July 15, 2005

Mr. Bradley A. Okoniewski, Manager
Safety, Health, and Environmental Programs
Cabot Corporation
P.O. Box 1608
County Line Road
Boyertown, PA, 19512

SUBJECT: AMENDMENT OF SOURCE MATERIALS LICENSE NO. SMB-920 FOR CABOT CORPORATION'S BOYERTOWN, PENNSYLVANIA FACILITY, TO ALLOW RECYCLING OF FILTERCAKE AT A CEMENT KILN (TAC LU0072)

Dear Mr. Okoniewski:

By letter dated November 24, 2004, Cabot Supermetals (CSM), submitted an application and requested amendment of Source Materials License No. SMB-920 to allow recycling of the waste water filtercake. CSM owns and operates the Boyertown facility as a subsidiary of the licensee, Cabot Corporation. The U.S. Nuclear Regulatory Commission (NRC) staff's preliminary review of the application resulted in a request for additional information (RAI) dated December 22, 2004. A revised application and updates to the 2003 Environmental Report were provided January 28, 2005.

The NRC staff has completed its review of the revised application, and determined that it provides reasonable assurance that the recycling of the filtercake complies with NRC regulations and current policy. Based on the information provided in the application, previous inspections, and discussions with CSM staff and stakeholders, we have completed the Safety Evaluation Report (Enclosure 1).

License Condition 20 has been modified to include the option to recycle filtercake as feed material at a cement kiln, under the conditions described in the submittal. The change was discussed with Mr. R. Schoenfelder of your staff on May 18**,** 2005 and is provided as Amendment No. 7 to Source Materials License No. SMB-920. The amended license is enclosed (Enclosure 2).

The NRC staff prepared an Environmental Assessment (EA) for the license renewal, in accordance with the National Environmental Policy Act and NRC regulations in 10 CFR Part 51. The draft EA was issued on March 31, 2005, and the final EA was issued June 10, 2005. The assessment concluded that amendment of License SMB-920, to allow recycling of the filtercake at a cement kiln, will have no significant impact on the environment. A Finding of No Significant Impact was published in the Federal Register on July 7, 2005.

If you have any questions regarding this letter or the enclosures, please contact Mr. Michael Raddatz of my staff at (301) 415-6334, electronic mail mgr@nrc.gov, fax (301) 415-5390, or by mail c/o NRC Document Control Desk, Mr. Raddatz, Mail Stop T8 F42, 11555 Rockville Pike, Rockville, MD 20852-2738.

In accordance with 10 CFR 2.390 of the NRC's Rules of Practice, a copy of this letter will be available electronically from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Gary S. Janosko, Chief
Fuel Cycle Facilities Branch
Division of Fuel Cycle Safety
and Safeguards
Office of Nuclear Material Safety
and Safeguards

Docket No. 40-6940
License No. SMB-920

Enclosures: 1. Safety Evaluation Report
2. License Amendment No. 7

cc: Timothy Knapp, Cabot Supermetals

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Close TAC LU0072

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SAFETY EVALUATION REPORT
LICENSE AMENDMENT TO ALLOW RECYCLING OF FILTERCAKE IN CEMENT
CABOT SUPERMETALS, CABOT CORPORATION
BOYERTOWN, PENNSYLVANIA

DATE: July 11, 2005

DOCKET NO.: 40-6940

LICENSE NO.: SMB-920

FACILITY: Cabot Supermetals
County Line Road
Boyertown, Pennsylvania

TECHNICAL REVIEWERS: Elaine Brummett, Christopher McKenney

PROJECT MANAGER: Michael Raddatz

SUMMARY AND CONCLUSIONS:

Cabot Supermetals (CSM) submitted, by letter dated November 24, 2004, a license amendment request for Source Materials License No. SMB-920, to allow recycling of waste water filtercake produced at the Boyertown, Pennsylvania (PA) facility. The U.S. Nuclear Regulatory Commission (NRC) staff conducted an initial review and requested additional information on December 22, 2004. CSM responded by letter dated January 12, 2005, addressing the staff's concerns. A revised application was submitted January 28, 2005.

