

Textiles: Post-Consumer

COMMODITY PROFILE

North Carolina Department of
Environment and Natural Resources
DIVISION OF POLLUTION PREVENTION
AND ENVIRONMENTAL ASSISTANCE

MARKETS ASSESSMENT 1998



OVERVIEW

The textile recycling industry is one of the oldest and most established recycling industries in the country. In fact, it is not uncommon to find textile recyclers who have been in business more than 50 years. Broadly defined, textiles encompass almost anything made from fabric, including clothing, carpets, and car seats.¹ This report focuses on the recycling of post-consumer textiles rather than post-industrial textiles, because post-industrial textiles are (1) outside the scope of municipal solid waste as defined by the EPA and (2) have traditionally been recycled at higher rates.

For the purposes of this report, post-consumer textiles are defined as:

- used clothing such as old garments, paired shoes, belts, purses, etc.
- used linens such as sheets, towels, pillow cases, draperies, etc.

Similarly, the Council for Textile Recycling defines post-consumer textiles as “textile waste from the home such as used or worn clothing, bed linens, and towels that can be collected and recycled.”² Both definitions include materials commonly collected by textile recyclers; however, the definition of post-consumer textiles varies from one recycler to another.

Although textile recycling is well established, the collection of post-consumer textiles directly from local government sources is a relatively new and rapidly growing practice in North Carolina. This growth trend is likely to continue in the state for some time. Currently, North Carolina is recovering at least eight percent of its post-consumer textiles and perhaps as much as 15 percent.

A majority (61 percent) of the post-consumer textiles collected for recycling is exported to other countries.³ As a result, the strength of the textile recycling industry is closely tied to foreign economies. Volatility in these economies,

Figure 1: Estimated Generation (Tons) of Post-Consumer Textiles in North Carolina, 1997 and 2002⁵

	1997	2002
Used Clothing	152,482	173,607
Linens	20,793	23,674
Total	173,275	197,281

Figure 2: Characterization of Post-Consumer Textiles Generated in North Carolina, 1997 and 2002⁶

	Residential		Commercial	
	1997	2002	1997	2002
Used Clothing	91,489	104,165	60,993	69,443
Linens	12,476	14,204	8,317	9,469
Total	103,965	118,369	69,310	78,912

among other factors, has hurt the textile recycling industry in recent months.

SUPPLY Generation

Generation of post-consumer textiles in North Carolina was determined using Environmental Protection Agency (EPA) estimates for national generation in 1996. Data were extrapolated to represent national generation of post-consumer textiles in 1997 and then applied to North Carolina's 1997 population. These data are presented in Figure 1. In 1997, North Carolina generated approximately 173,275 tons of post-consumer textiles, or almost 47 pounds per person per year. This number could increase to 197,281 tons by 2002, or almost 51 pounds per person per year, representing over 13 percent growth in overall textile generation from 1997 to 2002. This projection is based on EPA estimates for 2000 extrapolated to 2002 combined with projected population growth.⁴

The generation of used clothing and linens can be further characterized by the source of generation: residential and commercial. As is apparent from Figure 2, residential sources generate the larger portion of used clothing and linens generated in North Carolina. Commercial sources, although smaller, also generate significant quantities of used clothing and linens.

Recovery

Nearly 14,300 tons of post-consumer textiles were recovered in North Carolina in 1997, representing an eight-percent diversion rate. This figure likely underestimates re-

covery, as it fails to account for several sources that may increase the recovered tonnage substantially. The data, which are primarily from textile recyclers, account for a portion of the material collected by charities but fail to account for domestic reuse (the percentage of donations designated for resale) by several large charities. This assessment also fails to account for post-consumer textiles sales from used clothing retail outlets and yard sales. Furthermore, the textile recyclers identified during this assessment do not represent an exhaustive search for textile recyclers, and in some cases, the recyclers contacted were unable to provide data on recovery from North Carolina.

