

Hospicycle

A Plastics Recycling Guide for Hospitals

Starting a Plastics Recycling Program at Your Hospital

Healthcare facilities in the United States generate approximately 6,600 tons of waste per day¹. It is estimated that between 20 and 25 percent of that 6,600 tons can be attributed to plastic packaging and plastic products². In addition, 85 percent of the waste generated is non-infectious³. In conclusion, the potential for plastics recycling in hospitals is significant to both environmental and human health impacts.

While hospitals have been champions of recycling for decades, efforts have largely focused on food service and administrative functions. The challenges that hospitals are facing now are how to successfully integrate recycling practices into a patient care setting, and understanding the economic, regulatory, resourcing and infrastructure nuances that come with it. Focusing on clean, non-infectious healthcare plastic waste materials, the Healthcare Plastics Recycling Council (HPRC) has developed this guide with supporting tools to help hospitals navigate the process of initiating a plastics recycling program in a patient care setting from initial planning and business decisions through program implementation and improvement considerations.

Acknowledgements

The content presented herein is based on data and lessons learned from plastic waste recycling pilot study work and from valuable insight provided by Stanford University Medical Center and Kaiser Permanente, who serve in an advisory role to HPRC. As we continue our pilot study work and develop new data, we will update this guide and associated tools.

¹ Kaplan, Susan, Blair Sadler, Kevin Little, Calvin Franz, and Peter Orris. "Can Sustainable Hospitals Help Bend the Health Care Cost Curve?", The Commonwealth Fund, Issue Brief, November 2012.

² Lee, B., M. Ellenbecker, and R. Moure-Eraso. "Analyses of the Recycling Potential of Medical Plastic Wastes." Waste Management (2002): 461-470

³ Grogan, Terry. "Solid Waste Reduction in US Hospitals." Hospital Engineering & Facilities Management (2003): 88-91.

Before You Begin

Before you begin implementing a healthcare plastics recycling program, there are several considerations that should be evaluated and implemented. A healthcare plastics recycling program is an advanced recycling option, so consider your hospital's commitment to sustainability to gauge whether this is an appropriate tool in your sustainability program. There are also financial considerations, and resourcing and equipment needs that should be evaluated prior to getting started.

Initial Waste Characterization

The focus of this guidance document is to assist hospitals in establishing a recycling program for clean, non-infectious plastic products and plastic packaging. To help you identify the types of materials to target and approximate quantities of waste plastics, we have developed the following tools:

- [Common Recyclable Healthcare Plastics](#)
- [Typical Waste Characterization](#)

Commitment to Sustainability

By considering recycling of healthcare plastics, it is apparent that your hospital is interested in advancing a sustainability program. Be prepared that the recycling of healthcare plastics is not as easy to implement as other sustainability initiatives may be. We have developed these tools to help you assess if your hospital is ready to implement a plastics recycling program and to develop a business case to gain approval and support from executive management.

- [Checklist to Assess Readiness](#)
- [Guide to Developing a Business Case](#)

Economic Analysis

Is a healthcare plastic recycling program a financially-viable option for your hospital? The Economic Pro-Forma tool will help your hospital answer that question by walking you through the process of evaluating your waste streams and recycling program requirements. Be prepared for a cost neutral recycling program – will this be acceptable in your hospital?

- [Economic Pro-Forma Tool](#)

Critical Infrastructure

There are several critical infrastructure components that are necessary to evaluate prior to including healthcare plastics in your hospital's recycling program.

1. Dock space to conduct sorting/processing and dock-out materials transfer; and
2. Equipment and supplies to manage the plastics (e.g. baler, compactor, carts, etc.)

At this point in the process, a preliminary evaluation of these infrastructure components is appropriate, with a more detailed evaluation to be completed during the "Getting Started" phase. We have developed these tools to assist your hospital in evaluating your internal infrastructure so that you can assess if additional resources may need to be secured prior to initiating a healthcare plastics recycling program within your hospital.

- [Dock Space Guideline](#)
- [Recycling Equipment Guideline](#)

Getting Started

Once you have confirmed your hospital's commitment to sustainability, and evaluated economic viability and critical physical infrastructure requirements, it is time to develop your hospital's healthcare plastics recycling program. Tools within this section will help you characterize your waste, create partnerships to recycle selected healthcare plastics, and establish a recycling strategy for managing the plastics included in your program.

Detailed Waste Characterization

In the initial waste characterization, you identified common recyclable healthcare plastics and approximate quantities of healthcare plastics that might be recyclable at your hospital. Now it is time to begin preparing a more detailed waste characterization of recyclable plastics for your hospital, starting with waste mapping. Waste mapping is the process of identifying waste quantities and types generated from an activity or area, and mapping it from the time and place where the waste is created to the time and place where the waste is hauled off site.