The NRC staff performed an evaluation of the safety and environmental aspects for the license amendment following the applicable guidance in NUREG-1520, "Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility," and NUREG-1748, "Environmental Review Guidance for Licensing Actions Associated with NMSS Programs." The decommissioning funding plan did not need to be adjusted as the landfill option for disposal of filtercake is still viable and is more costly than recycling the material. This Safety Evaluation Report (SER) describes the basis for the approval of the license amendment request. Some of the evaluation was based on the 2004 license renewal application and the SER developed for that action. The staff recommends approval of the request, because the proposed activities are protective of the health and safety of the workers, the public, and the environment.

DISCUSSION:

1.0 General Information

1.1 License History and Background

NRC Source Materials License No. SMB-920 was last renewed on May 26, 2004. Cabot Corporation (Cabot) is authorized to possess natural uranium and thorium in any chemical or physical form in an amount that will not exceed 360 metric tons (400 tons) of elemental uranium and thorium. It is authorized to receive, possess, and process this material at the County Line Road facility, Boyertown, PA. Cabot is a global specialty chemicals and material company headquartered in Boston, MA, with operations in 21 countries. CSM is a subsidiary of the licensee, that owns and operates the Boyertown facility with about 400 employees.

1.2 Facility and Process Description

The Boyertown facility is located in southeastern PA, on both sides of County Line Road, on the border of Berks and Montgomery Counties, approximately 2.4 kilometers (1.5 miles) northeast of the borough of Boyertown. The site is fenced and the two primary access gates are staffed with security guards. Secondary gates are equipped with automatic security card readers. Access to work areas where radioactive material is handled is controlled administratively by signs and training.

The southwestern portion of the site is bordered by West Swamp Creek. The facility is located in a valley consisting of woods, hills, and farmlands. Forested areas are located north of the operating areas, and along West Swamp Creek on the southwest part of the site. Primary land use is agricultural. However, recently a new residential development within 3.2 kilometers (2 miles) southeast of the plant has been constructed with about 50 houses. Additional information related to the site (demographics, hydrology, geology, and meteorology) is provided in the Environmental Assessment (EA) for the license renewal issued April 12, 2004.

CSM processes tantalite, and columbite ores to extract tantalum (Ta) and niobium (Nb). The ores contain source material (uranium and thorium up to 4 percent by weight in combination) averaging 0.22 percent. The ore generally arrives in 55-gallon drums and has a sandy consistency. The ore is transferred for grinding and classification, then sized material is dissolved in hydrofluoric acid in heated digesters. The resulting acid slurry is separated in two streams. The filtrate contains the soluble Ta and Nb compounds, while the pressed solids (presscake or ore residue) contain the insoluble uranium and thorium compounds and other insoluble impurities.

Ta and Nb are recovered using a two-stage extraction process. The other main operations include fabrication of products, treatment of liquid waste, and storage of the presscake until it is transported and disposed at a licensed site.

Treating the liquid waste with lime to precipitate fluoride and adjust pH, and pressing the mixture to remove liquid, results in a semi-solid residue or sludge termed filtercake. This filtercake averages about 50 percent water by weight and the solid material is mostly calcium

fluoride. CSM indicated that the beneficial re-use of the calcium-rich filtercake would assist the company in the international market competition by lowering disposal costs.

2.0 Radiation Protection and Monitoring

2.1 Facility Radiation Protection

As required under 10 CFR 20.1101, CSM has both a radiation protection program and a program to ensure that exposures are as low as is reasonably achievable (ALARA). The radiation protection program includes monitoring of radiation exposure (internal and external) and environmental monitoring, as well as effluent control.

CSM has an ALARA Committee that is required to meet at least quarterly to address radiation safety, occupational safety, and health of workers and the public. The Committee reviews the radiation monitoring results and makes recommendations to achieve ALARA exposure levels.

CSM maintains current and accurate written procedures for the radiation safety program in a Radiation Safety Officer's Operations Manual. Administrative controls at the facility include: required training for workers; inventory tracking, restricting access to the area of airborne radioactivity; investigation if monitoring results exceed 30 percent of the limit; and prohibiting eating, drinking, and smoking or chewing in the plant process areas. In addition, CSM has a radiation safety and emergency personnel training program to ensure appropriate training to employees working with or around licensed materials. CSM also performs surveys as part of its radiation control and personnel monitoring programs.