Due to shortcomings of these data, it is likely that North Carolina's actual diversion rate is significantly higher, perhaps as high as 15 percent. Based on EPA data, the national recovery rate for used clothing and linens in 1996 was about 14 percent. Although no specific figure could be found, the Council for Textile Recycling and the Secondary Materials and Recycled Textiles Association estimate recovery to be under 25 percent.⁷ The recovery of post-consumer textiles in North Carolina is estimated in Figure 3.

Local government collection of used clothing and linens in North Carolina has grown rapidly during the past year. In fact, one county collection program added during fiscal year 1997-98 provided enough textiles to double the tonnage reported by all local governments the previous year. Additionally, many of the textile recyclers contacted during this assessment indicated interest in expanding or adding programs in North Carolina. State agencies are also collecting post-consumer textiles. The North Carolina Department

Figure 3: Estimated Recovery of Post-Consumer Textiles in North Carolina, 1997 and 2002

	1997		2002	
	Tonnage	Percent Diversion	Tonnage	Percent Diversion
Recycled	9,268	5.35%	27,551	14.00%
Reused	5,000	2.89%	5,700	2.89%
Total	14,268	8.24%	33,251	16.85%

of Administration's Division of Purchase and Contract recently started a textile recycling program that recovered approximately 120,000 pounds from state agencies in the first eight weeks of the program. The program will likely be expanded further and has the potential to add at least another 500 tons to recovery in North Carolina.⁸ For these reasons, it is estimated that the textile diversion rate will double by 2002 despite concerns of unstable foreign economies. (See *Demand* section below.) This increase would result in a recycling rate of almost 17 percent in 2002. Since the majority of the growth is expected from textile recyclers, the recovery rate for domestic reuse of clothing is projected to remain constant.

To assess the ability to further reduce the textile waste disposed in North Carolina, 13 programs countrywide were investigated. The average recovery of these programs was slightly more than two pounds per person per year.⁹ At this rate, local governments in North Carolina have the potential to recover almost 7,500 tons of post-consumer textiles a year. In 1997, local governments reported a total of only 68 tons collected for recycling, leaving substantial room for improvement.

It appears that the rural nature of North Carolina may be one of the larger constraints to increasing recovery of post-consumer textiles. It may not be possible for textile recyclers to profitably collect post-consumer textiles from rural areas of North Carolina without forming regional partnerships. In a strong market, post-consumer textiles are valuable enough that the distance to market is not a limiting factor (as it is with most recyclable commodities). In a weakened market for post-consumer textiles, however, textile recyclers may not be able to afford to collect from rural communities that do not provide sufficient quantities and quality of post-consumer textiles.

The quality of the post-consumer textiles also is a key to increasing recovery. The presence of non-textile materials, unacceptable textile materials, and moisture-related contamination was indicated by textile recyclers as problems associated with local government collections. Quality is also

a concern when collecting from charitable sources. When charities receive clothing donations, the materials are culled, which in effect removes the high-quality materials and leaves a less valuable product for textile recyclers.

DEMAND

End-uses for recycled post-consumer textiles generally fall into three categories: used clothing for reuse, fibers for reprocessing, or industrial wipers. Within these categories, the Council for Textile Recycling indicates that about 35 percent is used as clothing for reuse, 33 percent is used as fibers for reprocessing, and 25 percent is used to make industrial wipers.¹⁰ The remaining seven percent is residuals from the recycling process that must be landfilled. Overall, about 61 percent of recycled textiles are exported to other countries. Some textiles are reused domestically, but the quantity is considered to be small when compared to overall generation.

Communication with several textile recyclers indicates demand is currently at an all time low, with many facilities running below 50 percent capacity. The decreased demand is due to several factors including instability of foreign economies, the strength of the United States dollar, and political unrest on the African continent. Because of the dynamics in foreign economies, however, a static view of the current demand is not warranted. The demand for post-consumer textiles is cyclical and will rebound as foreign economies rebound, a concept well understood by textile recyclers.

