



Recycling Works

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Johnson Brothers Utility and Paving Company Repaves Road with Rooftops

by Sherry Yarkosky, Recycling Business Development Specialist

The next time you drive on a North Carolina road, you may be driving on what was once a rooftop. On a recent Harnett County highway paving project completed in the fall of 2014, Johnson Brothers Utility and Paving used approximately 5,000 tons of recycled asphalt shingles, or the equivalent of shingles from 2,250 homes.

In addition, the project also used recycled asphalt pavement (RAP) or old asphalt pavement that was milled from roads and reprocessed. Combining the



A grinder processes shingles to the size of coffee grounds.

recycled shingles and RAP, 19 percent total recycled material was used on the project.

Since the fall of 2010, Johnson Brothers Utility and Paving has been collect-

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Clean piles of tear-off asphalt shingles from Harnett County rooftops await processing at the Johnson Brothers Utility and Paving Asphalt plant.

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ing clean tear-off asphalt shingles from private roofing contractors and local public landfills. Shingles are considered clean if metal, wood, insulation, flashing, and other trash are removed. Once the shingles are tested for asbestos, they are processed with a grinder and used as a replacement for expensive virgin liquid asphalt. Depending on the road project, between 3 percent and 6 percent of ground shingles can



be used to replace the liquid virgin asphalt binder.



Processed recycled asphalt shingles (top photo) are used to replace a portion of liquid virgin asphalt in hot mix asphalt production. Next, finished hot mix asphalt containing recycled shingles and recycled asphalt paving is loaded into a dump truck to be delivered to the job site (middle photo). A dump truck then loads hot mix asphalt containing recycled shingles and recycled asphalt paving into the hopper of the paving machine (bottom photo).

“We have had great success using recycled shingles on our road projects, and could use as much as 10,000 tons per year of it,” said Carson Harrington, Johnson Brothers Utility and Paving Asphalt manager.



A paver with a hopper full of hot mix asphalt is spread and compacted on the road (top photo). Finally, a steel drum roller compacts the asphalt pavement to the required density (bottom photo).

Johnson Brothers Utility and Paving is a family owned business that has been in operation for more than 40 years. In 2015, Johnson Brothers opened a second hot mix asphalt plant in St. Pauls, N.C. Similar to the parent plant located in Harnett County, the new asphalt plant in Robeson County also accepts clean recycled shingles from roofing contractors, landfills and transfer stations.

For more information, contact Carson Harrington, Johnson Brothers Utility and Paving Asphalt manager, at (910) 893-8378 or ichjbros@embarqmail.com.

Plastic Revolutions Announces New Mixed Rigid Plastics Processing Line

by Mike Green, Recycling Business Development Specialist

On Feb. 1, Plastic Revolutions in Reidsville, began operation of a new state-of-the-art processing line for mixed rigid plastic bales. The new line has the capacity to process up to 10,000 pounds of mixed rigid plastics per hour.



Plastic Revolutions currently has 88 employees and plans to add 12 more with the addition of the new mixed rigid plastics processing line at the Reidsville facility shown above.

Plastic Revolutions was formed in 1991 with a focus on building processing equipment for the plastics recycling industry. Company President John Hagan's passion for recycling and the environment inspired him to invest his own capital to start the company and to continue investing his own funds into the company during the lean periods to avoid company layoffs.

According to Plastic Revolutions Vice President and General Manager Ed Handy, "John has always been a really green guy. He did it on faith and just stuck with it." Hagan's work for the environment extends to past leadership positions with the North Carolina Wildlife Habitat Foundation and the Clean Water Management Trust Fund.

The company's journey into processing began in the early 2000s when they started using their own equipment prototypes in a plastics wash-

ing line. Plastic Revolutions now has two washing lines with a capacity of 84 million pounds per year, six granulating lines with 110 million pounds per year of capacity, and two extrusion palletizing lines with 30 million pounds of capacity per year. The 300,000 square foot facility includes a waste water pre-treatment system to clean dirty process water for reuse.

The idea for the mixed plastics processing line was sparked by the request of a European company that needed 20-30 million pounds per year of ground mix plastics for operations in the United States. Plant Manager Dee Pyrtle led development of the new Vecoplan processing line, which includes a specialized shredder that can handle metals.