The site has a Preparedness, Prevention, and Contingency Plan with procedures to prevent spills and to respond to unplanned releases of hazardous materials. CSM appears to have appropriate staff, procedures, and equipment in place to effectively deal with various types of emergencies such as accidents involving trucks carrying filtercake.

2.2 Monitoring

CSM is required to measure concentrations and quantities of both radioactive and hazardous materials released to and in the environment around the facility as described in 10 CFR Part 20, Subparts D and F. Also, CSM is subject to the Clean Air Act requirements of 40 CFR Part 61, Subpart I, and State regulations. The CSM facility conducts effluent and environmental monitoring programs to provide a basis for evaluating potential public health and safety impacts, for compliance with the NRC license and environmental regulations, and for development of mitigation measures. The effluent, personnel, and environmental monitoring programs are discussed in the EA issued by NRC on April 12, 2004, for the license renewal.

2.3 Environmental Assessment

The NRC staff prepared a draft EA for the recycle license amendment request. That document was sent to various agencies and local governments for comment on March 31, 2005. One comment was received from the PA Department of Environmental Protection, Bureau of Radiation Protection, and was addressed in the final EA issued June 10, 2005. A finding of no significant impact was published in the *Federal Register* on July 7, 2005.

2.4 Findings

The staff's review of the amendment request determined that radiation protection and monitoring programs meet the regulations, are consistent with regulatory guidance, and are adequate to protect the health and safety of the workers and the public. Also, the NRC staff determined that the management of radioactive waste is appropriate and would not significantly impact the human environment.

3.0 Waste Water Filtercake

3.1 Characteristics

At the waste water treatment plant, liquid waste from the ore digestion process and other plant activities is neutralized with lime, then the mixture is pressed to remove liquid; the residual semi-solid waste is called filtercake. CSM produces approximately 19,000 tons of filtercake per year which is shipped daily to a landfill (three municipal landfills have been used). The filtercake (under the renewal application and a license condition) is composite sampled monthly and analyzed for uranium and thorium at least monthly to ensure that the average concentration remains below CSM's license condition limit. The condition limits the release of this material to 10 pCi/g uranium and 3 pCi/g thorium, applied as the sum of fractions so that the total source material activity will not exceed 10 pCi/g for the monthly average. The average concentrations of uranium and thorium in the filtercake have historically been 4.1 and 0.1 ppm (2.85 and 0.015 pCi/g), and from 1999 to 2003 averaged 3.0 pCi/g and 0.2 pCi/g, respectively. Most quarterly values were below 4.0 pCi/g total.

Plant operation includes the receipt of feed material as ore, containing an average of 0.165 percent by weight of uranium oxide (U3O8), and an average of 0.057 percent by weight of thorium dioxide (ThO2). The plant ore feed rate is approximately 9,600 pounds per day five days per week, or 1,200 tons per year. CSM uses ore assay data to track uranium and thorium concentrations in individual ore batches and to isolate occasional batches that may contain higher concentrations than normal. Those batches are either rejected or are isolated during processing so that the resultant filtercake can be monitored closely to detect materials that exceed the landfill release limits. This limits the amount of uranium and thorium in the filtercake. CSM performs gamma surveys of trucks carrying the filtercake to landfills and has found levels that are indistinguishable from background.

CSM has been disposing of the filtercake sludge at local landfills for over 10 years under the NRC-approved 10 pCi/g limit for uranium plus thorium. The 2003 dose modeling to support this limit was for the critical group, using the resident farmer scenario, on a closed landfill. The staff determined that the disposal dose analyses performed by the licensee either quantitatively or qualitatively addressed all of the important scenarios and adequately described the source term that included Pb-210 as well as U-238 and Th-232 and their progeny. Adequate sensitivity and ALARA analyses were performed. The calculated potential dose, if members of the public are exposed through normal pathways to the maximum levels while living on top of the landfill, was less than 0.03 mSv/y (3 mrem/y) above background. Radiation doses at this level would not impact health, safety, or the environment. Also, as discussed above, the amount of radioactivity actually released contains far less than the maximum allowed. Therefore, a dose of about 0.01 mSv/y (1 mrem/y) could be expected for a resident farmer at the landfill site.

