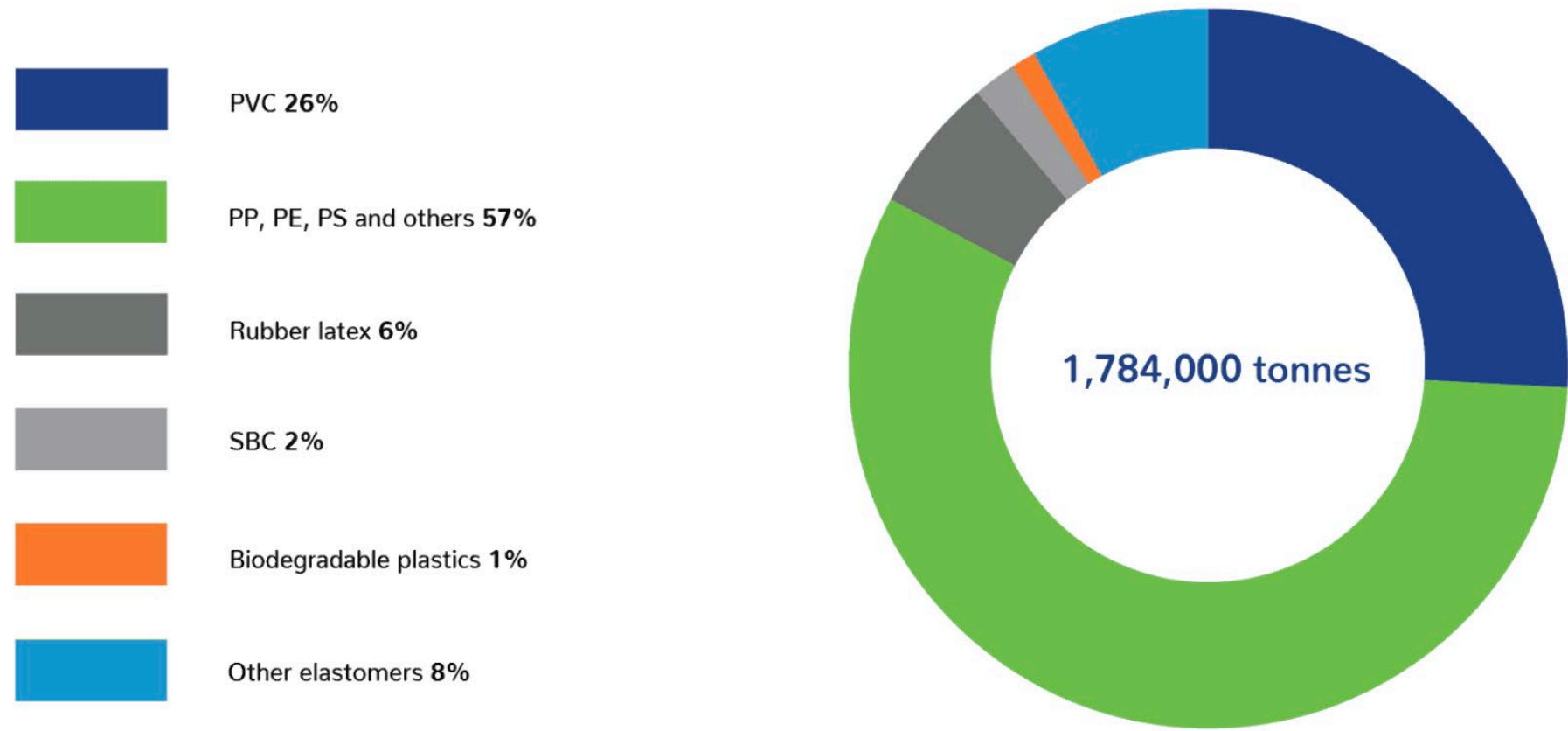


Tubing



Saline Bags

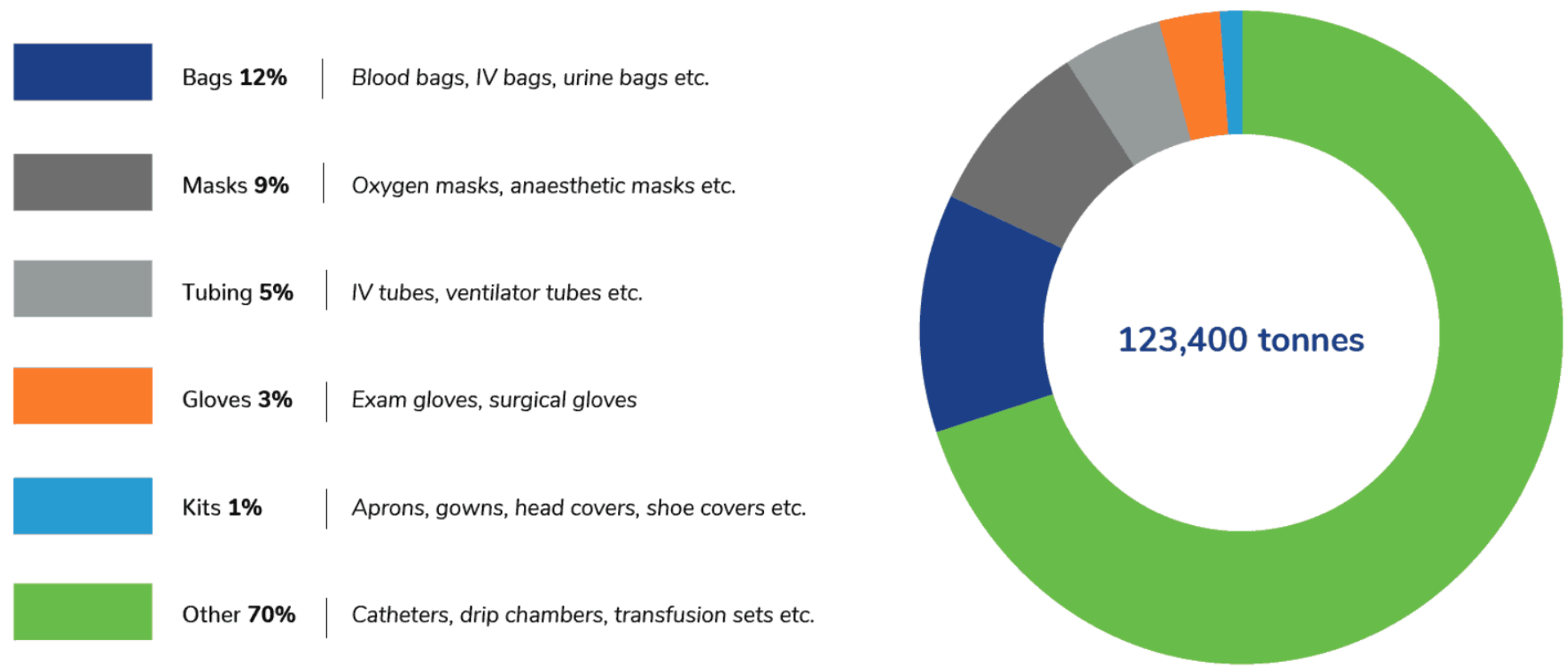
Medical Devices Globally – PVC vs. Other Polymers VSC



Note: Shares calculated based on volumes of unformulated polymers

Source: Europe Medical Polymer Market Report, Global Market Insights, 2021

PVC uses in medical devices and equipment, Europe



Source: Europe Medical Polymer Market Report, Global Market Insights, 2021

U.S. Pilot Projects

Andy Antil

General Manager • Westlake Dimex



Westlake Dimex

700,000+

Sq. feet of production & warehousing space spread across three campuses in Marietta, Ohio

100MM+

Pounds of recycled plastic materials processed annually, making Westlake Dimex one of the largest recyclers of post-industrial resins in the US

30+

Years of manufacturing with recycled plastic resins

2021

Acquired by Westlake Company

2023

Became part of the Westlake Global Compounds Group



Recycled PVC Compounds & Toll Processing Services



Flexible PVC