The line begins with a large conveyer belt capable of holding entire bales. The belt carries the bales to a shredder that takes the material down to two-inch flakes. The flakes travel under a magnet to remove ferrous metals and past eddy currents to remove non-ferrous metals. At the end of the line, the metals are sent down one conveyer belt while the plastics are fed to a traditional grinder. According to Handy, "This processing line will allow us to take more lower grade mixed rigid bales than some of our competitors."

Handy stated that they are poised to begin buying large quantities of mixed rigid bales, adding, "It's good plastic if you can process it."

For more information, contact Ed Hardy, Plastic Revolutions at (336) 349-2861 or Shandy1037@aol.com.

Trade Associations Lend Support to Recyclers of Rigid Plastics

by Jan Foster, Waste Reduction Partners

Recycling trade associations provide a great resource for statistics and facts about the value of recyclable commodities and tools for recycling education and outreach.

This is the first article in a two-part series about assistance that recycling trade associations provide to recycling businesses. The focus of this first article is on non-bottle rigid plastics, a fast growing segment of plastics recycling.

Non-bottle rigid plastics are new commodities for a lot of recycling programs and have presented complex challenges in collection, sorting and processing. Until recently, many recyclers sent rigid plastics overseas in bales of low-grade, unsorted plastic. China's "Green Fence"



Non-bottle rigid plastics present a unique challenge to recycling programs.

standards implemented in 2013 on these bales severely restricted overseas markets. Recyclers were faced with the problem of preserving quality and value in their bales, which often include a wide variety of plastic resins, look-alike plastics, and contaminants such as labels and mixed-resin products.

Plastics recycling trade associations recognize these challenges and are working hard to help recycling businesses overcome them. Associations have evaluated the most efficient collection and sorting methods, developed market-tested specifications for the preparation of bales, and recruited demand from domestic end markets. These efforts are designed to help recycling businesses combat the negative impacts of the Green Fence.

Model Bale Specifications for Polypropylene

The Association of Post-consumer Plastic Recyclers (APR) recently developed a model bale specification for polypropylene (PP). Until 2014, model bale specifications focused on polyethylene (PET and HDPE). The creation of the PP model spec is a signal that viable markets have formed for polypropylenes, including prescription bottles, margarine tubs, and yogurt cups. The model specs offer some clarity in



The model bale specification for polypropylene (PP) hints that markets have developed for these resins from products like those pictured above.

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the complex world of plastics recycling and are a major step towards the improved efficiency of plastics recycling. All of the model specs can be found at <http://www.plasticsrecycling.org/pp-resins/for-mrfs-and-reclaimers>.

Sort for Value Matrix for Plastics in Single-stream Programs

The Association of Post-consumer Plastic Recyclers (APR) also went one step further in its assistance to plastics recyclers by developing a Sort for Value Matrix with Moore Recycling Associates. The Sort for Value Matrix offers guidance on how plastics, including rigid plastics, can be most effectively sorted from a single stream recycling mix by demonstrating what level of sorting can offer recyclers the most value. The matrix presents average pricing that was gained before and after the Green Fence episode for plastics that have been sorted to varying degrees. It demonstrates that added levels of sorting can reduce the negative impact of market fluctuations. This matrix can be found at <http://www.plasticsrecycling.org/pp-resins/for-mrfs-and-reclaimers>.

New Data on Efficiencies in Recycling PET Thermoforms

The National Association for PET Container Resources (NAPCOR), the industry trade group for PET plastic packaging, and the Society of the Plastics Industry (SPI), the plastics industry trade association, collaborated to assist recyclers of PET thermoforms. According to NAPCOR, PET thermoforms are the fastest growing segment of the rigid plastic packaging industry. PET thermoforms include non-bottle plastic containers such as clam-shells, cups, cake lids and egg cartons. To examine the recycling process and overcome potential barriers, NAPCOR began a grant program available to recycling businesses willing to provide case studies. Grant projects helped NAPCOR determine strategies for efficiently recycling PET thermoforms and develop guidance materials for other recyclers. The findings can be found at



PET thermoforms are one of the fastest growing segments of the rigid plastic packaging industry.

NAPCOR's website, <http://www.napcor.com/PET/thermoforms.html>.