To be conservative, License Condition 20 limits the release of this material to 370 Bq/g (10 pCi/g) uranium and 111 Bq/g (3 pCi/g) thorium, applied as the sum of fractions so that the total source material activity will not exceed 10 pCi/g on a monthly average. This ensures that the annual average will be less than 10 pCi/g.

3.2 Transportation

The filtercake would be transported to the cement kiln, as it is to the landfill, in covered or contained trucks. Approximately 62 truckloads of filtercake could be shipped each month.

In the event of a release or spill of the wastewater filtercake during transportation, the licensee has adequate procedures to address the clean-up. This is demonstrable because CSM has been transporting filtercake to local landfills for decades. In that time CSM has experienced one spill incident in that time. That spill was detected, evaluated, and cleaned up by the transporter's response team, with CSM oversight, within 30 minutes of the incident. Further, the material contains such low levels of radioactivity that it is usually similar to the native soil, and would not present a radiological hazard to the public or the environment.

3.3 Handling at a Cement Kiln

CSM identified the critical parameters that would need to be in place before a cement kiln could receive the filtercake, i.e. within the bounds of the dose modeling. Most important is the dilution of the filtercake to 1 percent of the feed material processed. Second is the handling of the material, such that during extreme weather conditions, the filtercake is stored so the material is protected from the elements. And third, the workers moving and mixing the filtercake should have "limited" exposures which would be accomplished by using equipment to transfer and mix the filtercake with other feed materials.

Accordingly, the proposed License Condition would require CSM to ensure by contract with the cement kiln that:

< The filtercake is diluted by at least a factor of 100:1 (wet weight basis) by other feed materials that do not include NRC-licensed material;
< The filtercake is handled using mechanical equipment and systems in a manner that minimizes direct contact with the filtercake by workers;
< Incoming filtercake is stored on pads and in a manner that will minimize the potential for release or dispersal of the material.

After mixing and drying, the cement clinkers (ping-pong sized) are moved from the kiln and ground into cement and bagged. Because the low activity filtercake is diluted 1:100 in making the cement, the cement would contain levels of radiation similar to conventional cement or natural soil. This product is usually combined with sand and water to make concrete.

3.4 Dose Assessment

SOURCE TERM

The licensee has provided adequate characterization of the material to be recycled. The material is natural uranium and thorium that is not in secular equilibrium (progeny at much lower levels). The licensee has used scaling factors to calculate the progeny concentrations if the parent radionuclide is at the appropriate concentration limit. These scaling factors are based on site data and are appropriate for the analysis. The licensee has also used conservative assumptions of chemical form in its dose analysis.

The concentrations in the filtercake are similar to natural concentrations of uranium and thorium in standard feed materials, and the proposed limits are similar in magnitude to concentrations that can be seen in other alternate concrete feed materials such as coal ash. For comparison, analysis of PA background surface soil from 33 locations indicated that U-238 levels varied from 0.4 to 1.9 pCi/g with an average of 1.2 pCi/g and Th-232 varied from 0.4 to1.7 pCi/g with an average of 1.1 pCi/g (ORNL, 1981). The US soil mean levels for U-238 and Th-232 are about 0.98 and 1.0 pCi/g, respectively.

SCENARIOS AND PATHWAYS

Four general scenarios need to be assessed to investigate the potential doses from the re-use of this material: (1) transportation of material; (2) public worker dose at the cement plant; (3) use of the material; and (4) disposal or abandonment of the material. CSM's license renewal analyzed the potential effects of shipping this material, the potential dose from placing the material in a landfill, and the long-term potential dose from the landfill. Those analyses are still appropriate for this material and bound the doses for those scenarios. For this application, the licensee included three scenarios: a worker at the bagging operation, a resident of a concrete building, and a resident farmer using land for grazing only with the concrete building abandoned in-place.

The staff finds these scenarios to be generally adequate and reasonable for the assessments required for compliance with 10 CFR 20.2002. The justification for the pathways elimination for the abandoned building is weak, however, independent staff analyses found the assumptions to not be risk-significant.