Independent, third-party certified to contain a minimum of 73% recycled content.

GreenCircle Certification Number: 23-0515

Rigid PVC

Independent, third-party certified to contain a minimum of 98% recycled content.

GreenCircle Certification Number: 23-0520

Westlake
Dimex





U.S. Pilot Projects

Northwestern Memorial Hospital, Chicago, IL

Rochester Regional Health, Rochester, NY

Houston Methodist, Houston, TX

SITE AUDIT

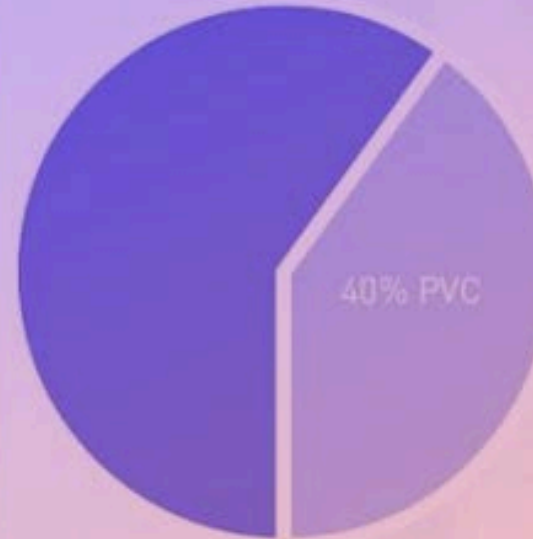
- Identify Target Areas
- Identify Places to Drain/Rinse Bags
- Determine Hamper Locations
- Review Internal Logistics
- Determining Baler Location
- Determine Material Storage (~2500lbs baled)

DEVICE REVIEW

- Photograph PVC Devices from Target areas
- Review Storage Location(s) at facility
- Review Devices for Non-PVC Content

ONBOARDING & TRAINING

- Identify Team Champion(s) in Target Areas
- Develop & Distribute Work Instructions
- Develop Training Video
- Place MEDIVINYL+ Stickers Target Area Supply room



DID YOU KNOW THAT 40% OF
ALL PLASTICS-BASED MEDICAL
DEVICES ARE MADE FROM PVC?

