Combustion Byproducts Recycling Consortium

What is the CBRC?

The Combustion Byproducts Recycling Consortium (CBRC) supports and promotes the commercially viable and environmentally-sound recycling of CCBs (coal combustion byproducts). These materials are left behind after coal is burned to generate electricity. Once viewed as waste, the CBRC recognizes the value of CCBs as a resource and provides seed money for researchers to develop and field test innovative and productive uses for these materials.

Why is the CBRC Needed?

According to the American Coal Foundation, U.S. coal deposits contain more energy than all of the world's oil reserves. With Americans increasingly concerned about the cost and security of foreign energy supplies, coal will continue to play a key role in supplying the Nation's electrical needs.

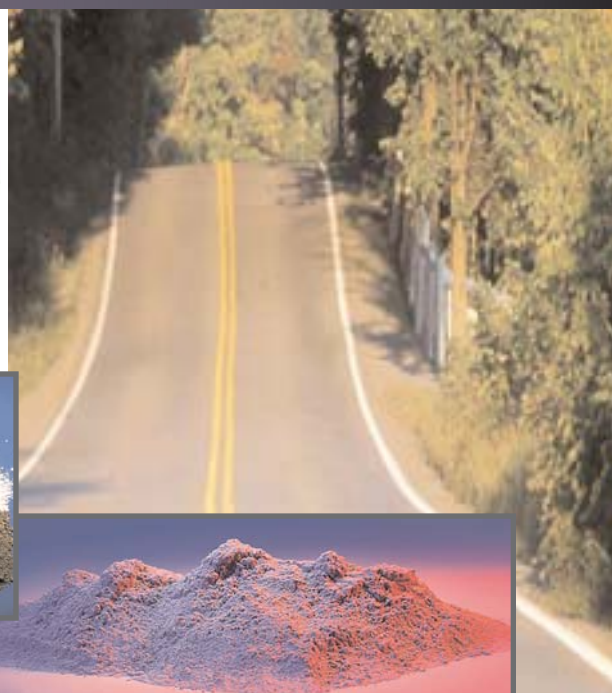
About half of America's electrical power comes from coal. In generating this power, U.S. utilities produce and capture more than 123 million tons of CCBs each year. That amounts to about half the volume of ash ejected by the eruption of Mt. St. Helens in 1980. It is expensive to place such a volume of material in landfills, and there is also the environmental cost of dedicating land to CCB disposal. As a result, the industry seeks to find beneficial uses for its ash and minimize its need for landfill space.

The CBRC assists industry and regulatory agencies identify beneficial applications for CCBs. We recognize the changing nature of CCBs and have adapted accordingly. As air quality regulations have become more stringent, more scrubber sludge, high-carbon ash, and sorbents are produced. Markets for these new byproducts need to be found to ensure an increasingly high recycle rate for CCBs.

What has the CBRC Accomplished?

Since its inception in 1998, the CBRC has funded 52 research projects nationwide with a total value exceeding $10 million from federal, state, and private sources of support. When the CBRC began its work, only 25% of CCBs were used beneficially. Today that number exceeds 43%. The CBRC has significantly contributed to this increase in CCB utilization by working to develop exciting new uses for CCBs as well as by improving and expanding current uses.

Transportation Industry: CCBs are used in new pavements, recycling asphalt pavements, and stabilizing gravel roads. They perform well when used in Portland cement for roadway construction. CCBs make concrete stronger, more durable, and less permeable. Using CCBs in concrete preserves natural resources typically mined for cement production. CCBs can also be used in place of natural materials in manufacturing automobile parts.



from here to there

CBRC researchers have demonstrated that CCBs can be used in roadway construction and the manufacture of a variety of materials, such as concrete, bricks, and utility poles.

Fly ash photos courtesy of the Portland Cement Association. Other photos from Photos.com, U.S. Geological Survey and the CBRC.

Building Products: Wallboard, blocks, bricks, countertops, and decorative tiles have all been successfully manufactured using CCBs. These products are environmentally-safe and structurally sound. Substituting CCBs in place of natural materials is cost-effective and preserves natural resources.

Mine Filling and Reclamation: CCBs are an environmentally-safe and economical way to reclaim mine lands. Used as fill for surface mine pits and in grout for underground mine voids, they serve to reduce acid mine drainage. Use of these materials has been proven safe without harming groundwater supplies. This large-scale use of CCBs also serves to remediate poor mine soils and allow for revegetation with grasses or trees.

Agricultural Uses: CCBs have been safely and successfully used to amend agricultural soils to improve crop production from tomatoes and corn to alfalfa. They have also been used to create impermeable liners to contain swine manure on large commercial pig farms.

More work is needed

More research is needed for the CBRC to reach its goals. By 2010, the CBRC hopes to:

- increase the overall CCB utilization rate from the current 43% to 50%,
- increase the current rate of the CCB, FGD (flue gas desulfurization), used,
- increase the number of uses considered allowable under state regulations, and
- examine the environmental impact of byproduct use and disposal.

Additional research is needed to determine:

- if CCBs affected by the new air emission scrubbers can be restored to a quality that would allow it to be used in concrete;
- if additional beneficial uses can be identified for CCBs that cannot meet the quality necessary for use in concrete production, and
- if CCBs produced from the new air emission scrubbers will be safe for use in building material products

What you can do to help

Funding for the U.S. Department of Energy Office of Fossil Energy's Innovations for Existing Plants (IEP) Program (the program that funds the CBRC) was significantly reduced in 2007 and eliminated in the President's FY 2008 budget.

Please voice your support for the CBRC's work to your local congressional delegates. Urge them to contact the House and Senate Energy and Water Subcommittees to ask them to restore funding for this important work.

The amount of CCBs produced in the U.S. each year is about half the volume of ash ejected by the 1980 eruption of Mt. St. Helens.

CBRC researchers developed materials, such as countertops, tiles, and siding from sulfate-rich FGD scrubber sludge. The products proved to be safe from both environmental and health perspectives.

For more information, contact Tamara Vandivort, CBRC program coordinator, at (304) 293-2867 x 5448 or at Tamara.Vandivort@mail.wvu.edu.
or visit the CBRC Web site at
http://wwwri.nrcce.wvu.edu/programs/cbrc/