COMPUTER MODELS

The licensee used RESRAD version 6.22 in probabilistic mode to calculate the dose for the concrete worker and the final disposition scenarios. For the resident of the concrete building, the licensee used RESRAD-BUILD version 3.22, again in probabilistic mode.

The use of these computer codes are appropriate for the scenarios being modeled. The staff finds these computer codes to be adequate and reasonable for the assessments required for compliance with 10 CFR 20.2002.

PARAMETER SELECTION

The licensee used primarily a mix of default parameter distributions and site-specific input parameters. Site-specific information was used, if available (for example, information concerning operations at the cement company). If an input parameter was sensitive and no site-specific information was available or appropriate, the default distribution was used. If the input parameter was not sensitive, the mean value of the distribution was used. For parameters that were not sensitive but had no site-specific data or default distribution, the licensee selected to use the RESRAD industrial worker deterministic default value.

The staff finds this approach to be appropriate for the modeling completed by the licensee.

SENSITIVITY/UNCERTAINTY CALCULATIONS

The licensee has performed probabilistic analyses to calculate potential doses from the reuse of the filtercake material. These probabilistic analyses are supported by sensitivity analyses to ensure the important parameters are properly justified. The licensee uses the mean of the peak approach to calculate the dose from each scenario and has selected the 90^{th} percentile of the total dose over all pathways from each scenario.

The staff finds this approach acceptable. The use of the 90^{th} percentile and the mean of the peak approach is a more conservative approach than the approach suggested by NUREG-1757, Volume 2, "Consolidated NMSS Decommissioning Guidance."

LICENSEE RESULTS

The licensee's results show that, for each of the new scenarios, the dose will be less than 0.01 mSv/y (1 mrem/y). These analyses show that the dose from the proposed action is likely to be negligible and within the NRC policy of approving doses of "a few mrem" for 10 CFR 20.2002 requests.

INDEPENDENT ANALYSES

Along with reviewing the dose analyses provided by CSM, the staff performed independent analyses of the potential impact from the waste using the generic analyses for concrete in NUREG-1640, "Radiological Assessments for Clearance of Materials from Nuclear Facilities" for comparison. The results from these analyses: (1) allowed the staff to determine that a request for additional information on the scenario for the long-term abandonment scenario was not necessary; and (2) provided additional confidence for the staff making the regulatory decision to approve the request.

NUREG-1640 is a good reference for generic assessments of potential doses from disposing of low levels of radioactive materials. For this proposal, the staff used the dose coefficients in Appendix I. Totaling the resulting doses for each scenario resulted in a dose that was a small fraction of 0.01 mSv/y (1 mrem/y).

3.5 Findings

The staff's review finds the dose assessment for the licensee's proposal to be adequate and reasonable to demonstrate that the dose will be below the NRC policy limit of "a few mrem." The licensee used appropriate scenarios and computer models. The licensee used appropriate site-specific information and a probabilistic approach to modeling the uncertainty in this dose assessment. CSM used a conservative approach in selecting the probabilistic dose result to compare to the policy limit.

4.0 Regulatory Analysis

4.1 Previously Approved Source Material Waste Recycling as Cement Kiln Feed Material

The February 2, 1999, Staff Requirements Memorandum (SRM) to SECY-98-284 stated that the Commission has not objected to the staff's proposal to approve a licensee's request to transfer baghouse dust (high CaF_2 content) to an exempt person (cement manufacturer) in accordance with 10 CFR 40.51(b)(3) and 40.13(a). However, a projected dose greater than 0.25 mSv/y (25 mrem/y) would require notification of the Commission. The baghouse dust contained 0.03 weight-percent uranium and thorium, but the staff conservatively assumed 11.4 pCi/g U-238 and 51.4 pCi/g Th-228 for the modeling. Under realistic assumptions, the maximum dose was not expected to exceed 0.02 mSv/y (2 mrem/y).

