Scrap Tire Recycling and the Use of Recycled Tire Rubber in Arizona

Dawn Helms, CRM / Jeff Smith, Cactus Asphalt
WASTE TIRE RECYCLING IN ARIZONA

A PUBLIC/PRIVATE PARTNERSHIP

Dawn Helms
CRM of America, LLC
Introduction

- Arizona’s Model Waste Tire Program
- By The Numbers
- Components of a Successful Program
- Vibrant Industry
Arizona Waste Tire Laws & Program Fees

- AZ generates approx. 13 million scrap tires per year
- $2.00 recycling fee for each tire purchased
- Tire retailers keep $.10 per tire to cover record keeping
- DEQ receives 3.5% per year to enforce the tire laws
- Remaining funds distributed to counties based on registered vehicles
- Each County must build and maintain a Waste Tire Collection Site
- Disposal programs determined and administered by the counties
Tires Recycled at CRM by County in 2017

- Apache – 20,000
- Cochise – 150,000
- Coconino – 140,000
- Gila – 75,000
- Graham – 40,000
- Greenlee – 5,000
- La Paz – 113,000
- Maricopa – 6,700,000
- Mohave – 308,000
- Navajo – 104,000
- Pinal – 250,000
- Pima – 1,400,000
- Santa Cruz – 110,000
- Yavapai – 250,000
- Yuma – 335,000

- TOTAL: 10,000,000
Let’s Do the Math

- Total of waste tires for recycling 10,000,000 PTE’s (Passenger Tire Equivalent)

- Total PTE’s generated in AZ per year 13,000,000 PTE’s

- Difference is approx. 2,000,000 PTE’s out of the system - culled and sold as used tires

- Fun Fact: 10 Million PTE stretches approx. 4,735 miles or approx. half way around the earth
What Makes a Successful Waste Tire Management Program?

• Closed Loop Partnerships
• Industry Expertise in Manufacturing Methods and Logistics
• Market Development
• Product Diversification
• Commitment to Environmental Stewardship
Closed Loop Partnerships

- Closed loop partnerships support a common environmental responsibility goal
  - A strong waste tire management program (Collection)
  - A strong waste tire recycling program (Recycling)

- The last chain in the closed loop process is purchasing
  - The use of the recycled waste tires as crumb rubber in products such as asphalt rubber and artificial turf infill
State-of-the-art recycling/manufacturing facility with the largest capacity in Northern America

Utilizes varied processing methods to meet customers crumb rubber requirements; ambient and cryogenic production

Industry expertise in waste tire recycling, manufacturing, technology, marketing, and logistics

A company mission of environmental stewardship
CRM of America...Arizona’s Tire Recycler ... the basic component of a successful waste tire recycling program

120,000 sq. ft. plant on 40 acres in East Maricopa County

Artificial Turf Landscape
Arizona tire pile problem remains unresolved

“The Arizona Department of Environmental Quality has now passed legislation requiring privately-owned facilities with more than 500 tires to submit site plans. “
Mobile Arizona
After
Portrait of An Unsuccessful Waste Tire Management Program

“Tire Failure”

Lax rules left mountains of mosquito-infested, flammable tires in South Carolina

• By Tony Bartelme and David Wren
tbartelme@postandcourier.com
dwren@postandcourier.com
• Apr 22, 2018
El Paso, TX

Cleanup efforts at massive El Paso County tire dump a costly challenge, owner says
By: matt.steiner@gazette.com  Aug 31, 2016

“Tires had piled up for more than two decades after the dump began in the 1980s. Six years ago, the dump had an estimated 30 million tires in stacks above ground and buried 30 feet underground”.
“The Midway Tire Monofill is the second largest in Colorado, which has three such dumps.

A facility, owned by CH2E in Hudson is the biggest, Gaboriau said.

The third monofill in Colorado is run by Resources Management Co. and is located in Julesburg.

Gaboriau said CDPHE estimates the three facilities combined are filled with more than 60 million tires.”

By: matt.steiner@gazette.com  Aug 31, 2016
Waste Tire Recycling is more than an environmental program, it has become a **VIBRANT INDUSTRY**

Adding Millions to Arizona’s economy with…..

**JOBS** **TRANSPORT** **WORK**

**VENDOR** **REVENUE** **SUPPLIER**

**RESEARCH** **TECHNOLOGY** **TRANSFER**
RECYCLED TIRE RUBBER USE IN ARIZONA

Jeff Smith
Cactus Asphalt
Charlie McDonald
and
A-R "Band-aid"
Circa 1966
Early Spreader Truck Technology – Circa 1973
Next Generation Rubber Blending Technology – Circa 1992
New Spreader Truck Technology
Recap Current Rubber Use for Pavement Preservation Applications in Arizona

- SAM (Chip Seal /LV and HV FAST)
- SAMI (Interlayer)
- Cape Seal (Slurry, Micro and Premium Seal Coat)
- Hot Mix (Gap and Open Grade)
- Scrub Seal (Hot Applied)
- Four Binder Materials Available (Arizona Rubber)
  - Polymer Modified Asphalt Rubber
  - Asphalt Rubber
  - Rubberized Asphalt Binder
  - Rubberized Asphalt Scrub Seal
Cape Seal – (Slurry Seal / Micro)
Cape Seal (Premium Seal Coat)
Gap/Open Graded Hot Mix
Binder Materials That Contain Arizona RTR
POLYMER MODIFIED ASPHALT RUBBER

Usually 82 to 85 Percent of PG Asphalt Cement and
15 to 18 Percent of 12 to 14 Mesh CRM and Fine Grind SBS Polymer Combination

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FAST Application Rates
PMAR Binder - .60 to .75 Gallons Per Square Yard
3/8" to 1/2" Aggregate – 26 to 32 Pounds Per Square Yard
Usually 80 to 85 Percent PG Asphalt Cement
and
15 to 20 Percent of 12 to 14 Mesh CRM or a Combination of CRM and High Natural Rubber

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FAST Application Rates
A-R Binder - .55 to .75 Gallons Per Square Yard
3/8" to 1/2" Aggregate – 26 to 36 Pounds Per Square Yard

Currently Utilized as a Hot Mix Binder
Usually 89 Percent PG Asphalt Cement and 
11 Percent of Fine Grind CRM and Fine Grind SBS Polymer Combination

FAST Application Rates
RAB Binder - .30 to .50 Gallons Per Square Yard
1/4" to 3/8" Aggregate - 18 to 28 Pounds Per Square Yard

Has been utilized as a Hot Mix Binder
Usually 86 to 90 Percent of a Low Penetration Asphalt Cement

and

10 to 14 Percent of a Fine Grind CRM and SBS Polymer Combination

Application Rates
Binder - .20 to .50 Gallons Per Square Yard
Aggregate or Sand - None Required
Landfill to Road Use

- Mohave County
- Maricopa County
- City of Glendale