Industrial Resources Council Tools & Resources

A sustainable materials technical support & outreach program

2012 Industrial Materials Conference
Indianapolis, IN
November 28-29, 2012

In the Beginning . . .

- Industry groups had always had separate efforts to work with Federal & state agencies
  - FHWA
  - US EPA
  - TRB
  - AASHTO
  - DOT's

US EPA Beneficial Use Summits

- Brought multiple stakeholders together
  - EPA funded travel for state regulatory agencies
  - 2002 Chicago meeting organized by NCASI
- Stakeholders realized that barriers and opportunities were common among materials
  - Market development barriers:
    - Environmental, technical, economic
- Annual Summits continued until 2008

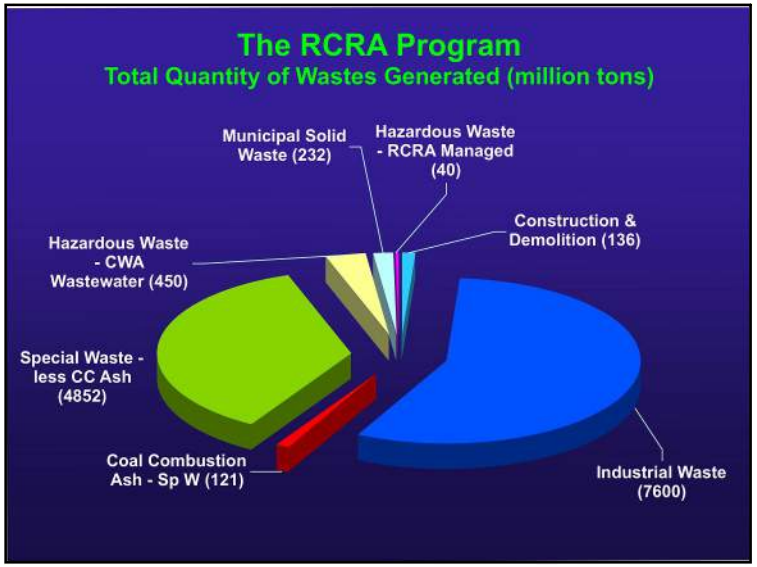
http://www.industrialmaterialssummit.com/2008/pastconf

Multi-stakeholder meetings build bridges

- FHWA recycling workshops
- Beneficial Use Summits
- RMRC regional workshops
- Green Highways Partnership

Why was the IRC formed?

- Material associations were engaging with same people in same forums
  - Similar issues & opportunities
  - Similar markets
- Create single point of contact for national & state partnerships
- Coordinate technology transfer & market development efforts
- Focus on high volume materials



How Much Material?

- Generation Rate:
  - **CCPs**
    - **122 million TPY**
  - **Steel Mill Residuals**
    - **19.7 million TPY**
  - **Foundry Sands & Slags**
    - **10 million TPY**
  - **Paper Mill Residuals, Boiler Ash & Others**
    - **15 million TPY**
  - **Tires**
    - **300 million tires/yr**
  - **Recycled Concrete**
    - **180 million tons est.**
    - **325 million total C&D**
- Number of Facilities:
  - **Power Plants: ~500**
  - **Steel Mills: ~130**
  - **Foundries: 2,800**
  - **Pulp & Paper Mills: ~430**
  - **Tires: Municipal, commercial & industrial generation points**
  - **Recycled Concrete: ~2,300**

IRC's Mission: Level the Playing Field

- Address barriers
  - Engineering
  - Economic
  - Environmental
  - Educational
- Create Markets
  - Match characteristics of material to applications
  - Develop appropriate standards & specifications
  - Technology transfer to project designers & engineers

Engineering

- Acceptance of "new" materials tied to technical specifications & performance standards
  - Specifications should be performance-based, not material-based
- No centralized technical resources exists
  - Lots of success stories out there
- DOT leadership important
  - DOT's set construction standards
  - Most pavement miles controlled at county or local level

Economic

- Sustainable economies require efficient material management systems to account for embedded costs
- Materials are typically the highest cost in any construction project
  - Recovered materials can save dollars
- Cost of testing & permitting real economic barrier
  - Unlike virgin materials, industrial materials from a single generator will be uniform
- For smaller quantity generators, commingling and co-processing will be only viable economic model
  - DOT's with frequent testing requirements make that impossible

Environmental

- Playing field is not level
  - Naturally occurring background levels need to be considered
  - Comparable virgin materials need to be considered
- Markets cross state & local borders
  - Different state standards costly for multi-state end users or marketers
  - Industries need to be involved
- Case by case permitting especially costly
  - Often cost prohibitive for smaller generators
- Compliance costs for end users can be deal breakers

Educational

- Dialogues need to involve generators & agencies
- Educational efforts typically focus on DOT's
  - Most construction isn't DOT controlled
  - Contractors will ultimately determine materials usage in free market
- Tech transfer should focus on markets, not materials

IRC Market Applications

- Manufactured products
  - Cement
  - Asphalt
  - Concrete pavement
  - Concrete products
    - Brick, block, mortars
  - Flowable fill/CLSM
- Geotechnical applications
  - Bases and subbases
  - Structural fills
  - Embankments
  - Landfill construction
- Soil amendments
  - Manufactured topsoils
  - Nursery & grower soils

Construction - Engineered Fill




Cement Manufacturing & Concrete Products


Flowable Fill (CLSM)

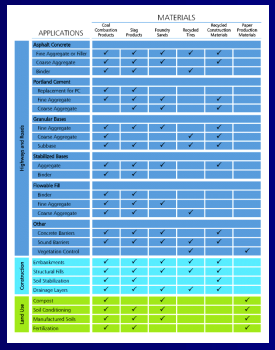

Asphalt




Potting and Specialty Soils



IRC website



- Industrial Resources Council is a resource for information about how to use industrial materials in various applications
- http://www.industrialresourcescouncil.org

Industry Snapshots

- Where does each material come from
- Info on generators
- How much material
- Most common uses

Material Profiles

- Snapshot of each material type
- Downloadable as PDF's
  - CCP's
  - Foundry Sands & Slags
  - Iron & Steel Slag
  - Pulp & Paper Industry Materials
  - Reclaimed Concrete Aggregate
  - Tire-Derived Materials

Application Profiles

- Structural fill
- Embankments
- Granular bases
- Stabilized bases
- PCC Concrete
- Hot Mix Asphalt
- Flowable Fill
- Portland Cement
- Other PCC concrete products
- Soil Stabliization

IRC matrix

- Matches between Materials and Applications
- Downloadable PDF
- E-version provides additional details

IRC E-matrix

- How is material used in this application?
- How does it perform?
- Technical issues?
- QA/QC Issues?
- Environmental issues?
- Other Resources

Other web portal needs

- More Applications
- Technical Library
- Case Studies
- Project Directory
- Presentations
- Events
- Resources
- More links

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For More Information

American Coal Ash Association
www.acaa-usa.org

Construction Materials Recycling Association
www.cdrecycling.org
www.concreterecycling.org

AFS-FIRST, Inc.
www.foundryrecycling.org

For More Information

National Council for Air & Stream Improvement
269-276-3548
www.NCASI.org

National Slag Association &
www.nationalslag.org

Rubber Manufacturers Association
www.rma.org