In 1997, a license amendment was issued to Westinghouse Electric Corporation for the facility in Columbia, South Carolina, to allow release of its industrial waste treatment products (primarily CaF_2) to a cement manufacturer. The release was to contain less than 30 pCi/g uranium (low enriched). The waste would constitute a maximum of 0.25 percent of each cement batch and the maximum dose to the public from the resulting concrete would be 0.05 mSv/y (5 mrem/y). According to an E-mail on March 8, 2001, (ML051810395) from Donald Goldbach of Westinghouse, the company shipped 10,650 pounds of the waste to a cement manufacturer in 1998.

Other fuel cycle licensees have been allowed to release CaF_2 wastes containing up to 212 pCi/g uranium to the steel industry (Allied-Signal in 1992 and Global Nuclear Fuel) with authorization granted based on the requirements of 10 CFR 40.13(a). According to one licensee (Allied-Signal 1991), the natural CaF_2 (flluorspar) contains 18 pCi/g uranium.

4.2 Current Regulations and Policy

The NRC regulations state:

10 CFR 40.51(b) "Except as otherwise provided in his license and subject to the provisions of paragraphs (c) and (d) of this section, any licensee may transfer source or byproduct material:... (3) To any person exempt from the licensing requirements of the Act and regulations in this part, to the extent permitted under such exemption;...."

10 CFR 40.13(a) "Any person is exempt from the regulations in this part and from the requirements for a license set forth in section 62 of the Act to the extent that such person receives, possesses, uses, transfers or delivers source material in any chemical mixture, compound, solution, or alloy in which the source material is by weight less than one-twentieth of

1 percent (0.05 percent) of the mixture, compound, solution or alloy. The exemption contained in this paragraph does not include byproduct material as defined in this part." Although the Commission considered revising this regulation to apply only to non-licensees, that rule-making has not been completed. As written, Section 40.13(a) would exempt the CSM filtercake.

It is the staff's understanding that the filtercake would be transferred as authorized by 40.51(b) and the cement kiln would be exempt from licensing under 40.13(a).

Guidance on release of solid materials from a licensed site was provided to NRC staff in an August 7, 2000, memorandum from William Kane, Director, Office of Nuclear Material Safety and Safeguards (NMSS), and Samuel Collins, Director, Office of Nuclear Reactor Regulation (NRR) (ML003735583). Staff was directed to continue evaluating licensee requests on a case-by-case basis using existing guidance in Regulatory Guide 1.86, "Termination of Operating Licenses for Nuclear Reactors," and Fuel Cycle Policy and Guidance Directive FC 83-23 for materials licensees. On July 27, 2001, Donald Cool, Director, Division of Industrial and Medical Nuclear Safety, provided guidance for release of soils from licensed facilities. The memorandum indicated that for prospective cases or cases that are not grand-fathered, there may be approval under a criterion of a few mrem. On December 27, 2002, Mr. Cool provided guidance on the release of concrete. It indicated that for prospective cases, release of concrete with volumetric sources of contamination may be approved under a criterion of a few mrem.

The March 2002, SRM (SECY-00-0201) and an October 8, 2003, SRM (SECY-03-0106) stated that staff should continue its current practice of reviewing licensees' requests for transfer or disposal of unimportant quantities of source material under 40.13(a), and, when justified, issue case-specific exemptions based on previous Commission guidance.

4.3 Consultation With Other Agencies

CSM met with staff of the U.S. Environmental Protection Agency Region III Waste Minimization Program, and Pennsylvania Department of Environmental Protection (PADEP) Office of Solid Waste, and the Bureau of Radiation Protection on August 9, 2004. CSM indicated that there is support for beneficial re-use of material to lessen the amount of material going to landfills.

The NRC staff provided the draft EA for the recycle amendment request to several departments in PADEP and several local governmental agencies. Only one comment was received. This was addressed by the License Condition.

4.4 Decommissioning Funding Plan

In the 2004 decommissioning cost estimate, CSM provided just the cost for one day of loading, transporting, and disposal of filtercake at a landfill since filtercake is removed from the site each day of operation. The requested amendment for an alternate disposal option does not require additional analysis or an increased surety amount because the filtercake would still be removed daily and the recycling at a cement kiln would be less costly than disposal at a landfill.

4.5 Findings

The request to recycle filtercake containing low levels of source material at a cement kiln is consistent with past practices approved for NRC licensees. Also, the request meets current NRC regulations and policy.