Hamper & Bags

Current cost \$175-250

Foot Pedal with Lid

Uses 36–42-Gal PE liner/bag

Currently suggesting a Violet bag/liner (Violet for Vinyl – Purple for PVC)

Signs for Hamper Lid and Wall

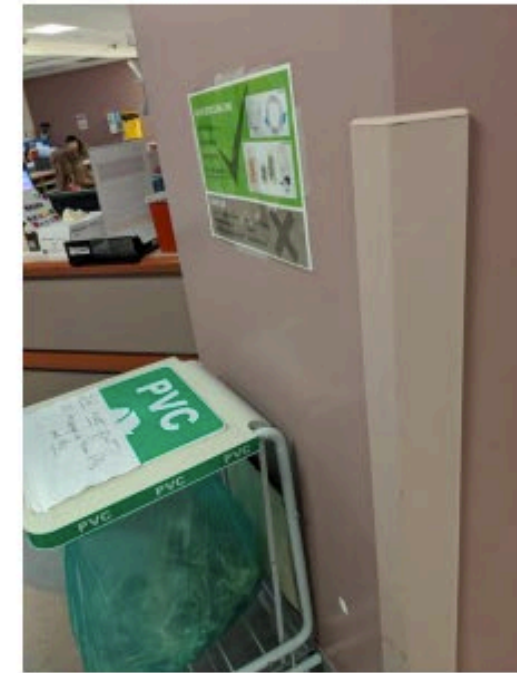


Hamper Location

Hampers can be located near sink (Easy for draining bags)

Safety Scissors to be attached to Hamper for Non-PVC removal

Hampers should be close to garbage for disposal of Non-PVC



MEDI VINYL+

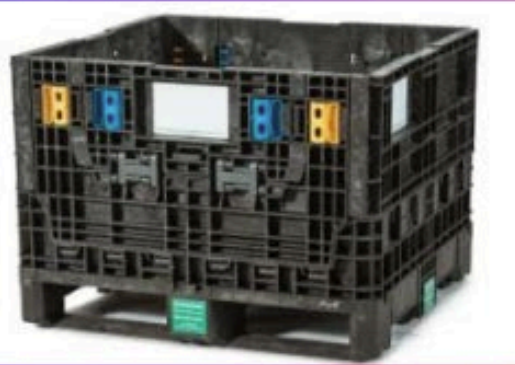
PLEASE *PVC* RECYCLE

 All PVC Oxygen Masks/Respirators <small>(If able, remove strap & metal clip)</small>	 PVC Tubing
 PVC Nasal Canulas	 PVC Anesthesia Circuit Masks
 PVC Fluid Bags <small>(Empty)</small>	 PVC Fluid Bags <small>(Empty)</small>

Leave Out

- Medication added fluid bags
- Contaminated materials
- Anything from isolated patients
- Non-PVC IV fluid bags
- Xytotoxic/Regulated medications/wastes
- Non-PVC Gloves





Logistics

Baler to be installed at each facility

Storage area for ~2500 lbs "finished bales" to be identified

Storage method to be determined

Pick up frequency to be determined by

Pick up cost of \$250.00-\$500.00 for LTL 1
Gaylord/Container space per pick up

Flat monthly pick-up fee is the goal to be able to spread program across USA

Once more facilities join, schedules can be developed for regular pick ups

Bales can be weighed at pick up

Carbon Footprint on MediVinyl+ is lower due to heavier weight per pick up

Bales @ the Dock

Stainless-Steel Baler cost ~12-25K

- smaller footprint
- different sizes available

Non-Stainless-Steel cost ~ 8-20K

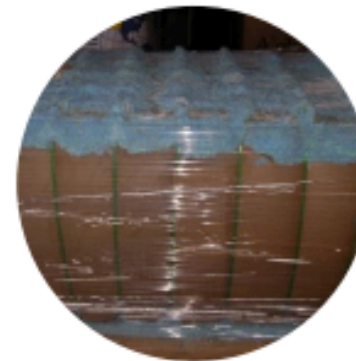
- Larger footprint
- Larger bales

Finished Bales can be

- Stored in Returnable Containers
- Stacked on skids & Stretch wrapped

Ideal Storage of 1500-2500 lbs net at facility

- Greatly reduces pick up cost
- Indoor or Outdoor Storage options
- Loading will require Forklift/Dock



Examples of Products using Medical RPVC





Discussion

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A yellow industrial robotic arm with a black gripper, positioned behind the text. The arm is mounted on a base and has several joints. The gripper is at the end of the arm, pointing towards the right.

MADE FOR YOU