Thanks to the hard work of plastics recycling trade groups to simplify the complexity of non-bottle rigid plastics, recyclers are meeting the challenge of improving quality and value in their recovered material. As a result, plastics recyclers are achieving significant recovery rates. According to a recent article in *Plastics News*, more than one billion pounds of rigid plastics are now being recycled annually. ("Rigid Plastic Recycling Grows," *Plastics News*, Steve Alexandra, Steve Sikra, and Steve Russell, February 28, 2014). The efforts of APR to develop model bale specifications for #5 polypropylene, APR and Moore Associates' work on the Sorting for Value Matrix, and NAPCOR and SPI's work with PET thermoforms can help recycling businesses understand the most efficient and cost-effective methods to recycle these commodities.

Jan Foster is a Solid Waste Manager with Waste Reduction Partners. Waste Reduction Partners (WRP) works in special partnership with RBAC and the Division of Environmental Assistance and Customer Service (DEACS) to help businesses with solid waste reduction and recycling market development. For more information on how WRP can help your business, please visit our website at www.wastereductionpartners.org.

New River Tire Recycling and Roll-Tech: Closing the Tire Recycling Loop

by Matt Ewadinger, RBAC Manager

Pilot Mountain-based New River Tire Recycling, LLC, a collector and processor of scrap tires, and Roll-Tech Molding Products, Inc., a manufacturer of rubber wheels on molded recycled-content plastic hubs, have entered into a collaborative agreement whereby scrap tires generated in North Carolina are made into a variety of products right here in the Tar Heel State. New River Tire Recycling performs the first step by turning discarded tires into a crumb rubber product that becomes feedstock for Roll-Tech's wheel manufacturing operation. Previously, Roll-Tech received its feedstock from Indiana, Georgia, South Carolina, Louisiana, Florida, Michigan and Illinois.

"We are extremely pleased to receive crumb rubber from a North Carolina-based company. The proximity of New River Tire Recycling will save us between \$30,000 and \$50,000 per year in freight costs. In addition, we are excited that a considerable amount of the feedstock will come from tires generated right here in Catawba County," said Patrice Bertrand, Roll-Tech President and CEO.

New River Tire Recycling was founded in 2007 by owners Ben and Stephanie Bryant. Since entering the business, the Bryants' operation has collected and processed more than five million tires from several counties in North Carolina, and several municipalities and private customers in Virginia. The current product-line includes civil engineering chips, tire derived fuel (TDF), mulch, crumb rubber and steel wire.

New River Tire Recycling, which employs 12 people at the present time, is located on a 28 acre site with an 115,000 square foot building and 4-acre outdoor concrete tipping and storage area. The company also operates a fleet of more

than 60 trailers that are strategically located at many sites in North Carolina and Virginia.

The process of producing the crumb rubber that is sent to Roll-Tech starts when whole tires are placed onto conveyor belts and sent to the stage 1 shredding system. Stage 1 reduces the whole tire to a



Sample of crumb rubber product and crumb rubber super sacks from New River Tire Recycling.

2x2-inch chip. That chip is then fed to stage 2, where the "Grizzly" grinds the material into a 3/4-inch chip, simultaneously liberating the steel wire. The wire is pulled out of the rubber by magnets and the rubber then goes to the stage 3 cracker mill. The cracker mill reduces the 3/4-inch chip into a fine powder from 10-mesh to 100-mesh size.

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There are various screens and magnets throughout the processing line to remove unwanted steel and properly size the particles. The rubber is then bagged and shipped to Roll Tech.

The process was designed, fabricated and put into operation by Ben Bryant himself. "Since I started this business, I have always bought used equipment and refurbished it to meet our needs and budget. Mechanical engineering is my passion and I am always looking for ways to improve equipment or build our own custom pieces from scratch. We build most of our conveyors and augers onsite ourselves," said Bryant.

Roll-Tech was founded in 1995 and is a former U.S. subsidiary of Guitel S.A. The company employs 32 people in its recently expanded 40,000-square foot facility and manufactures wheels for garbage and recycling carts, hand-trucks, high-pressure cleaners, material handling equipment and other heavy-duty applications.

In addition to this collaborative effort, New River Tire Recycling is planning to significantly increase its throughput in the coming months and Roll-Tech is also in the midst of a major expansion.

New River Tire Recycling will install additional processing equipment including a granulator to reduce particle size and an air lift/collection system to better separate nylon from rubber. The operation will also be adding a new chipper shredder to increase throughput on the TDF line to 12 tons per hour. "With the additional equipment, we believe we can double our crumb rubber throughput, thereby dramatically increasing our facility's capacity to six million tires per year, and at the same time producing a higher value-added product. The increase in capacity will enable us to offer tire recycling services to many additional N.C. counties," said Bryant.

