

Foundry Industry Benchmarking Survey

Industry Practices Regarding the Disposal and Beneficial Reuse of Foundry Sand

Results and Analysis



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As part of its foundry sand beneficial reuse initiative, the American Foundry Society (AFS) has undertaken a multi-year data gathering effort to quantify the amount of sand available for reuse, characterize current reuse practices, and identify specific barriers. The results of the survey will help AFS continue its work to expand reuse opportunities. The following report summarizes the results of this survey effort.

Methodology

The survey instrument was developed with input from the AFS Water Quality and Waste Disposal Committee (10-F), the National Center for Manufacturing Sciences (NCMS), and the U.S. Environmental Protection Agency (EPA).

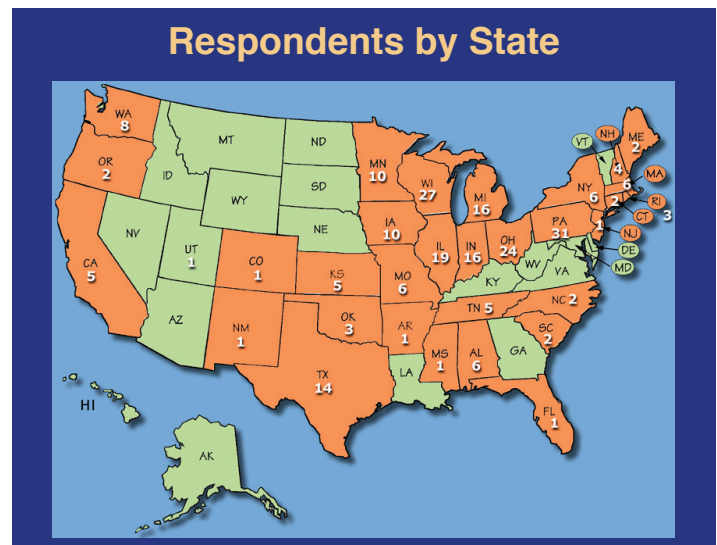
AFS executed an aggressive distribution effort by mailing surveys to nearly 1,100 facilities, posting an electronic version on the AFS website's homepage, and promoting survey participation at various conferences and industry meetings.

In order to obtain a geographically-representative sample of responses, AFS developed participation goals for key states to ensure we received completed surveys from at least 10% of the state's foundries. AFS worked closely with state-level foundry associations in order to meet this target.

The survey was conducted from 2005 to 2007 in which AFS collected data from the previous calendar year (i.e. 2004 to 2006). The data from all years was combined in order to look at the results based on a larger number of foundries. Please note that some facilities did not respond to all the survey questions and therefore, the total number of responses for any particular question may be less than the total number of respondents.

Data Summary

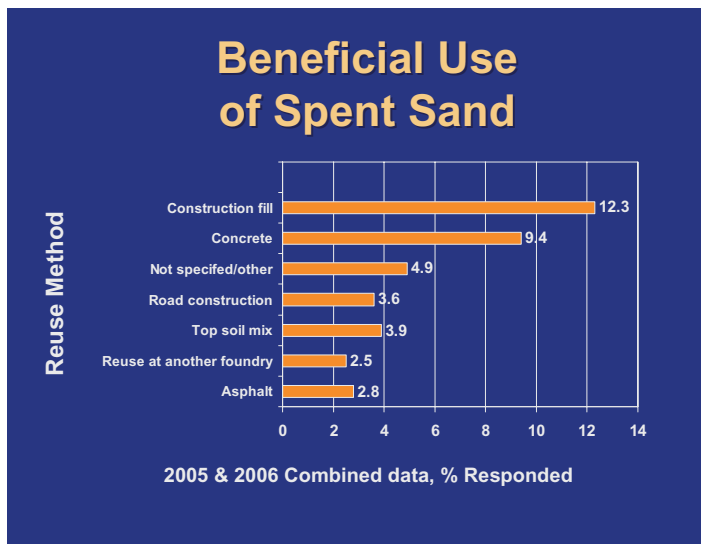
244 Total Respondents = 24% completion rate



