



Supermetals

40-6940

Cabot Supermetals
1608 County Line Road
Boyertown, PA 19512
August 26, 2003

Ms. Elaine Brummett
U.S. Nuclear Regulatory Commission
Fuel Cycle Facilities Branch
Division of Fuel Cycle Safety and Safeguards
Office of Nuclear Material Safety and Safeguards

Re: Request to Conduct Plant Trial Using Filtercake as Cement Kiln Feed Material -
Cabot Super Metals, Inc. Boyertown Facility, License SMB-920. Docket No. 40-6940

Dear Ms. Brummett

As you know, Cabot Super Metals, Inc. (CSM) operates a plant in Boyertown, PA that includes an on-site wastewater treatment plant that produces filtercake containing trace levels of radionuclides. CSM recently submitted to you dose assessments that addressed two scenarios: one involving release to local sanitary landfills, and the other involving release to a roadbase recycling operation. Both of those assessments justified release of materials containing radionuclides at higher concentrations than are found in our filtercake. We now have an opportunity to pursue a third disposal option that will permit beneficial reuse of the filtercake in a manner that would involve handling methods and exposure levels to workers and the general public that essentially duplicate significant portions of the scenarios covered in our prior dose assessments. This letter provides information demonstrating that the previously evaluated scenarios and the current opportunity are similar in many areas, and we are requesting permission to proceed with a limited Plant Trial operation to test the feasibility of this disposal option based on the dose assessments previously accepted by the U. S. Nuclear Regulatory Commission (NRC).

It is important that CSM get approval to move forward quickly, at least short-term for the Plant Trial, because the company that will use the filtercake as raw material will run this trial in the very near future. The data that can be collected from this trial study will determine if the process is feasible, and will likely provide information that will support dose assessment modeling if it is required prior to proceeding with routine shipments of the filtercake. This option could become the best alternative for disposal of the filtercake because beneficial re-use of a waste is preferable to increasing the volumes of material sent to our landfills, and because it is the most economically advantageous disposal option for this material. This economic advantage helps ensure that our operations remain competitive and that we continue to operate as a major employer in the Boyertown area.



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The Proposed Process

Lehigh Cement Company (LCC) in Blandon, PA has agreed that the filtercake generated by CSM can be considered for use as an alternative raw material feed source for their cement kiln. Calcium is the primary component in their feed sources and the filtercake is primarily calcium fluoride and calcium sulfate (>70%). They have reviewed analytical data summarizing the composition of the filtercake and determined that they can use it as a raw material feed to the kiln because of its high calcium content, and there would be no adverse impacts to the quality of their cement. The filtercake would be added at a 1% (by weight) feed ratio to the kiln resulting in a 100:1 dilution of our filtercake. The total raw material feed rate to the kiln is approximately 1.8 - 2.0 million tons per year, so the quantity of filtercake that CSM could supply to LCC in any year would be 20,000 tons.

LCC and CSM are working with the Pennsylvania Department of Environmental Protection Office Of Solid Waste (PADEP) and would like to move forward with what the agency calls a "co-product" determination of this material. The Co-Product Regulations were established to reduce the amount of waste going to landfills by finding ways to beneficially reuse residual wastes such as this filtercake. If this option proves viable, it would be a very positive approach from a solid waste regulation standpoint.

The next step is to conduct a full-scale Plant Trial. Lehigh would process the filtercake through their kiln during a standard product run while collecting specific process data to confirm that it is a good raw material feed source for them. Those data, along with other analytical data, will be used to evaluate the process and demonstrate to the PADEP that the filtercake can be used as a raw material without harm to human health and the environment, and to confirm that it does not affect the quality of the cement produced. If all of the process data look good, and the regulatory agencies approve, LCC will accept the material at their site for processing on a continual basis.

The proposed Plant Trial involves approximately 1500 tons of filtercake, which is the quantity produced during four weeks of normal operation at the Boyertown plant. The material would be transported from the Boyertown Plant to the LCC plant, a distance of approximately 17 miles, using covered or contained vehicles identical to those identified in the prior dose assessments for landfill disposal and roadbase recycling. The process for transporting and handling the filtercake minimizes the possibility of releasing material or exposing individuals. The filtercake is a fairly dense, moist solid when it is accumulated at the Boyertown plant, which further minimizes the possibility of generating airborne particulates.

LCC will receive the waste filtercake in bulk and store it on a concrete pad. The pad is covered on 3 sides to protect it from the elements. To add the filtercake to the kiln feed,



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an operator will transport the material by front-end loader from the storage pad to the kiln feed chute. The material is dumped directly into the feed chute. There is no further worker interaction with the filtercake from that point as the material handling equipment (conveyors, scrapers, etc.) moves the filtercake material through the system to the blending and pre-heat areas, and to the kiln. After the blending stage, the radionuclide concentrations in the filtercake have effectively been reduced by a factor of 100 due to dilution with other feed materials. In other words, if the filtercake contained less than 10 pCi/g of uranium and thorium, the blended material would now contain less than 0.1 pCi/g of those nuclides.

There is no further operator interface with the material until after it has been blended and processed and the cement klinker product exits the kiln. The cement klinker product is a large particle (pea-gravel size) solid material that presents very limited potential for airborne resuspension.

Comparison to Prior Dose Assessments

CSM has recently submitted dose assessments that were accepted by the NRC for recycling the filtercake as roadbase, and for landfill disposal. We would like to use the information we generated in those assessments to evaluate this new option, if possible, in order to receive permission to proceed with the Plant Trial study in a timely manner. A general comparison was made of the pertinent conditions in the various scenarios. Factors in the existing dose assessments that are expected to be conservative when compared to the cement option, and the guidance and assumptions used in the prior dose assessments that are expected to add to the level of conservatism are described below.

1. The concentrations of uranium and thorium in CSM's filtercake have remained consistent for a long period of time and the material has been released to local landfills in compliance with an NRC license condition that requires the total uranium and thorium levels in the material not to exceed 10 pCi/g. CSM's process has not significantly changed in the recent past and there are no plans to implement any significant change in the foreseeable future.
2. The distance to LCC from the Boyertown site is significantly less than the distance to the recycling operation that was addressed in the previous dose assessment, making the dose to truck driver and to individuals along the route less than in the roadbase recycle option.
3. The dilution factor for this scenario is a factor of 7 greater than the dilution factor assumed for the recycle dose assessment, so the relative concentrations of the radionuclides in the end product material are a factor of 7 lower for this cement scenario.
4. The process of mixing and handling the roadbase requires more direct worker interaction and closer contact for a longer period of time than the cement option.



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5. The landfill and roadbase options leave the material in a loose, dispersible form. The concrete klinker is in a larger, solid form that would be far less dispersible, so potential exposure levels should be lower for the cement scenario.
6. The short period of time for the Plant Trial, the limited quantity of material that will be processed, the low levels of radioactivity in the filtercake, and the history of unrestricted release to landfills provide reasonable limits on the "worst-case" potential doses and pathways to be considered.

Based on this information, CSM requests the following from the NRC:

1. Approval from the NRC to process 4 weeks of filtercake material through the kiln for the Plant Trial. We need quick approval on this and anticipate it will occur within a month.
2. The steps that CSM would need to complete, following a successful Plant Trial, in order to continually supply this material to LCC in the future.

Thank you for your timely consideration of this request.

Sincerely,
Cabot Supermetals

A handwritten signature in black ink, appearing to read 'Timothy M. Knapp'.

Timothy M. Knapp