The recent 15,000-square foot Roll-Tech expansion creates more storage space for raw materials and also includes the installation of a screening system for crumb rubber, two new injection machines, and a paint line for Roll-Tech's new Safe-T-Tiles (pavers). The Safe-T-



Tile pavers are made from recycled tires and plastics that offer a tough, interlocking surface for various decorative or heavy-duty industrial purposes.



Roll-Tech's Safe-T-Tile pavers, seen here at the demonstration site near the 9th hole at the Catawba County Country Club, are made from recycled tires and plastics.

For more information about Roll-Tech and its product line, contact Patrice Bertrand at 828-431-4515, or pbertrand@rolltech.net, or visit: <http://rolltech.net/default/index.cfm>.

For more information about New River Tire Recycling, contact Ben Bryant at 276-728-0201 or newrivertire@yahoo.com, or visit: <http://www.newrivertirerecycling.com/>.

Product Stewardship Program Announced for Post-Consumer Carpet

by Matt Ewadinger, RBAC Manager

On Dec. 15, 2014, the Carpet and Rug Institute (CRI) and the Carpet America Recovery Effort (CARE) announced a voluntary product stewardship (VPS) program to assist sorters of post-consumer carpet with their efforts to divert material from landfills.

The VPS Program is designed to address all applicable post-consumer carpet, regardless of polymer type, primary materials, or construction. The program will provide financial assistance to qualified U.S. sorters who identify, separate and market post-consumer carpet. Members of the carpet recycling industry may apply to CARE to become Qualified Sorters to become eligible for the VPS Program.

VPS Program supporters include carpet manufacturers and other members of CRI. CARE will act as the stewardship organization for the VPS Program. The supporters have committed \$4.5 million for the initial year of the VPS Program. It is expected that the VPS Program will have a two-year term.



"The VPS Program is the key next step in our mission to divert more carpet from U.S. landfills," said Brendan McSheehy, CARE's Chairman of the Board. "Sorters may use funds from the program to partner with their customers to divert carpet and recycle carpet back into useful consumer products, such as recycled carpet fiber, carpet cushion, broadloom, carpet tiles, and a wide range of plastic products".

The VPS Program is scheduled to launch in the first quarter of 2015. Sorters who qualify for financial assistance can expect to begin receiving funds by June 2015.

For more information, contact Bob Peoples, CARE executive director at bpeoples@carpetrecover.org or visit www.carpetrecovery.org and click on the VPS tab.

Join Us for the 2015 CRA Conference

by Scott Mouw, Community and Business Assistance Section Chief

Plan to join hundreds of other Carolina recyclers at the [25th Annual Carolina Recycling Association Conference and Trade Show](#), "Making Waves in Recycling" to be held Mar. 23 - 26, at The Embassy Suites - Kingston Plantation in Myrtle Beach, S.C.

The Conference will feature a set of dynamic sessions addressing some of the most important issues in recycling, including:

- Recycling Markets
- Plastics
- Single Stream Collection
- Electronics
- C&D
- MRF Operations
- Measuring Program Performance
- New Recycling Technologies

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- Organics and Composting
- Recycling Policy
- Recycling at Events
- Effective Education and Outreach

The CRA conference is also renowned for having an exhibit hall packed with equipment vendors, recycling markets and service providers. In short, the exhibit hall is a great place to do business, to talk to new and old customers, and to learn the latest technologies and connections to improve your recycling efforts.

Information about the conference can be found on CRA's main website:

<http://www.cra-recycle.org/2015conf/>

The Carolina Recycling Association's
25th Annual Conference and Trade Show

**MAKING WAVES
IN RECYCLING**

March 23-26, 2015
Embassy Suites Kingston Plantation
Myrtle Beach, SC
www.cra-recycle.org/2015conf

**Does Your Waste
Have a Home?
Find one at...**

**NORTH CAROLINA
WasteTrader**

www.ncwastetrader.org
N.C.'s Industrial Waste Exchange

North Carolina's marketplace for discarded or surplus materials and products.

This free, waste exchange service is designed to divert recoverable materials from disposal while providing feedstocks and supplies to potential users.

**For more information, call
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