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Cover Photo Courtesy of Kate Worley at Minnesota Waste Wise.



*The recycling industry is  
a complex process industry  
driven by commodity markets.  
As a consequence, making the  
case for recycling blue wrap material  
may be difficult on economics alone.*

## The Hard Case for Blue Wrap Recycling

BY PERRY A. TRUNICK

**M**ost of the successful blue wrap recycling programs in place at hospitals and medical centers today started as grassroots efforts to reduce the amount of waste the hospital was sending to the landfill. The typical story starts with some concerned operating-room team members recognizing that the blue wrap coming into the facility covering sterile surgical kits was nearly as clean going into the waste stream. Here are some of their best practices.

The cloth-like appearance and texture of the polypropylene may be part of the success of blue wrap, but it is also part of the reason it was not more widely recycled. Carrying a number 5 resin identifier for recycling purposes, blue wrap is in a class with a variety of industrial and food packaging products. Its durability makes it a candidate for a number of products once it is recycled. If that would make it popular for recycling, the fact it cannot be used again in its original medical application means the original producer is less likely to be interested in taking it back. Others may be skeptical of its source – surgical services – and avoid it over concerns they might be forced to deal with bio hazards. In the latter case, its distinctive appearance turns it into a recycling pariah.

The real hazard is not biological. Indicator strips attached to the blue wrap surgical kits use a lead-based indicator. That, and the adhesive, have raised concerns for potential recyclers. But, indicator tapes have been developed that eliminate the lead hazard, leaving only the adhesive to deal with. In either case, the indicator strip can be removed before the blue wrap is disposed of in a recycling container.

#### Speaking Volumes

**H**ospitals in the United States produce nearly 6 billion tons of waste per year. Only about 15% of hospital waste is infectious or medical waste. That's the waste that is highly regulated and requires the most care and cost in disposal. The other 85% looks a lot like any other institutional waste stream where the institution provides lodging, foodservice, and has administrative and operations functions.

At 45%, the largest component of hospital waste is paper, including corrugated packaging, according to the Environmental Protection Agency (EPA). Plastics follow at 15%, and then food, metals, and other at 10% each. Glass (7%) and wood (3%) round out the non-hazardous waste list.

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# The Hard Case for Blue Wrap Recycling

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Hospital plastics waste can include anything from the stretch wrap used on pallets of goods down to the plastic drink bottles used by patients, visitors, and staff. The total volume may be skewed by the fact that, in some cases, the blue wrap used in surgical services may be placed in bags with medical waste. This can be an unnecessary expense for the hospital. One estimate suggests 19% of the waste coming from surgical services is blue wrap. A Minnesota Medical Center fact sheet for blue wrap recycling indicates blue wrap represents 20% of operating room waste or 5% of total hospital waste.

Why all of the concern? One medical center with six operating rooms determined it produced 20,000 pounds of blue wrap waste in eight months. Another found it consumed 81,000 sheets of blue wrap material per year. A Maryland study said U.S. hospitals generate 7 tons of waste per day. Of the surgical waste in that total, 19% was blue wrap. For one hospital that put in a blue wrap recycling program, it recycled 8 tons in 12 months.

## Separation and Diversion

Whichever way you count the volumes the simplest approach to reducing disposal costs may be to separate the unstained blue wrap from regulated medical wastes and avoid the higher disposal costs. One medical center determined its operating rooms were generating 50 tons of blue wrap waste per year – 25% of their waste stream. As red-bag waste, it cost \$20,000 per year in disposal fees. When blue wrap was separated at the source and disposed of as municipal solid waste, the cost on that portion of the waste stream dropped to \$1,250.

Blue wrap is an effective replacement for hard cases, but some hospitals have been able to return to sterile, reusable hard cases. If the initial cost of the cases can be amortized over a suitable period, the business case for hard cases can sell the investment. But, many hospitals can't afford the initial cash outlay, or they have space constraints that make storage of the hard cases difficult.

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# The Hard Case for Blue Wrap Recycling

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These conversions typically compute the acquisition costs of blue wrap (about \$2.48 per pound in one example) and then estimate how much of the blue-wrapped materials could be effectively handled by hard cases. Multiplying the amount of blue wrap that would not be consumed by the current cost for the material yields the biggest part of the cost justification.

Other factors can come into play, such as costs of rehandling and sterilizing a percentage of the previously blue-wrapped instruments where the sterile barrier had been broken (arguably, not an issue with the hard cases).

But on the other side, a certain percentage of the items will still be more efficient or cost effective to handle in blue wrap, so add the price of blue wrap for those. The cost that seldom appears in the hard-case justification is the storage of the cases – including any necessary racking or shelving and the space allocation within the facility.