The Plastics Mapping Tool will help guide you through the process of identifying plastics waste generated and how it is currently handled at your hospital – who currently moves it, where it goes within the hospital, how it is handled prior to the hauler receiving it. Review the section on common recyclable healthcare plastics to help identify recyclable plastic wastes at your hospital. Remember – the focus should be on recycling clean, non-infectious plastic waste materials.

Lastly, it is critical to understand the regulatory requirements associated with collecting, managing, transporting, and recycling healthcare plastics. We have listed resources to help you identify and understand the regulations that may apply to a healthcare plastics recycling program so you can be prepared when discussing recycling options with your recycling team and business partners.

- [Plastics Mapping Tool](#)
- [Common Recyclable Healthcare Plastics](#)
- [Regulatory Compliance](#)
- [Typical Waste Characterization](#)

Recycling Partner

Selecting a recycling partner/materials recovery facility (MRF) is a critical component of developing the recycling strategy. Your recycling partner can provide valuable insight for running your program effectively. Also, your recycling partner's operations will affect your program depending on whether they can take a single stream of mixed recyclables, including plastics, or require some level of segregation. Your recycling partner's cost structure will be a critical portion of the business case and economic pro forma, as well.

To identify a recycling partner, start with your current recycling partner to determine if they can or will take healthcare plastics. The tools below provide suggestions on finding a partner and guiding the discussion to help find the right partner.

- [What is a MRF?](#)
- [Finding a Recycling Partner](#)
- [Questions to Ask a Recycler](#)

Recycling Strategy

There are several different strategies for healthcare plastics recycling that can be implemented in a hospital, depending on the resources available. A limited program may be appropriate due to specific plastic types accepted by the MRF or to pilot a program within a particular area of the hospital. We have developed guides for a few proven strategies to consider when setting up your program.

- [Recycling Strategy Selection](#)

When developing your recycling strategy, consider the following safety aspects:

- Establish your first recycling program in low patient acuity areas first, developing the process fully before expanding to high patient acuity areas such as ER/ICU.
- Utilize appropriate personal protective equipment (PPE), both at the hospital for staff collecting the plastic materials and at the MRF/recycler for incoming inspection of materials.

Ambiguous materials should be avoided, such as plastic products with similar appearances where one type of plastic product is acceptable and a similar-looking product is not acceptable. An example is a metalized plastic bag with a shiny metal layer, like the packaging found on a scrub brush with antimicrobial and skin cleaner, which may not be acceptable for recycling.

Running the Program

Are you ready to implement your healthcare plastics recycling program? The following tools provide guidance and tips for setting up the resources and logistics for running the program, establishing a training program, measuring progress and success, and tracking the program economics.

Resources

Now that you are ready to start your plastics recycling program, ensure that the resources, infrastructure and logistics are established and well aligned for program implementation. Consider how you will run this program internally and assign appropriate equipment and resources. Understand how the MRF/hauler would like to receive this material and agree upon a mutually beneficial dock-out solution to minimize dock space and prevent cross-contamination. Ideally, your plastics recycling program will be well aligned with existing recycling programs and waste management work flow to minimize additional efforts associated with recycling plastics. Consider any staff concerns or union contract negotiations that will be required as you identify the resources necessary for implementation of the recycling program.

The following guidance will help you establish and align the right resources needed to run the plastics recycling program, including a set of helpful tips to help you develop a streamlined materials flow process for identifying, collecting, sorting and segregating (as needed), and transferring healthcare plastics.

- [Dock Space Guideline](#)
- [Equipment Guideline](#)
- [Materials Flow and Logistics](#)

Training Program

Training will be a necessary component of any healthcare plastics recycling program to ensure that safety and program requirements are maintained throughout the process and that MRF/recycler requirements are met for successful recycling. Successful programs will require a training component for involved personnel, as well as tools that serve to remind staff placed in visible and strategic locations. Consider establishing minimum requirements and qualifications for the trainer, such as requiring trainers to have visited the recycling partner's operations at least once to understand how collected materials are processed and specific restrictions for collected materials.

Training templates and tools are shared in the modules below, and should be modified to reflect your hospital's specific program with respect to affected personnel, departments, and plastics included in the program.

- [Poster Template](#)
- [Training Template](#)

Remember to continue the training program through periodic refresher training and training for new personnel. As your program matures and information is collected from hospital and MRF/recycler audits, incorporate audit findings into the training materials. Seek feedback from your MRF/recycler on compliance and enhancements to the program, and incorporate this feedback into the training. And update your training materials as policies or procedures change.

As a best management practice, consider providing coaching and training to the MRF/recycler on materials that will be sent from your hospital, how to identify what should not be in the waste stream, what needs special handling, how to identify if something is or is not medical waste, and how to manage medical waste and other unknown and nonconforming materials. This training can help the MRF/recycler with its safety program and help the staff there respond appropriately to unknown and nonconforming materials in your waste stream.

