



# eNewsLink



A NEWSLETTER TO EXPAND MARKETS FOR RECYCLED MATERIALS

Spring 2007

## Increasing recycling of tear-off asphalt shingles nationwide



Omann Brothers Inc. asphalt shingle recycling and hot-mix asphalt plant near St. Michael, Minnesota.

The market for roofing in the U.S. is on the rise<sup>1</sup> and as homeowners replace their roofs the need to recycle the shingle waste generated by those projects – an estimated 7 to 10 million tons a year<sup>2</sup> – increases. Several uses for recycled asphalt shingles have been explored in recent years, and the use for the material that seems to be taking hold is as an additive in hot-mix asphalt. King County and a handful of states across the country have been researching this use for recycled asphalt shingles with the hope that a viable market for that material can be developed. King County is focusing its efforts on post-consumer recycled asphalt shingles, commonly referred to as "tear-off."

Asphalt roofing shingles are made of asphalt cement, a mat backing, mineral granules and mineral fillers. There are two sources of shingles in the waste stream: construction/demolition and manufacturing. Tear-off shingles are asphalt shingles removed from existing roofs during re-roofing or demolition; 10 million tons of this material are generated in the United

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### In this issue

- King County focus
- Fast facts
- Material highlights
- Partner updates
- News you can use

### Material highlights

In 2007 *LinkUp* is focusing its recycling efforts on four priority materials: asphalt shingles, container glass, gypsum wallboard and urban wood.

#### National Asphalt Roadmap

[The National Asphalt Pavement Association](#), along with the [Federal Highway Administration](#) and [American Association of State Highway and Transportation Officials](#), is working to develop a [National Asphalt Roadmap](#) and is seeking comments on the current draft. The roadmap vision is to "develop improved asphalt pavement technologies" in order to ensure that travel and business routes throughout the nation are clear and usable for years to come. It will "serve as a guiding document" for organizations and agencies in the "formulation and identification of programs and projects" to better the country's roadways.

#### Container recycling incentives

[The Washington State Beverage Container Recycling Initiative Funding Program](#) (Initiative) is "looking to test the use of incentives to increase the collection, recovery and recycling of used beverage containers in Washington State." The initiative recently solicited project proposals

States each year.<sup>3</sup> Manufacturing new shingles generates nearly one million tons of scrap each year<sup>4</sup> including "tabs" created when shingles are shaped and shingles that do not pass quality control.

Research has been done to test the usability of both types of recycled shingles; both have proven to be a viable material for use in pavement projects. The use of manufacturing shingle scrap is widely accepted. The use of the more abundant recycled tear-off shingles is less common, but has begun to gain more attention in recent years.

"There are a lot of states looking at tear-off asphalt shingles," said Dan Krivit, an expert in asphalt shingle recycling who works with King County [LinkUp](#). "The ecological and economic benefits make the use of this recycled material an attractive option."

Experts in states such as Minnesota, Hawaii and Texas have conducted feasibility or field studies of highways and trailways paved with asphalt containing recycled tear-off shingles. Preliminary studies using recycled asphalt shingles—tear-off and manufacturing scrap—have shown increased stiffness of the asphalt, decreased cracking, no effect on moisture sensitivity, decreased susceptibility to rutting and decreased optimum content of virgin asphalt cement.<sup>5</sup>

In 2005, the [Association of American State Highway and Transportation Officials \(AASHTO\)](#) released a provisional standard specification for the use of reclaimed asphalt shingles, from manufacturing waste and post-consumer sources, as an additive in hot-mix asphalt. The standard is currently being revised and will be reviewed this fall. At least three states—Missouri, South Carolina and Maine—currently have standard specifications or official guidelines for the use of tear-off shingles.

The process of recycling asphalt shingles follows these steps: first debris, such as plastic, wood and paper, is removed from loads of asphalt shingles. Next, the shingles are ground up and magnets remove any remaining nails. Finally, the ground material is added to virgin aggregate, liquid asphalt and sometimes recycled asphalt pavement. All these materials are mixed and heated in a hot-mix drum. The asphalt is then used for roads and other paving projects.

King County is eager to increase recycling of the estimated 17,000 tons of asphalt shingle waste generated each year in King County (outside Seattle). Less than 1,000 tons of these materials are currently recycled.<sup>6</sup> This year [LinkUp](#) has made tear-off asphalt shingles one of its priority materials and is working to develop new markets for it. It is currently in the beginning stages of a two-year study that will determine the feasibility of using recycled tear-off shingles in hot-mix asphalt pavement in King County.

