Get the Advantage: Reusable vs. Disposable Textiles

Medical textiles are one of the most rapidly growing sectors in the textile market. This includes such product categories as precaution gowns, patient gowns, laboratory coats and scrubs. The rising need for medical textiles reflects an aging population, longer life spans, more Americans gaining access to healthcare and more advanced healthcare procedures. Healthcare facilities need cost-effective textile supplies to reduce operating costs, which are increasing due to the influx of patients, an unpredictable economy and reduced Medicare assistance. A comparison of reusable vs. disposable products reveals the overall advantages of reusable textiles, including cost savings, waste reduction and infection control.

**COST SAVINGS**

A major misconception driving healthcare facilities to use disposable textiles is the assumption that they are more economical than reusable textiles. At first glance, it appears that disposable textiles are more cost effective. However, to determine the true cost, you must look beyond the initial purchase price. When using disposable textiles, you also must consider:

- Waste disposal
- Occupational health
- Environmental impact
- Warehousing

Though reusable textiles do have additional costs for cleaning and delivery, the chemicals and water used for daily maintenance is much less than disposal costs (See Figure 1).

**WASTE DISPOSAL**

In 2010, the *Washington Post* worked with Practice Greenhealth to survey 114 of the group’s member hospitals. The results showed that 33.8 lbs. of waste were produced per day per staffed bed (Rastogi, 2010). As of 2008, there were 951,045 staffed hospital beds in the United States, according to The American Hospital Association (Rastogi, 2010). With those factors combined, that would equal nearly 5.9 million
tons of garbage annually, including municipal solid waste and regulated medical waste.

Single-use disposable apparel can be considered regulated medical waste, depending on how and where it is worn in a hospital. Regulated medical waste (RMW) are items that may have been contaminated by blood, body fluids or other potentially infectious materials. Healthcare facilities that use disposable textiles, rather than reusable textiles, produce a substantially greater amount of regulated medical waste, costing them more in disposal costs. Regulated medical waste must be disposed of in compliance with RCRA (Resource Conservation and Recovery Act) regulations. Hospitals contract with companies to handle this waste, which can become very costly, as seen in figure 1.

**OCCUPATIONAL HEALTH—BARRIER PROTECTION**

According to the U.S. Occupational Safety and Health Administration (OSHA), healthcare garments need to be appropriate for the task and degree of exposure to bloodborne pathogens and infectious bacteria anticipated (OSHA 1992). Disposable isolation or barrier gowns are sometimes portrayed as providing better barrier protection. But reusable isolation gowns have proven to be just as effective in providing barrier protection when laundered properly. Reusable isolation gowns meet or exceed barrier protection standards set by The Association for the Advancement of Medical Instrumentation (AMMI) for Level I to IV gowns (ANSI/AAMI PB70:2012). With today’s modern fabrication techniques, reusable isolation or barrier gowns are made of fabrics using very fine microfiber yarns to create a 100% polyester fabric which is very tightly woven and thus fluid-repellent.

**ENVIRONMENTAL IMPACT**

By using reusable textiles, you are reducing your environmental footprint at every step of the process as opposed to disposables. Continuing with the example in figure 1, if a hospital uses 2,000 pieces of a 1/10 lb. disposable isolation gown a day for a year, they would produce 73,000 lbs. or 36.5 tons of solid medical waste annually. Every year, more than 2 million tons of medical waste go into landfills. The mounds of disposables that sit in landfills are anaerobically degraded, meaning digested without oxygen. This process produces methane (CH4) as the final degradation product, according to Steven J. Tinker, sr. vice president, research & development, Gurtler Industries, Inc., South Holland, IL. The Publicly Owned Treatment
Works’ (POTW) process of breaking down soils is aerobic, meaning with oxygen, and the final degradation products are carbon dioxide (CO2) and water (H2O). “Though most people think that the global warming issue is only affected by carbon dioxide, the fact is that methane has been identified as one of the worst global warming offenders, and it is estimated that methane has an impact 20 times greater than carbon dioxide,” says Tinker.

Disposal manufacturing companies try to highlight how reusable textiles use too much water and chemicals to remove soils. But in fact this process is very “green.” Most major healthcare laundries operate within a POTW wastewater treatment system, which utilizes bacteria to digest soils, such as blood, which are very easily biodegraded. The laundry borrows the water for the laundering process, which then is returned to the environment via the POTW in a state that’s as clean as it was when it was obtained. This is referred to as the “Green Loop,” since it’s a quick process that produces minimal waste. Due to the fact that the water returns quickly and biodegradable chemicals are used, commercial or institutional laundering has a relatively minor impact on the environment. Furthermore, nearly 10% of the water used in a laundry is evaporated in the drying process. This water returns to the ecosystem in the form of water vapor which eventually returns in the form of rain.

Modern techniques and equipment also have improved the efficiency of the laundering process. Operators using modern equipment and engineering can expect:

- **Water efficiency**—0.5-0.7 gallons of water per lb. of processed textiles vs. 3.0+ gallons with traditional washing methods.
- **Advanced wastewater treatment**—Systems successfully clean the water used in laundering facilities, allowing it to discharge safely into the municipal sewer system.
- **Decreased use of natural gas and oil**—Heat reclamation and other solutions keep energy usage to typically under 2,500 Btu per lb.

In comparison, because disposables are only used once, the constant manufacturing of these products uses more water, energy and chemicals.

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**References:**

3. Rastogi, N.S. (2010, October 18) Green Lantern: How much trash does a hospital produce? The Washington Post. Retrieved from http://www.washingtonpost.com/…if a hospital uses 2,000 pieces of a 1/10 pound disposable isolation gown a day for a year, they would produce 73,000 pounds or 36.5 tons of solid medical waste a year…”

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**WAREHOUSING**

Since reusable textiles can be delivered daily, the hospital can keep less inventory on hand to meet its needs. That, in turn, frees up valuable space for revenue-generating services.

**COMFORT AND IMAGE**

Reusable textiles offer a softer touch and better fit, as opposed to the materials used in disposable products. Reusable textiles are more stable, whereas disposable garments are more susceptible to tearing or snagging. Reusable textiles also provide healthcare facilities with a more professional look that can enhance a facility’s image and brand. They also are more patient friendly and less intimidating, thus improving the patient experience.

**REUSABLE KNOWLEDGE**

The advantages of reusable textiles vs. disposables include the overall cost, maintenance, comfort and reduced environmental impact. What’s more, these benefits come without compromising quality, safety or style. For all these reasons, as healthcare facilities seek to lower their costs, reusable textile products should be part of the solution. By understanding the true cost of disposables and the multiple advantages of reusables, the latter stand out as an environmentally safe and value-added choice.

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