

Recycling Roofing Materials: Developing Best Practices for Roofing Contractors

A presentation to:

NRCA 2011 International Roofing Symposium

By Dan Krivit

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Emerging Technologies and Roof System Performance

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Team Members

- * RoofCycle, USA
 (Formerly Roofs 2 Roads, Inc.)
 Boulder, Colorado)
- ❖ Foth Infrastructure & Environment, LLC Lake Elmo, MN
- **Environmental Property Audits, Inc.**Anoka, MN





My Rap Sheet

- Over 10 years consulting on shingles recycling
- Author of the Shingles Recycling Best Practices Guide
- Assist with specifications and quality control guidelines
- Serve CMRA as technical advisor on ASR Forum, ShingleRecycling.org and webinars
- * Multiple clients throughout the U.S. & Canada





Presentation Outline

- Recycling Overview & history of technology
- Benefits to roofing contractors
- How to supply clean tear-off shingles
- * Asbestos management
- * Recycling of low slope roofing materials
- Trends and future predictions



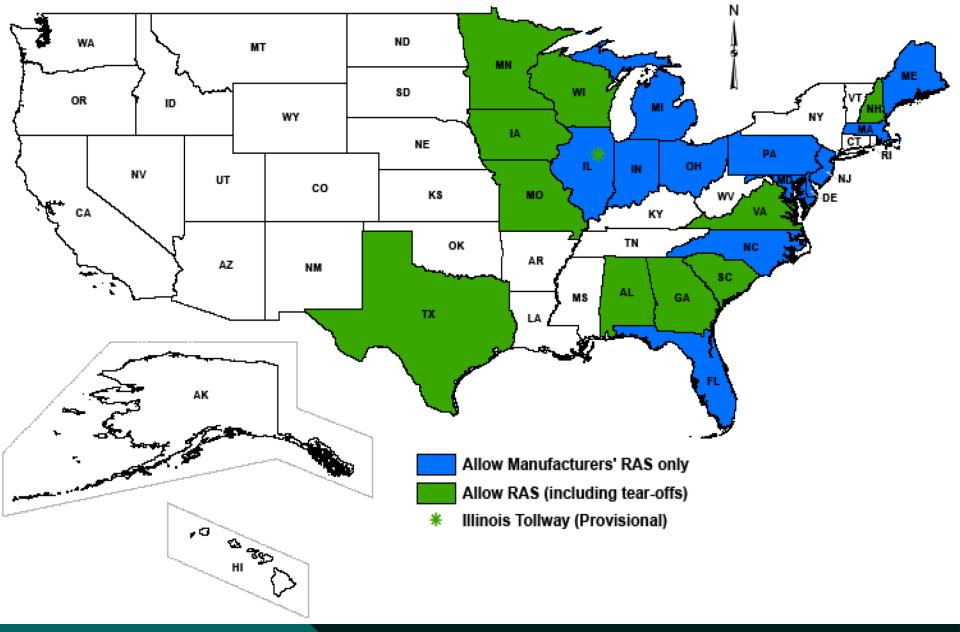


History of Shingles Recycling (continued)

- Primary market for recycled asphalt shingles (RAS) is hot mix asphalt (HMA)
- Shingles have been tested and used successfully for over 20 years
- * 21 state DOT's allow the use of RAS in HMA
- * Post-consumer, "tear-off" shingles regulated differently than manufacturers' shingle scrap











Environmental Regulations

- Help assure steady market growth by providing reasonable standards
- Vary by state
- Based in part on existing asbestos management programs for each state





Background

- Asphalt shingle recycling is growing rapidly, especially from residential homes
- * Recycling from commercial roofs for singleply membranes & insulation is here
- BUR & other materials using adhesives is up and coming





Shingle Recycling Steps

- Clean supply
- Grinding, screening
- Use in hot mix asphalt (HMA)
- Quality control throughout











Source: APAC – Texas:

New Dallas Cowboys Stadium

(Arlington, TX)

Asphalt Shingle Scrap

- Manufacturers scrap(Pre-consumer / post-industrial)
- Tear-off shingles (Post-consumer)





Benefits to Contractors

- Reduced costs
- Increased sales
- Contribution to recycling and the environment
- Enhanced safety awareness