"Its time has come. There are a number of indicators that this market is ready for commercial development," said Krivit, who is working on the King County study.

and will award up to \$500,000 to "entities that help the Initiative to implement and evaluate the most effective method(s) for increasing container recovery through the use of incentives."

**New markets for urban wood**

LinkUp partner [Recovery 1, Inc.](#) has begun supplying pulp company [Pope and Talbot](#) with processed urban wood from construction and demolition waste, which is being used to manufacture the first 100 percent [Forest Stewardship Council-certified](#), post-consumer recycled pulp for making paper.

**LinkUp Blog**

Be sure to check out the [LinkUp blog](#) where you'll find news and updates on the program's priority materials. We also invite you to post comments, news and resources.

**Partner update**

*News about LinkUp partners working with LinkUp focus materials or other recyclable materials*

**Recovery 1, Inc.**

In April, [Recovery 1, Inc.](#) was selected as a recipient of a King County [Green Globe award](#) for its efforts to increase the recycling of construction and demolition waste materials. Recovery 1 received the Leader in Market Development of Recycled Materials Award for its work to improve markets for urban wood, gypsum wallboard, carpet and other materials.



**Alchemy Goods**

[Alchemy Goods](#), which makes handbags from recycled and salvaged materials, is continuing to grow, so much so that it has outgrown its workshop in Fremont. The company recently moved to a larger space in

According to the Missouri Department of Transportation, depending on the mix design, up to five percent of recycled asphalt shingles can successfully be added to asphalt pavement. If King County were able to incorporate the material at this rate, nearly half of all shingles generated in the county and disposed could be used in paving unincorporated King County roads.<sup>7</sup> In addition to preventing waste, there are major economic benefits. The cost of virgin asphalt continues to rise, driving the demand for more economical options.<sup>8</sup> According to Krivit, using recycled asphalt shingles for pavement can offer significant savings.

One of the primary goals for [LinkUp](#) this year is to encourage a local paving trial using tear-off asphalt shingles. Should a successful trial take place, Washington state, King County and other jurisdictions could be one step closer to being able to use post-consumer, tear-off asphalt shingles in their roadways.

- 1) [SBI, Roofing Materials in the U.S. \(SBI, November 2006\)](#)
- 2) [National Association of Home Builders Research Center in cooperation with U.S. Environmental Protection Agency, From Roof to Roads: Recycling Asphalt Roofing Shingles into Paving Materials \(1998\), pp 1](#)
- 3) [Office of Solid Waste and Emergency Response Innovations Pilot, Tear-off Asphalt Shingles Recycling, US Environmental Protection Agency, 2005, pp 1](#)
- 4) [National Association of Home Builders Research Center in cooperation with U.S. Environmental Protection Agency, From Roof to Roads: Recycling Asphalt Roofing Shingles into Paving Materials \(1998\), pp 1](#)
- 5) [ShingleRecycling.org](#)
- 6) [King County Solid Waste Division, C&D Waste Materials Market Assessment \(2004\), pp 30](#)
- 7) Missouri Department of Transportation specification permits up to 5% asphalt shingles to be used in place of mineral aggregate. Substitution of Asphalt Shingles, MoDOT, MSP03-01B; 150,000 tons of asphalt used for road projects annually in King County, WSDOT 2006; 16,600 tons disposed asphalt shingles generated in King County, C&D Waste Materials Market Assessment (2004), pp 30.
- 8) [Dan Krivit & ShingleRecycling.org & U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response Innovations Pilot: Tear-off Asphalt Shingles Recycling \(2005\) pp 1](#)

## King County focus

In collaboration with local cities and stakeholders, the King County Solid Waste Division is currently updating the *2001 Comprehensive Solid Waste Management Plan*, which covers a 20-year planning window, and has an overall goal of providing policies that will guide future solid waste and recycling programs and services.

King County spent the last several years planning for significant changes to its solid waste system. This is partly due to the county's current proposed policy of exporting waste for disposal once the Cedar Hills Regional Landfill reaches capacity and closes. Cedar Hills, the last active landfill in King County, could reach capacity by 2016 based on current waste projections and operating procedures.

In September 2006, the Solid Waste Division proposed recommendations for preparing the solid waste system for waste export in its *Solid Waste Transfer and Waste Export System Plan: Proposed Recommendations*. This proposal incorporated collaborative input from the Solid Waste Division's advisory groups, waste hauling companies, labor representatives, its

Seattle's SODO neighborhood and has expanded its sales and collection efforts into the Portland market.