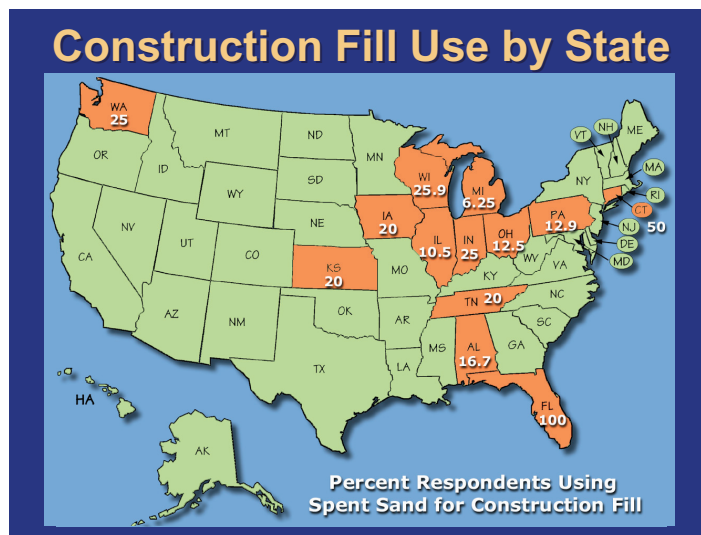
Beneficial Reuse Applications

Quick Facts:

- On average, survey respondents purchased 9,131 tons of sand per year.
- On average, survey respondents beneficially reused 3,281 tons of sand per year. (NOTE: Excludes landfill cover as a beneficial reuse application)
- The industry beneficially reuses 2.6 million tons of sand per year - 28.18% of the total tons of sand available for reuse.*



Survey respondents indicated that construction fill and Portland Cement/Concrete were the most frequent beneficial reuse applications (excluding landfill cover). The average hauling distance for those beneficially reusing their sand in construction fill applications was only 17.9 miles.



The Indiana Cast Metals Association (INCMA) spearheaded its own initiative to investigate and address the barriers to beneficial reuse facing Indiana foundries.

Main Barriers:

1. Smaller foundries blocked out of the market – INCMA found there were several large foundries sending their used sand to various cement kilns around the state. The smaller foundries were thus blocked out of the market since the larger foundries were supplying enough material to the cement plants. The benchmarking survey results show that 62.5% of respondents from the state of Indiana indicated the lack of a market for used foundry sand was a barrier to beneficial reuse.

The aggregate producers (suppliers to cement kilns, asphalt and ready-mix concrete plants) also view foundry sand as a competitor and have worked diligently to keep foundry sand out of their markets by convincing producers not to use what they consider an “industrial waste.”

2. Minimal waste disposal costs – Another barrier to beneficial reuse efforts in Indiana stems from the fact that waste disposal costs are minimal, making it hard for foundries to justify the start-up costs involved in organizing a comprehensive beneficial reuse program.

INCMA, in an effort to address these problems, engaged in an aggressive campaign to educate county and local officials about the beneficial reuse of foundry sand and also to encourage them to open doors for smaller reuse projects. In addition, the association is looking at different ways small to medium sized Indiana foundries could combine their used sand and send it to a broker for processing and distribution.

Conclusions

The good news . . .

- There are examples of beneficial reuse projects occurring in foundries across the United States. The industry-supported non-profit, Foundry Industry Recycling Starts Today (FIRST), has catalogued several case studies on its website (www.foundryrecycling.org).
- Only 4.9% of respondents indicated they did **not** know foundry sand could be beneficially reused. This indicates that the industry’s efforts to educate foundry owners and managers about beneficial reuse have been relatively successful.

What needs improvement . . .

- Only a small percentage of foundries are reusing their sand in the top soils market. The industry is waiting, however, on U.S. Department of Agriculture research that may open up markets in this area.
- There is a need to reduce the average hauling distance for each type of beneficial reuse application. AFS members now use the association’s mapping program to find potential end-users in close proximity to their facility. Members have access to this program via the AFS website.
- Inexpensive waste disposal costs can make it more attractive for foundries to dump sand in a landfill instead of beneficially reusing it either on or off-site. States should consider financial incentives for foundries who engage in beneficial reuse activities.
- Currently, foundries are purchasing more than three times as much sand as they are beneficially reusing. As the industry moves forward with its beneficial reuse initiative, this gap should become smaller.
- Not surprisingly, as the size of the foundry increases, so does the likelihood that it is involved in some type of beneficial reuse activity. More beneficial reuse applications for smaller volumes of foundry sand need to become available.