5.0 Conclusions

The review of the application and independent dose modeling has led staff to determine that there is reasonable assurance that CSM's proposed recycling of filtercake as cement kiln feed material meets the applicable criteria in Part 20 and Part 40, for the safety of workers, the public, and the environment. Also, the low potential doses are in keeping with current NRC policy.

Proposed wording for License Condition 20.

> The waste water filtercake source material limit for release to a landfill or a cement kiln operation (recycling to a cement kiln as described in submittal dated January 28, 2005) is the sum of fractions as follows: uranium/10 pCi/g + thorium/3 pCi/g = 1. This limit applies to a representative monthly average for filtercake released from the site.
>
> To provide assurance that the dilution ratio of the filtercake will be maintained at a minimum of 100:1, CSM will incorporate appropriate language into its contract, with the cement kiln, requiring their agreement to maintain this ratio. In addition, the contract will include a clause that authorizes staff or managers from CSM to inspect the kiln operation at least once in any year that significant quantities of filtercake are shipped there, with the intent of verifying that the dilution ratio is maintained. Records of these inspections will be maintained in CSM's NRC license files maintained by the SH&E department.

6.0 References

NRC: Environmental Review Guidance for Licensing Actions Associated with NMSS Programs (NUREG-1748)

NRC: Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility - Final Report (NUREG-1520)

NRC: NUREG-1757, Volume 2, "Consolidated NMSS Decommissioning Guidance"

NRC: Environmental Assessment For Renewal of Source Material License No. SMB-920 at the Cabot Facility Boyertown, Pennsylvania, issued April 12, 2004. (ML041030379)

NRC: NUREG-1640,Volumes, 1-4, Radiological Assessment for Clearance of Materials from Nuclear Facilities

NRC: Staff Requirements: SECY-98-284 - Transfers of Material Containing less than 0.05 Percent by Weight Source Material under 10 CFR 40.51(b)(3) and (B)(4), and 40.13(a)

NRC: August 7, 2000, memorandum from William Kane, Director, NMSS, and Samuel Collins, Director, NRR. (ML003735583)

NRC: Regulatory Guide 1.86, “Termination of Operating Licenses for Nuclear Reactors”

NRC: Policy and Guidance Directive FC 83-23, Division of Industrial and Medical Nuclear Safety, November 4, 1983 (ML0300650166)

NRC: December 27, 2002, Dr. Cool a guidance on the release of concrete (ML0030020591)

NRC: March 8, 2001, E-mail (ML051810395), from Donald Goldbach of Westinghouse

NRC: STAFF REQUIREMENTS - SECY-00-0201 - PROPOSED RULE -10 CFR PART 40 AMENDMENTS TO REQUIRE NRC APPROVAL FOR TRANSFER FROM LICENSEES TO EXEMPT PERSONS

NRC: STAFF REQUIREMENTS - SECY-03-0106 - UPDATE ON PROPOSED RULE CHANGES TO 10 CFR 40.51

Cabot Supermetals via Weston Solutions, Inc., Response to NRC Comments, including a revised application for recycling and an update to the Environmental Report, January 28, 2005 (ML050330142**)**

Cabot Supermetals via Weston Solutions, Inc., “Request to Amend License SMB-920 to Allow Filtercake to be Used as Cement Kiln Feed Material - Cabot Supermetals, Inc. Boyertown Facility.” dated November 24, 20049 (ML043350415)

“Page Changes to License Renewal Application dated March 23, 2004,” dated May 24, 2004. (ML041460211)

Cabot Supermetals and Weston Solutions, Inc., “Application for Renewal of Source Material License No. SMB-920,” dated March 23, 2004 (ML040860628); Weston Solutions, Inc. letter, (ML040860633) (application and form 313), CSM transmittal letter dated March 29, 2004 (ML040930203)

U.S. Nuclear Regulatory Commission, letter to CSM conveying the final Environmental Assessment for the Cabot license renewal, dated April 12, 2004 (ML041030379)

U.S. Nuclear Regulatory Commission, letter to CSM acknowledging receipt of the application and requesting additional information, dated December 22, 2004 (ML043570238)