Industrial Resources Council: Tools and 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)
Industrial Resources Council is a resource for information about how to use industrial materials in various applications.

IRC website

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 Stabilization

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

### For More Information

**American Coal Ash Association**  
www.acaa-usa.org

**Construction Materials Recycling Association**  
www.cdrecycling.org  
www.concretereycling.org

**AFS-FIRST, Inc.**  
www.foundryrecycling.org

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

**National Slag Association &**  
www.nationalslag.org

**Rubber Manufacturers Association**  
www.rma.org