Although demand is currently low, textile recyclers contacted indicated an interest in expanding programs and a willingness to accept additional materials, although at a lower price. A review of the Recycling Business Assistance Center's *Directory of Markets for Recyclable Materials* identifies 10 textile recyclers servicing North Carolina. Of these 10, only two currently work with local governments in North Carolina, but three expressed an interest in doing so. Six of the recyclers contacted currently collect post-consumer textiles from commercial sources, such as charities and retail outlets. A brief description of the two companies collecting

post-consumer textiles from North Carolina local governments is provided below.

Carolina Textile Recycling, Walterboro, South Carolina,¹¹ primarily collects clothing for reuse or recycling (about 80 to 90 percent of the material processed) and is working with 15 local governments in North Carolina, including the following counties: Stanly, Union, Mecklenburg, Gaston, Rowan, Alexander, and McDowell. Last year the company processed between 1.75 to two million pounds of material from counties and other direct sources (e.g., church drop-offs) and another 1.75-2 million pounds from charities. About half of their material remains in the United States, and the remaining material is exported. The material is divided between the following end uses: industrial and commercial wiping cloths, raw materials for mills, export, and direct reuse. Currently, Carolina Textile Recycling is running at about 50 percent of capacity. The company indicated an interest in working with additional local governments in North Carolina, especially in larger communities.

J.G. Thompson Enterprises (Thompson), Spindale, North Carolina,¹² handles post-industrial textiles and used clothing. The company received between five and six million pounds in 1997, primarily from North Carolina but also from South Carolina and Tennessee. Thompson is currently working with two local governments in North Carolina — Kill Devil Hills and Spindale — and is willing to consider working with additional local governments. In Spindale, the company is testing curbside collection in bags. The company is currently running at about 20 to 30 percent of capacity.

As noted above, export represents the single largest end use for post-consumer textiles. Many of the countries that receive this clothing are developing countries with annual per capita salaries commonly under \$500, making used clothing the only affordable option. These countries also tend to have higher population growth rates than industrialized countries like the United States. Low salaries combined with high population growth make these countries a key component of post-consumer textile recycling and an area for increased demand in the future.¹³

SUPPLY / DEMAND RELATIONSHIP

With 61 percent of recycled post-consumer textiles exported to other countries, the underlying supply/demand

relationship is straightforward: when foreign economies are struggling, demand will drop. When foreign economies rebound, an occurrence that is very difficult to predict, the demand for post-consumer textiles should rebound, particularly for clothing that is reusable.

The Council for Textile Recycling indicates that several global factors have softened the market for textile exports. These factors include the strong value of the American dollar versus other currencies, nuclear testing in some countries that generally receive high quantities of used clothing from the United States, and the general degradation of foreign economies.¹⁴

United States trade policies also affect both post-consumer and post-industrial textile recycling. The North American Free Trade Agreement has resulted in many textile manufacturers moving to other countries where labor is less expensive. This shift has resulted in a decrease in the supply of industrial textile waste as well as a decrease in domestic demand for textiles or fiber from recycled textiles.¹⁵

These factors combined with domestic factors such as the recent strike at General Motors, a company that uses recycled fiber in automotive seats, have resulted in a marked decrease in the price paid for used textiles. Suppliers that might have received \$0.05 a pound for materials in mid-1997 are now only receiving \$0.02 per pound. Although a \$0.03 decrease per pound does not seem like a major change, it represents a \$60 decrease per ton.

Unfortunately, this price decrease occurred as textile recyclers began expansion into local government collection. It is worth noting, however, that the collection of used clothing generally requires minimal effort from local governments. Even at two cents per pound, the revenues from textile recycling can help offset the cost of recycling programs, making them more efficient on a cost per ton basis. This also holds true for commercial establishments that may realize significant savings in avoided disposal fees.