### Cedar Grove Composting

This spring, Home Depot stores around King County will begin sending the remnants of unpurchased plants to [LinkUp](#) partner [Cedar Grove Composting](#) to be processed into compost. Until now, most of those plants were being disposed of as garbage. Cedar Grove Composting was also the 2007 winner of the Most Innovative Recycler of the Year award from the Washington State Recycling Association.

### News you can use

#### West Coast Green

More than 250 exhibitors, 100 experts and 6,000 attendees are expected to gather at this year's three-day [West Coast Green](#) conference and expo. Focused on residential green building, the conference is suited for green businesses, those interested in regional construction standards, and consumers. It will take place at the Bill Graham Civic Auditorium in San Francisco, Sept. 20-22, 2007.

#### Asphalt Workshop

In late 2006, the [National Asphalt Pavement Association](#) hosted a half-day workshop focused on increasing the highway industry's overall use of recycled materials. A summary of the workshop and copies of presentations are now available for [download](#).

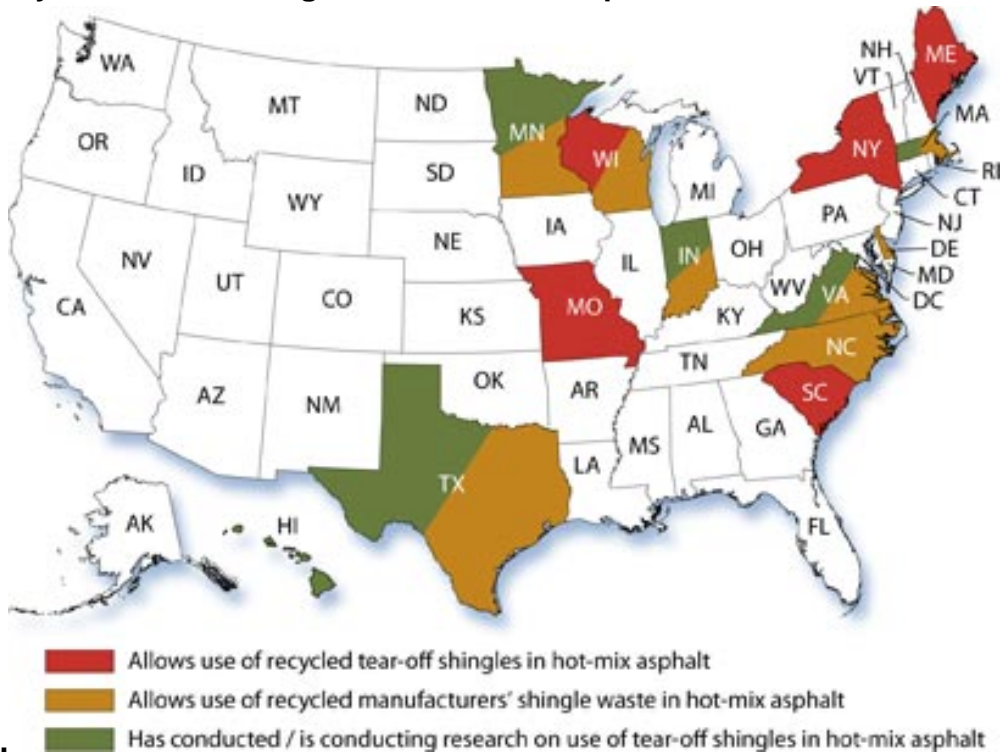
employees, and King County Council staff.

The recommendations submitted to the King County Council include modernizing the transfer system, maintaining the transfer system as a public-sector function, extending the life of the Cedar Hills landfill, monitoring intermodal capacity, and retaining property on Harbor Island as a potential site for an intermodal facility. This plan is currently pending review by an independent third party prior to consideration for approval by local cities and County Council. The review is expected to be completed this fall.

Recommendations from the solid waste transfer and export plan will help shape the broader Comprehensive Solid Waste Management Plan. King County will continue to collaborate with its advisory committees, including the Metropolitan Solid Waste Management Advisory Committee and the Solid Waste Advisory Committee, on the wide range of topics covered in the plan, which is scheduled for completion at the end of 2008.

## Fast facts

### Recycled tear-off shingle use in hot-mix asphalt in the U.



Source: shinglerecycling.org, State Experience

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