

## Reduce blue wrap waste with sterilization containers

Healthcare facilities can dramatically reduce the quantity, costs, and toxicity associated with blue wrap by using sterilization containers.

Most surgical instruments go through decontamination and sterilization. They are washed, assembled into sets based on the surgical procedure, and most often enclosed in blue wrap. The instruments are then sterilized; steam is the most commonly used method.

Blue wrap is a single-use disposable product comprised of polypropylene, an inert polymer derived from petrochemicals. It is used to envelop surgical instruments and ensure sterility. Blue wrap is designed to allow the sterilant to penetrate and sterilize the instruments through pores in the material that seal during sterilization and prevent entry of microbes and potential contamination.

### Health and Environmental Concerns

Once the blue wrap has gone through the sterilization process, it is not able to be reused due to the closed pores. Each time surgical instruments need to be sterilized, new blue wrap has to be purchased, used, and ultimately discarded, making it a costly single-use product. Concerns are mounting due to the availability of petroleum and the persistence of this material in the environment as it does not biodegrade easily upon disposal in landfills and is not commonly recyclable.

Also, to ensure sterility, indicator systems are used. One such indicator is tape, which is used to secure the blue wrap around instruments. The tape, however, often contains a lead salt which presents hazardous waste and human exposure concerns. Other indicators such as cards, tabs, and peel pouches may also contain a lead salt. The presence of lead in the indicators suggests they and/or the blue wrap must be managed as hazardous waste. Waste exceeding 5mg/kg lead is



A MnTAP intern reduced St. Luke's Hospital's blue wrap purchase and disposal costs with the implementation of sterilization containers.

considered hazardous. When the lead containing tape is adhered to the blue wrap, the entire package is considered hazardous waste.

Lead is both an environmental contaminant and human health toxicant. Wildlife, such as eagles, exposed to small quantities of lead through the ingestion of contaminated food can be fatal. Additionally, lead can cause a variety of human health issues including developmental, reproductive, and nerve disorders; muscle and joint pain; and memory problems.

### Sterilization Containers

Healthcare facilities incur considerable expenses annually to purchase blue wrap. The volume of blue wrap being disposed by medium to larger facilities is in the tens of tons. Healthcare facilities can reduce the quantity, costs, and toxicity associated with blue wrap by using sterilization containers.

Sterilization containers, also known as hard cases, are stainless steel boxes into which sterilized instruments are placed. They are reusable and can substitute for blue wrap in many applications. The use of hard cases minimizes the quantity of blue wrap and tape used and disposed of, thus greatly reducing costs. Hard cases are also better for protecting instruments from damage. They improve efficiency and are safer for patients because surgical procedures are not delayed due to

### Benefits Overview

Waste Reduction Option	Waste Reduced/ Materials Savings	Annual Cost Savings
Use sterilization container in place of blue wrap (data per container)	50 lbs of waste	\$391
Using 224 cases at St. Luke's Hospital (estimate)	5.4 tons blue wrap waste 22.4 lbs indicator waste	\$100,000

tears in blue wrap that require instruments to be flash sterilized. Hard cases also use lead containing indicators; however, the tags and filters with lead indicator dots are smaller in quantity and easier to manage than the tape adhering to blue wrap.

### **Reducing Blue Wrap Case Study**

St. Luke's Hospital in Duluth, Minnesota, was interested in reducing their blue wrap purchase and disposal costs. They had already purchased 161 hard cases. MnTAP then conducted a cost and disposal analysis for the purchase of additional hard cases. Each hard case offset blue wrap purchase and disposal as hazardous waste by approximately \$391 and reduced almost 50 pounds of waste annually. Each hard case costs about \$400, providing a return on investment of less than one year.

By purchasing an additional 224 sterilization containers, St. Luke's can reduce blue wrap waste by 5.4 tons, reduce lead-contaminated indicator waste by 22.4 pounds and save almost \$100,000 annually.



#### **For More Information**

MnTAP has a variety of technical assistance services available to help Minnesota businesses implement industry-tailored solutions that maximize resource efficiency, prevent pollution, increase energy efficiency, and reduce costs. Our information resources are available online at <[mntap.umn.edu](http://mntap.umn.edu)>. Please call MnTAP at 612.624.1300 or 800.247.0015 for personal assistance.