



Recycling Roofing Materials:

Developing Best Practices for Roofing Contractors

A presentation to:

**NRCA 2011 International Roofing
Symposium**

By Dan Krivit

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NRCA

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EPA, Inc.



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 single-ply 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: Payne & Dolan / NE Asphalt
(Ashland, WI)



Source: APAC - Texas
(Dallas)



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)
- ❖ *Spanish version of the RoofCycle's Training Video*

ARG Video

Asphalt Recycling Group (ARG) training video:

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

See also: [ARG Shingle Recycling program](#)

Roofing Manufacturers

- ❖ CertainTeed
- ❖ GAF
- ❖ Owens Corning

GAF University course

Asphalt Shingles and the Green Home

www.EZLearnU.com/?refcode=GAF



Other Roofing Materials

- ❖ NFI recycles EPDM, TPO and PVC membranes
- ❖ Duro-Last and KIK A 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)

Built Up Roofing

(Sample #2)



Top (Showing exposed asbestos fiber highlighting)



Bottom (Unexposed)

ACM Coating

On a standard fiberglass shingle



Source: King County, WA

ACM Aluminum Coating 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



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Plastic Roofing Cement – Historical Sample: “Fry”