Metrics of Success

Metrics to measure success of your plastics recycling program are a key to effective long term management of the program. Because healthcare plastics recycling is a relatively new initiative, the healthcare industry has not defined standard measures yet for plastics recycling. As a general benchmark, hospitals should be able to routinely achieve overall recycling rates of 15%.

There are several typical types of information that should be gathered from the MRF/recycler and within your hospital that will help monitor progress and gauge your program's effectiveness. See our metrics guide to help you establish data collection points and begin developing Key Performance Indicators to help you track progress and communicate successes.

- [Beginning to Collect Metrics](#)

Program Economics

Once the program has been implemented and operational for a period of time, it is a good practice to revisit the economic pro-forma and replace initial assumptions with actual data to determine the financial impact of the program. Review the economic pro-forma periodically, and especially as changes are made to the recycling program, to monitor the economic aspects of your program and identify opportunities for more cost savings.

- [Economic Pro-Forma Tool](#)

Improving the Program

Maintaining effectiveness and achieving continuous improvement in metrics is often a desire when implementing recycling programs, especially after running the program for a period of time. After reviewing the metrics and updating the economic pro-forma, it will be useful to develop targets and goals and establish a communication plan to share the results with your colleagues and other interested stakeholders. To ensure continued effectiveness, it is also imperative to regularly audit the program both within the hospital, at the MRF, and at the recycler. If there are findings in the audits, you may choose to offer incentives as part of this program to encourage continuous improvements towards a more efficient or effective program. Finally, problems will arise within this program. A FAQ tool has been developed to offer preliminary answers to some common questions or problems that arise.

Setting Targets & Goals

After the plastics recycling program has been established and baseline data and metrics have been collected and validated, it is time to establish targets and goals for continuous improvement in the program. We have developed guidance on factors to consider when developing targets and goals and suggestions on plastic recycling goals that can be considered for your hospital.

- [Guide to Targets & Goals](#)

Communication Plan

Now that the healthcare plastics recycling program has been implemented, incorporate it into your hospital's overall sustainability communications strategy to share successes and receive continued buy-in from the stakeholders.

Track the program metrics and KPIs and share successes internally, with business partners, and with other stakeholders. Collect/review and provide feedback to hospital (pictures and visual aids)/retrain personnel. Review the communication plan guidance for more tips on successful communication on plastics recycling. Consider what, if any, external communication plans may be needed. This may include information on the hospital website or applications for external award and recognition programs, including those from national healthcare organizations or local / state level recycling or sustainability organizations.

- [Communication Plan Guide](#)

Audit Program

After implementation of a healthcare plastics recycling program, periodic review and auditing should be conducted to ensure proper adherence to the program, maintaining safety at the hospital and MRF by ensuring contamination does not occur.

Follow-up at the hospital is essential – the program must be reviewed on a regular basis. Audit the collected recyclable plastics and the collection, transfer, and dock-out process to provide continuous feedback to those implementing the program. A regular training process for new employees involved in the program will also help ensure continued success.

Consider implementing an audit program to review MRF/recycling operations on a regular basis. The audit can include a regulatory compliance evaluation and as well as review of any changes in operations that might affect your hospital recycling program.

The audit guidelines can help you estimate an audit program for your hospital and for your MRF/recycling partner.

- [Hospital Audit Guideline](#)
- [MRF/Recycler Audit Guideline](#)

Stakeholder Incentives

As your plastics recycling program matures, consider incentive programs as encouragement for different stakeholders.

Incentives for the Hospital

Consider competitions between different areas based on % increase in quantity and/or % decrease in contamination levels. Think of rewards that will motivate employees at your hospital. Consider having teams contribute and/or collect information for applications to regional and national recognition programs, and consider having them participate in award presentations.

Incentives for the MRF/Recycler

Discuss incentive options with your MRF/processor for increasing waste quantities and reducing contamination levels.

Potential Problems and Troubleshooting

It is inevitable that questions and challenges will arise during the implementation of a healthcare plastics recycling program. In the future, a FAQ will be developed as common questions and challenges are identified. Please review other documents included in the “starting your program” and “running your program” sections for information now, and contribute comments/questions to this email address so we can develop the FAQ and reach out to the HPRC members and advisory council to address specific challenges.

HPRC is a private technical coalition of industry peers across healthcare, recycling and waste management industries seeking to improve recyclability of plastic products within healthcare. HPRC is made up of ten brand leading and globally recognized members including Baxter, BD, Cardinal Health, Covidien, DuPont, Eastman Chemical Company, Engineered Plastics Inc., Johnson & Johnson, Kimberly Clark, Perfecseal Inc., and SABIC. The council convenes biannually at meetings hosted by an HPRC member that include facility tours to further learning and knowledge sharing opportunities through first-hand demonstration of best practices in sustainable product and packaging design and recycling processes. For more information, visit www.hprc.org.