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## Starting a Pilot

One of the first steps in a blue wrap recycling initiative is to determine what you can generate. A “waste sort” that segregates the blue wrap for a sufficient time period will allow you to project some volumes. But even before that, some basic staff education is in order. Explain the need to segregate the blue wrap and provide adequately labeled bins and signage for the designated collection. It is a good idea to police the collection bin for the first two weeks of a 30-day trial, and educate staff about any discrepancies to improve compliance.

At the same time, locate other programs in the area. This is important for a number of reasons. One is that it will help you determine how much volume is already being recycled in the region. Another is to ramp up your learning curve on implementation by using their experience and internal education materials to guide your own effort.

If there are other blue wrap programs in your area, the market has already been defined. If not, you will need to find someone to take your recyclable blue wrap. It’s important to understand that the recycling industry is both a commodity marketplace and a process manufacturer. As Kate Worley, program director for Minnesota Waste Wise, points out, the distinctions aren’t always clear from directory listings under the “recycling” heading.

Talking to a commodity broker, even one who lists plastics as one of its commodities, may not get a positive response. That could be because the broker has not had a request from a processor for the type and grade of recyclable you are offering. Or, the broker may not have had a reliable supply of the commodity in sufficient volume to warrant searching out a processor willing to buy it.

Jen Ogden, RN, BSN, CNOR, said the biggest issue her group faced in making its blue wrap recycling program successful was finding someone to take the material. The OR Educator for Shawnee Mission Medical Center said, “We ended up finding a local company that melted it down and sold the recycled material regionally.”

Another hurdle Ogden acknowledges is the perception from the recycling industry that the materials are hazardous wastes. “We invited them to come to our OR to see exactly how blue wrap was handled, and to show them that it is not contaminated. We offer tours to anyone willing to make the trip to show exactly how clean this waste is.”

Most blue wrap is collected in the prep room before the instruments go into the operating room, adds Worley. That doesn’t change with recycling efforts in place, it just may involve a simple change in procedure. The same applies to the concern Worley heard from brokers about the lead-based indicator strip. Ogden says her group was first told they would

not need to remove the indicator strip, but then they were told it had to be removed before depositing the blue wrap in the recycling bin. Worley relates similar experiences and says good communication from the broker helped head off a potential problem – though it added an education step for the hospitals.

## Getting To Market

Armed with volumes and a prospective end market for the blue wrap, there are still a number of steps in the cycle that must be accounted for. How much manpower and what internal resources are needed, and at what cost?

EPA reports Dominican Hospital (Catholic Healthcare West), Santa Cruz, CA, needed only 24 labor hours to set up its program. Management support was four hours per month. Custodial labor was seven hours per month – time that was already required to dispose of the waste through previous channels.

Segregating the blue wrap in the prep room and removing it with other waste may be minimally disruptive, but accumulating volumes of blue wrap between pick ups by the recycler can put strains on the dock area of the facility. Part of the pilot must include looking at how wastes are currently handled and disposed of and then determining what additional needs the blue wrap effort might place on that infrastructure.

Transportation is a key component in a successful program. Recyclable commodities have a very low value, especially before they are processed. They don’t sustain significant transportation costs. That’s one reason why these efforts are regional. And even getting out of the urban area can present major issues. As Waste Wise’s Worley points out, there are a number of programs in the major urban areas, and that density makes collection easier and more cost effective. Her group also arranges for other commodities to be recycled, and it can schedule pick ups for other plastics from the same location and from other facilities near the medical center that have commodities going to the same sortation operation.

Processors want volume, so additional sortation and accumulation steps come into play between many suppliers and the one processor. Otherwise, your one facility may need a large storage space to accumulate volumes that are attractive enough for the recycler to pick up. In some cases, there may still be charges for pick up, but they will likely be lower than the per-ton and per-pull cost of waste removal.

Worley, whose program is a non-profit set up to promote and support sustainability, works with groups that hire disabled adults. Many of the other successful programs have similar affiliations. In some cases the labor cost is subsidized under other programs. In other instances, the revenue from the sale of the recyclables helps support the effort.

## Bottom Line

Successful blue wrap recycling programs need top management support to succeed. They also require a commitment and understanding of the people who will be responsible for segregating and handling the materials. Blue wrap waste is generated in a limited number of places in a medical center, which helps keep the effort required reasonable and the education process manageable. But can it be justified on a cost-avoidance or revenue-generating basis?

That’s the hard case. It’s easy to justify removing the volumes of blue wrap from the current waste stream and recycling them. Providing employment for disabled adults adds a social argument. In the end, says Worley, many of the hospitals are just donating the materials. She points out these commodities have value and, collected properly, they have more value. It’s important to show there is money being made and where, she continues.

Typical results of blue wrap recycling programs are impressive for the volumes of waste that are recovered for recycling, but they usually won’t excite the chief financial officer. That may be why they tend to originate as a grass roots effort at the source – with the surgical team that watches the bags of blue wrap going to the landfill. 