Reduced Costs

- * Recycling fees are cheaper
- * Recycling facilities are closer
- Unloading scrap is quicker





Barriers

- * Lack of recycling infrastructure
- Market demand needs to increase
- Need DOT specifications
- Environmental standards not consistent





Supply Development

- Clean tear-off shingles
- Emphasis on front-end separation
- Inspections, testing and tracking
- Source separation and Mixed roofing material





Clean Recyclable Materials

- Sorted at the job site
- Debris separated:
 - Metal
 - Plastic
 - ▶ Wood
 - Trash
- * Residential vs. commercial jobs





Roles of Contractors

- Quality supply of tear-off scrap
- Market development through supply assurance
- Help manage insurance claims
- Set up recycling systems and training programs





Snapshot of Two Training Programs

- RoofCycle roofing contractor training
- * EPA, Inc. / Foth asbestos training





RoofCycle Training

- Hands-on information transfer
- Evolving sorting and testing requirements
- By roofing contractors for roofing contractors





RoofCycle's Video

- Recycled Asphalt Tear Off Shingle
 Training Video (English)
- * <u>Spanish version of the RoofCycle's Training</u>
 <u>Video</u>







Asphalt Recycling Group (ARG) training video:

http://asphaltrecyclinggroup.com/get-certified/video/

See also: ARG Shingle Recycling program





Roofing Manufacturers

- * CertainTeed
- GAF
- Owens Corning







Asphalt Shingles and the Green Home www.EZLearnU.com/?refcode=GAF







Other Roofing Materials

- NFI recycles EPDM, TPO and PVC membranes
- Duro-Last and KIKA Sarnafil: single-ply PVC
- Derbigum recycling of modified bitumen





EPA/ Foth Asbestos Training

- Compliance with OSHA regulations
- Practical tools for visual identification





Metal Step Flashing – With ACM Plastic Roofing Cement





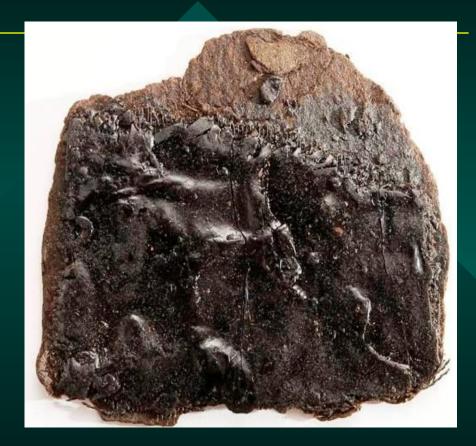


Built Up Roofing

(Sample #1)



Top (Showing exposed asbestos fiber highlighting)



Bottom (Unexposed)



RoofCycle, usa

Built Up Roofing

(Sample #2)





Top (Showing exposed asbestos fiber highlighting)

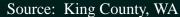
Bottom (Unexposed)





ACM Coating On a standard fiberglass shingle









On BUR



Source: King County, WA





ACM Aluminum Coating On BUR



Source: King County, WA





Future Outlook

- * RAS in HMA Huge growth
- * RAS as a commodity
- More state DOT specifications
- Environmental regulations:
 Continued state-by-state
- Increased role of contractors and roofing industry





Future Outlook (continued)

- More recycling of roofing "systems"
- More recycled content in roofing materials
- Design for recycling
- Strategies for supply development
- Tear-off material salvage rights may be claimed by insurance carriers





5th Asphalt Shingle Recycling Forum in Dallas, Oct 27 – 28, 2011

- ShingleRecycling.org
- Produced by the Construction Materials Recycling Association (CMRA)







Q&A and Discussion

- Questions
- Open discussion







Dan Krivit 612-616-7739

Dan.Krivit@Foth.com

www.Foth.com







David Coddington

303-956-9519

David@RoofCycleUSA.com

www.RoofCycle.blogspot.com







Environmental Property Audits, Inc. (EPA, Inc)

Jim Lindahl
763-323-9217
LindahlJ@EPAConsultants.com
www.EPAConsultants.com





Plastic Roofing Cement – Historical Sample: "Fry"