The increased interest in charitable organizations marketing directly to end-users also affects the supply and demand for post-consumer textiles. The extent to which this trend has hurt textile recyclers is hard to determine, however, one large recycler estimated that 30 percent of textile recyclers, primarily smaller companies, have been put out of business because of this trend.¹⁶

CONCLUSION

Although the textile recycling industry is well established, it is also an industry that is currently struggling with low demand. Unfortunately, the rapid decrease in demand oc-

curred as companies began to expand collection in North Carolina, especially from local government sources. Although the state has had a limited role in advancing textile recycling to date, the following recommendations outline ways the state can assist the textile recycling industry and better understand this component of the waste stream.

RECOMMENDATIONS

- The state should continue to educate businesses and local governments on the benefits of recycling post-consumer textiles.
- The state should offer funding through their Solid Waste Reduction Assistance Grants to encourage local governments to implement textile recycling programs.
- To increase the quantity of post-consumer textiles collected throughout the state, equitable, waste reduction based collection systems such as pay-as-you-throw (PAYT) should be encouraged. PAYT programs charge system users based on the amount of waste generated, providing financial incentives to reduce and recycle.
- The state should assist textile recyclers, where possible, in expanding operations in North Carolina. Such assistance may come in the form of helping to identify local governments with an interest in textile recycling or promoting regional local government partnerships to collect materials in rural areas. The state should further expand textile recycling by working with local chambers of commerce to coordinate drop-off programs at public centers such as shopping malls or town centers.
- Although the collection of post-consumer textiles from charitable organizations and local governments is well understood, the characterization of post-consumer textiles generated from retail outlets could not be determined during this assessment and should be further investigated.
- Similarly, characterization of post-industrial textiles should be further investigated. The Council for Textile Recycling estimates that approximately 75 percent of post-industrial textiles are currently recovered for recycling.¹⁷ The extent to which this accurately depicts recovery in North Carolina cannot be ascertained. The state should therefore undertake a study to determine the generation and recovery of post-industrial textile waste in North Carolina.
- To further enhance the demand for post-consumer textiles, the state should purchase materials made with recycled textiles, such as wiping cloths, whenever possible.

¹ Carpet generation and recovery is the subject of another commodity profile.

² Secondary Materials and Recycled Textiles Association. Online Glossary. <http://www.swartasn.org>. 1997.

³ Council for Textile Recycling. "Textile Recycling Fact Sheet." <http://www.textilerecycle.org/ctrfacts.html>. 1997

⁴ U.S. EPA. "Characterization of MSW in the United States: 1996 Update." June 1997.

⁵ Figures derived from EPA's "Characterization of MSW in the United States: 1997 Update. Figures were extrapolated for 1997 and applied to NC using population estimates. Estimates for 2002 are based on extrapolations using current, historical and estimates for 2000 from EPA.

⁶ U.S. EPA. "Characterization of MSW in the United States: 1994 Update." June 1995.

⁷ Council for Textile Recycling, Online Fact Sheet. "Don't Overlook Textiles." 1997. <http://www.textilerecycle.org/ctrinfo.html>

⁸ Personal Communication with Jeff Nance, State Surplus Property Officer, N.C. Division of Purchase and Contract. September 1998.

⁹ Data obtained from DPPEA local government recovery database, and the Institute of Local Self Reliance. "Weaving Textile Reuse into Waste Reduction." 1997.

¹⁰ Council for Textile Recycling. Online Fact Sheet, "Textile Recycling Fact Sheet." 1997. <http://www.textilerecycle.org/ctrfacts.html>

¹¹ Personal Communication with Brad Grossman, President, Carolina Textile Recycling. September, 1998.

¹² Personal Communication with Garry Thompson, Owner, J.G. Thompson Enterprises. September, 1998.

¹³ Personal Communication with Bernard Brill, Executive Vice President, Council for Textile Recycling. September, 1998

¹⁴ Personal Communication with Bernard Brill, Executive Vice President, Council for Textile Recycling. September, 1998

¹⁵ Ibid.

¹⁶ Personal Communication with Mike Aronson, Dumont Export Corporation. September, 1998

¹⁷ Council for Textile Recycling. Online Fact Sheet, "Don't Overlook Textiles." 1997. <http://www.textilerecycle.org/ctrinfo.html>