



February 2, 2009

Dear Senator Boxer and EPA Administrator Jackson:

We are the leadership team at CalStar Cement, in Newark, CA. The purposes of this letter are (1) to share some perspectives that we hope may be helpful as you consider and develop policy responses to the recent fly ash spill at TVA's Kingston plant; and (2) to request a meeting with you.

CalStar is a Silicon Valley company focused on green building materials. With deep background and credentials in the environmental movement, we are committed to developing new products that are energy efficient in their manufacture and help mitigate climate change when used in the place of traditional building materials. We are funded by Foundation Capital (Menlo Park, CA) and EnerTech Capital, two of the most successful venture capital firms in the clean technology field.

After more than a year of intensive R&D, we will build our first factory this year to make bricks, concrete products and general use cement using fly ash from a We Energies Coal-Fired Power Plant in Wisconsin. Compared to conventional clay bricks, CalStar's bricks require 80% less energy and emit 80% less CO₂ in their manufacture and incorporate up to 99% post-industrial by-products. Similarly, CalStar concrete products use 80% less energy and emit 80% less CO₂ compared to conventional Portland cement concrete. These breakthrough products are of great interest to architects, engineers and builders who are focused on green building.

With our company mission centered around environmental stewardship and our initial focus on fly ash bricks, we have studied and learned a great deal about fly ash. Based on our scientific and technical work, we believe three facts in particular merit your attention:

- 1. Fly ash is one of our most powerful tools for reducing the CO₂ footprint of cement**
- 2. Fly ash is safe when incorporated into building materials and in other applications**
- 3. Fly ash is not a hazardous waste, though it is imperative that it be disposed of properly.**

We provide more detail on each of these points below.

1. **Fly ash is one of our most powerful tools for reducing the CO₂ footprint of cement.**

Cement is one of the biggest single contributors to greenhouse gas emissions in the world. Globally, cement manufacturing generates 2.4 billion tons per year of CO₂; by comparison, all passenger automobiles emit about 2.8 billion tons per year. In the U.S., cement manufacture generates over 100 million tons of CO₂ each year.

The simplest and most efficient way to reduce Portland cement's CO₂ footprint is to use less cement by substituting fly ash. On average across the U.S. today, fly ash is used to replace about 15% of the Portland cement in concrete. Since 1990, over 200 million tons of fly ash have been used in this manner. In obviating the use of ordinary cement that would have generated almost a ton of CO₂ per ton of cement produced, this application of fly ash has prevented approximately 200 million tons of CO₂ from being released into the atmosphere during this period. This is significant, approximately equivalent to eliminating the emissions of 40 million passenger cars for a year.

We estimate that a similar quantity of CO₂ emissions can be avoided in the U.S. over the coming decade by continuing to expand the acceptance and adoption of fly ash in concrete, bricks and other building materials. The economic recovery plans to invest in infrastructure and buildings will require large amounts of concrete. Using high-fly ash mixes is essential to meeting the twin goals of infrastructure investments and CO₂ mitigation.

Looking beyond the U.S., a new McKinsey study¹ released on 26 January 2009 cites the use of fly ash in cement and concrete as a key component of global climate change policy, representing almost 490 million tons of annual CO₂ reduction potential at a negative cost, i.e. requiring no carbon tax or subsidy.

2. **Fly ash is safe when used in building materials and other applications.** Fly ash has been specified as a partial cement replacement and in other building materials for over 50 years. Pioneered by Prof. PK Mehta of UC Berkeley among others, the addition of fly ash makes concrete more durable and more reliable, and in many parts of the country less costly.

In California, CalTrans requires 25% fly ash blends in most of its mix designs; many notable structures in our state including the San Francisco-Oakland Bay Bridge and the de Young Museum have been built using concrete with 50% fly ash replacement for cement. The U.S. Green Building Council encourages the use of fly ash in its LEED rating system.

Numerous academic studies and publications by the U.S. Environmental Protection Agency, the U.S. Department of Energy, the Electric Power Research Institute and others

¹ McKinsey & Co., Pathways to a Low Carbon Economy, Version 2 of the Global Greenhouse Gas Cost Abatement Curve.

document the safety of fly ash when used in concrete and similar applications. Notably, leading environmental advocates also endorse the reuse of fly ash in concrete and other construction products. The National Resources Defense Council writes, “For some types of [coal combustion wastes], there are alternative uses as raw material for construction products such as concrete, plaster, and wallboard. When directed toward these ‘encapsulated uses’, the dangerous chemicals in the waste are not subject to erosion and leaching into the environment.”²

Lisa Evans of Earthjustice (the legal arm of the Sierra Club) testified in front of a US House of Representative Committee last June that, “Reuse of ash as a component of asphalt, concrete, and gypsum board are legitimate and safe reuses that should be encouraged. In addition, recycling ash in concrete can result in a large reduction of greenhouse gases.”³

CalStar’s R&D confirms these views. Our Board of Directors is adopting an Environmental Safety & Health policy that is unequivocally committed to ensuring that our products and processes meet all appropriate standards for safety. Our raw materials and end products are subjected to the strictest internal and external testing, and have been found safe in all dimensions at all stages of their life cycle.

3. **Fly ash is not a hazardous waste, though it is imperative that it be disposed of properly.** Fly ash has been exempted from RCRA regulation since 1982, based on EPA’s strong belief at that time that it was not hazardous. Since then, samples from hundreds of power plants have been tested by EPA, EPRI and others proving that the material rarely exceeds EPA limits on any of the chemicals or metals of concern, and generally falls below those limits by a very large margin. If the RCRA exemption were rescinded today, the vast majority of fly ash would remain categorized as a non-hazardous waste based on its actual chemical content.

With that said, practicing proper disposal practices is essential as 55% of the material is not recovered for beneficial use. Where beneficial uses cannot be found, we support policies that will protect public safety by eliminating surface impoundments and ensuring that landfills are lined appropriately.

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² NRDC, “Dangerous Disposals: Keeping Coal Combustion Waste Out of Our Water Supply”, Natural Resources Defense Council, 2007.

³ Evans, Lisa, Earthjustice, *Testimony before the Subcommittee of Energy and Mineral Resources, Committee on Natural Resources*, U.S. House of Representatives, 2008.

Increased beneficial use of fly ash represents a rare and valuable opportunity to address three important national priorities at once: reducing greenhouse gas emissions to mitigate climate change, managing a large category of industrial by-products, and creating new green-collar jobs. CalStar's mission includes all of these priorities.

To realize this opportunity nationally, public policy should continue to support the safe and beneficial use of fly ash when properly used in products, as U.S. EPA's Coal Combustion Products Partnership has sought to do since 2003. At the same time, public safety needs to be protected with appropriate laws regarding fly ash management and disposal. We believe both of these policy objectives can be achieved.

We respectfully request a meeting with you to provide additional clarification and information.

Sincerely,

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