

*Reference
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June 26, 1996

Mr. Robert J. Waldrop
ReUse Technology, Inc.
100 Chastain Center Blvd., Suite 155
Kennesaw, Georgia 30144

- References:
1. September 28, 1995 Letter from Robert J. Waldrop to Dexter Matthews Requesting Approval for Beneficial Reuse of Ash from Combustion of an 80:20 Blend of Coal:Shredded Tires.
 2. October 20, 1995 Letter from William Hocutt to Robert J. Waldrop Concerning Testing Protocol for Pending Kenansville Tire Derived Fuel (TDF) Test Burn.
 3. March 22, 1996 Letter from Robert J. Waldrop to William Hocutt Transmitting Data Obtained on the Ash Generated in the Kenansville TDF Test Burn.

Dear Mr. Waldrop:

The purpose of this letter is to inform you that your request for approval to beneficially use fly and bottom ash by-products from combustion of an 80:20 blend of coal:shredded tire fuel has been approved. The .1700 section of the 15A NCAC 13B Solid Waste Management Rules for coal combustion by-products were written for ash from combustion of one hundred percent coal and cannot be applied to ash from a fuel blend. The Solid Waste Management Division (SWMD) is not writing additional rules covering beneficial-use, but reviews requests such as the subject one on a case-by-case basis and when approved, issues a **Policy** to be followed.

Your September 28, 1995 and March 22, 1996 letters (references #1 and #3, above) both include essentially the same list of five uses/applications which are requested to be covered by this SWMD policy. Please note that only the first and fourth uses in that list of five can be covered by this policy because only they are in a category which falls within the jurisdiction of the SWMD and also are a beneficial use. These two uses both involve construction of structural fills and are being allowed so long as the conditions of this policy are not violated. Your proposed uses two, three and five are not impacted by this SWMD Policy for the following reasons. Use number two proposes to utilize the TDF ash as a soil nutrient or for other undefined agricultural purposes. This use is under the authority of the NC Department of Agriculture. However, please contact Ted Lyon of the SWMD at 919-733-0692, extension 253 to first get his recommendations. The third and fifth uses fall into the category of Recovered Materials as described in Subsection 309.05(c), Chapter 130A, Article 9 of the General Statutes. The Division will generally not be involved in such activities

as long as the requirements of this subsection are met. Specifically, condition #2 requires that the recovered materials shall not be placed upon any land or water so that the materials may enter other lands or be emitted into the air or discharged into any waters including groundwaters, or otherwise enter the environment or pose a threat to public health and safety.

This approval is only for combustion by-products generated at the Cogentrix Kenansville Facility because that ash composition and chemistry is expected to be site specific. Should Cogentrix wish to expand the use of the fuel blend to additional facilities, it will be necessary to conduct a trial burn at that (those) facility(ies) similar the one described in References #1 and #2 (above). Separate approval(s) must be obtained from the Division for beneficial-use of that (those) material(s). Ash sampling and testing protocols in each case must receive Divisional approval. It is anticipated that modifications to each site's Air Quality Permit will also be required by DEM.

Based on the data submitted with the reference #3 letter, the chemical composition of the coal:tire blended fuel ash differs from that produced from pure coal primarily due to the presence of zinc and an elevated arsenic content of the fly ash. The presence of zinc was anticipated based on the literature on tire combustion; the only question being at what level. One unexpected difference was a two to three fold increase in the totals and leachable arsenic seen in the blended fuel fly ash. With that increase, the leachable arsenic is approximately forty percent of the hazardous threshold of 5.0 mg/l. This change increases the potential for groundwater contamination with arsenic in structural fill applications. The bottom ash had some indication of elevated arsenic during the test burn, but this was not conclusive.

Neither the bottom nor the fly ash by-product extracts exhibited TCLP Regulated Organic constituents at the detection levels utilized. Only the bottom ash samples were found to contain 8240 and 8270 scan constituents at the method detection levels. The bottom ash also was found to exhibit TICs which were identified and quantification attempted. Analysis of TCLP protocol extractions of the bottom ash samples showed the organics to leach at levels <0.66 ppb. Volatile compounds were found including hexane at a level as high as 49ppm and total xylenes as high as 0.92ppm. This is surprising considering the elevated temperatures presumed to be present in the boiler.

The chemical characterizations summarized above on both the fly and bottom ashes from combustion of the coal:tire blended fuel have been reviewed by the SWMD. Based on the submitted data, we find that these by-products are suitable for use in structural fill applications **constructed according to the described Policy**. Your request for approval to blend the bottom ash with the fly ash for structural fill use is also approved.

As mentioned earlier, the SWMD does not have rules to follow for structural fill projects utilizing by-products from boiler combustion of **blended fuel**. The most efficient way to specify

the SWMD's **Tire Derived Fuel (TDF) Structural Fill Policy** conditions is to itemize the necessary changes that must be made in the .1700 Coal Combustion By-Products rules due to the use of the coal:tire fuel blend vs. use of 100% coal. The following changes are specified:

1. In Section .1701(Definitions): Wherever the .1700 Section Rules speaks of Coal Combustion By-Products or Coal Ash, this Blended Fuel Policy is referring to by-products of the 80:20 blend of coal:tire fuel. Also, definition #5 is deleted in the policy.
2. Section .1702 is revised to read: "The provisions of this Section shall apply to the siting, design, construction, operation, closure and recordation of projects which utilize 80:20 blended fuel combustion by-products as structural fill material. A solid waste management permit is not required for blended fuel combustion by-product structural fills which meet the requirements listed in this Section."
3. In Section .1703: A TCLP analysis shall be conducted at least annually as specified in (a)(4), but the policy requires that this data be submitted to the SWMD. The last sentence in (a)(4) is revised to read "A minimum analysis shall include: arsenic, barium, cadmium, lead, chromium, mercury, selenium, silver and **zinc**." During the first twelve months of operation of each electrical power generating facility using the 80:20 coal:tire fuel blend, quarterly TCLP analysis for the eight RCRA metals plus zinc shall be obtained and the results submitted to the SWMD.
4. In Section .1704(a)(4), the setback from any source of drinking water is increased from 100 feet to 500 feet. In Section .1704(a)(6), the setback from any property boundary is increased from 25 feet to 100 feet.
5. In Section .1705(a): A sentence is added stating: "As implied in the Coal Ash Rules, excavation of the site is not allowed". In Section .1705(f) a second sentence is added which reads: "It is suggested that at least one down-gradient monitoring well be installed at any site receiving 10,000 or more cubic yards of Tire Derived Fuel ash".
6. In Section .1706, a new requirement is added numbered as (e) which reads: "If at any time in the future this Structural fill is scheduled for excavation, the SWMD is to be informed prior to commencing." The Rule numbered .1706(e) is renumbered as .1706(f).
7. Section .1708 is removed in its entirety from the Tire Derived Fuel policy.

These changes plus the unmodified parts to the 15A NCAC 13B Section .1700 rules make-up the Tire Derived Fuel policy. This is a draft policy and it will be reviewed one year from this date for the purpose of instituting any necessary changes and the development of a final policy. Please telephone me at (919) 733-0692 ext.260 if you have any questions.

Sincerely,

William R. Hocutt
Environmental Chemist

cc: Dexter Matthews

Jim Coffey

Ted Lyon

Steve Proctor -DEM Air Quality

Thomas J. Bonner; Cogentrix; 9405 Arrowpoint Blvd.; Charlotte, NC 28273-8110

James K. Tilley; NC Dept. of Commerce; PO Box 29571; Raleigh, NC 27626-0571

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