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(Environmental Record Type: NPDES Correspondence)

April 30, 2008

Mr. Vojin Janjić, Manager
Permit Section
Division of Water Pollution Control
Tennessee Department of Environment and Conservation
6th Floor, L&C Annex
401 Church Street
Nashville, Tennessee 37243

Dear Mr. Janjić:

TENNESSEE VALLEY AUTHORITY (TVA) - KINGSTON FOSSIL PLANT (KIF) - NPDES PERMIT NO. TN0005452 – NOTIFICATION OF MEXEL 432/0 STUDY FOR IMPROVED CONDENSER PERFORMANCE

TVA is planning to test a new additive to improve condenser cleanliness at KIF. MEXEL 432/0 is a mixture of anti-fouling surfactants that act as corrosion inhibitors and scale dispersants. The listed active ingredient is Alkyl*amino-3 Aminopropane at 1.7% (* as in coconut oil). During the proposed six-month test, Unit 6 will be treated for twenty minutes each day. Unit 5 will be used as a "control" unit to determine the efficacy of MEXEL 432/0.

MEXEL 432/0 is labeled for use in removing mineral scaling, corrosion, and sediment in industrial waters. According to the product's distributor, there are more than a dozen other facilities using this product in the U.S. for maintaining condenser cleanliness/performance. TVA believes that Part III.H of the NPDES permit would therefore apply - Use of Toxic Chemicals. TVA and the vendor are designing the site of application within the cooling water system, dosing rate, methods, and the equipment to be employed to optimize condenser performance with minimum chemical use.

While KIF will not be using it for this purpose, MEXEL 432/0 has also been used as a molluscicide in other countries and is registered in the U.S. as such under FIFRA. There have been tests of Mexel 432/0 for this purpose in U.S. power plants, but no commercial applications to date. TVA believes that Part III.I (Macroinvertebrate Control Measures) of the NPDES permit would not apply here because MEXEL 432/0 will not be utilized at the same location, rate, method, or using the type of equipment required for molluscicide applications.

The planned initial feed rate of MEXEL 432/0 is estimated to be in the 3.5 to 5 ppm range in order to obtain a concentration of 2.5 mg/L from the unit being treated. There is expected to be a significant "native" demand in the test unit from scale and or other particulate and the exact amount will be determined in the field. Using 2.5 mg/L as the target concentration in Unit 6 and the flow from all the units, the concentration to the receiving stream would be conservatively estimated at 0.3 mg/L, omitting native demand from the flow from the other eight units. The actual concentration of the product to the receiving stream is expected to be much lower as there will be native demand introduced from the flows from these other units.

Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402-2801

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In evaluating the usage of MEXEL 432/0 versus permit conditions set forth in Part III.H of KIF's permit, TVA estimated toxic concentrations of MEXEL in the lab with chronic exposures to solutions of KIF's condenser cooling water containing the product. The site-specific 7-day IC_{25}, Lowest Observed Effects Concentration (LOEC), and No Observed Effects Concentration (NOEC) were determined during this study. The IC_{25} for MEXEL was determined to be 2.8 mg/L for *Ceriodaphnia dubia* reproduction and 2.6 mg/L for *Pimephales promelas* growth, respectively. The more conservative LOEC and NOEC were found to be 2.5 mg/L for both *Pimephales promelas* and *Ceriodaphnia dubia,* and 1.25 mg/L for both, respectively. The concentration of 0.3 mg/L (disregarding the other eight units' native demand) allows for a margin of safety of 4.2 compared to the NOEC. Again, the actual concentration in the discharge will likely be lower.

Enclosed is a table that summarizes the whole effluent toxicity (WET) results for your information. If the proposed six-month test is successful, MEXEL 432/0 is expected to improve condenser performance and reduce operations and maintenance expense. With this improvement in condenser cleanliness and performance, TVA anticipates associated reduction in coal burned to generate the same amount of electricity resulting in positive environmental and economic benefits. Based on the results, TVA will notify you if we intend to request approval for treating all nine units in the future.

TVA would appreciate your written concurrence with the proposed test as soon as possible as we would like to begin this test in the middle of May 2008. If you have any questions or need additional information, please contact Lindy Johnson at (423) 751-3361 in Chattanooga, or you may email her at lpjohnson@tva.gov.

Sincerely,

Gordon G. Park
Manager of Environmental Compliance
5D Lookout Place

CMA:LPJ:PAB
Enclosure
cc (Enclosure):
Ms. Natalie Harris
Knoxville Environmental Field Office
Tennessee Department of Environment and Conservation
3711 Middlebrook Pike
Knoxville, Tennessee 37921

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C. W. McCowan, KFP 1A-KST
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Sincerely,

Cynthia M. Anderson
for

Gordon G. Park
Manager of Environmental Compliance
5D Lookout Place

Enclosure
cc: Ms. Natalie Harris (Enclosure)
Knoxville Environmental Field Office
Tennessee Department of Environment and Conservation
3711 Middlebrook Pike
Knoxville, Tennessee 37921

Table 1. Summary endpoints for fathead minnow and daphnid chronic toxicity tests with Mexel 432/0.

Calc. CCW Discharge Concentration, mg/L*	NOEC mg/L		LOEC mg/L		IC_{25} mg/L			Lowest Factor w/o demand
	***Pimephales promelas* (Fathead Minnow)**							
		1.25		2.5		2.6778		4.21
	***Ceriodaphnia dubia* (Daphnid)**							
0.297		1.25		2.5		2.8237		

***Disregarding "native" demand in water from other 8 units.**