

December 31, 2009

Ms. Katherine Streit
U. S. Nuclear Regulatory Commission
Region III
2443 Warrenville Road
Lisle, IL 60532-4351

SUBJECT: ORISE CONTRACT NO. DE-AC05-06OR23100
LETTER REPORT FOR ANALYTICAL RESULTS FOR FOUR SOIL AND
TWO WATER SAMPLES FROM AMERICAN RADIOLABELED
CHEMICALS IN MARYLAND HEIGHTS, MISSOURI;
[INSPECTION REPORT NO. 030-20567/2009-02] (RFTA NO. 10-001)
DCN: 2006-LR-01-0

Dear Ms. Streit:

The Oak Ridge Institute for Science and Education (ORISE) received four soil samples and two water samples on November 6, 2009 from American Radiolabeled Chemicals (ARC) in Maryland Heights, MO. The samples were analyzed according to the 303 form supplied with the samples. The sample identification numbers are presented in Table 1. The soil and water samples were analyzed for tritium (H-3) and carbon-14 (C-14) by liquid scintillation analysis. The H-3 results for the soil and water samples are presented in Table 2 and 3. The C-14 results for the soil and water samples are presented in Table 4 and 5. The pertinent procedure references are included with the data tables.

ORISE's Quality Control (QC) requirements were met for these analyses. The QC files are available for your review upon request.

My contact information is listed below. You may also contact Wade Ivey at 865.576.9184 with any questions or comments.

Sincerely,



Dale Condra, Manager
Laboratory

RDC:WPI:ar

Enclosures

c: T. Carter, NRC/FSME/DWMEP T-8F5
 T. Patterson, NRC/FSME/TWFFN 8D42
 File 2006

S. Roberts, ORISE
T. Vitkus, ORISE

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Distribution approval and concurrence :	Initials
Technical Review	TJC
Quality Review	RT

TABLE 1
SAMPLE IDENTIFICATIONS
AND COLLECTION DATA
AMERICAN RADIOLABELED CHEMICALS
MARYLAND HEIGHTS, MO

ORISE Sample ID	NRC Region III Sample ID	Collection Date	Collection Time
2006S0001	02-01	11/03/09	11:10
2006S0002	02-02	11/03/09	11:20
2006S0003	02-03	11/03/09	13:00
2006S0004	02-04	11/03/09	14:00
2006W0001	02-01W	11/03/09	14:20
2006W0002	02-02W	11/03/09	14:30

TABLE 2

CONCENTRATION OF TRITIUM
 IN SOIL AND WATER SAMPLES
 BY LIQUID SCINTILLATION ANALYSIS
 AP6, REVISION 17; CP3 REVISION 2
 AMERICAN RADIOLABELED CHEMICALS
 MARYLAND HEIGHTS, MO

ORISE Sample ID	NRC Region III Sample ID	Concentrations, TPUs, and MDCs ^a (pCi/g wet weight for the soil samples)			
2006S0001	02-01	108	±	30 ^b	, 4
2006S0002	02-02	95	±	26	, 4
2006S0003	02-03	45	±	13	, 4
2006S0004	02-04	1,390	±	380	, 0 ^c

TABLE 2 (continued)

CONCENTRATION OF TRITIUM
 IN SOIL AND WATER SAMPLES
 BY LIQUID SCINTILLATION ANALYSIS
 AP6, REVISION 17; CP3 REVISION 2
 AMERICAN RADIOLABELED CHEMICALS
 MARYLAND HEIGHTS, MO

ORISE Sample ID	NRC Region III Sample ID	Concentrations, TPUs, and MDCs ^a (pCi/L for the water samples)			
2006W0001	02-01W	1.70E+05	±	0.48E5 ^b	, 0.21E5
2006W0002	02-02W	2.38E+06	±	0.64E6	, 0.02E6

^aThe MDCs are after the comma.

^bUncertainties represent the 95% confidence level, based on total propagated uncertainties.

^cZero value is due to rounding.

TABLE 2

**CONCENTRATION OF TRITIUM
IN SOIL SAMPLES
BY LIQUID SCINTILLATION ANALYSIS
AP6, REVISION 17; CP3 REVISION 2
AMERICAN RADIOLABELED CHEMICALS
MARYLAND HEIGHTS, MO**

ORISE Sample ID	NRC Region III Sample ID	Concentrations, TPUs, and MDCs ^a (pCi/g wet weight for the soil samples)			
2006S0001	02-01	108	±	30 ^b	, 4
2006S0002	02-02	95	±	26	, 4
2006S0003	02-03	45	±	13	, 4
2006S0004	02-04	1,390	±	380	, 0 ^c

^aThe MDCs are after the comma.

^bUncertainties represent the 95% confidence level, based on total propagated uncertainties.

^cZero value is due to rounding.

TABLE 3

**CONCENTRATION OF TRITIUM
IN WATER SAMPLES
BY LIQUID SCINTILLATION ANALYSIS
AP6, REVISION 17; CP3 REVISION 2
AMERICAN RADIOLABELED CHEMICALS
MARYLAND HEIGHTS, MO**

ORISE Sample ID	NRC Region III Sample ID	Concentrations, TPUs, and MDCs ^a (pCi/L for the water samples)			
2006W0001	02-01W	1.70E+05	±	0.48E5 ^b	, 0.21E5
2006W0002	02-02W	2.38E+06	±	0.64E6	, 0.02E6

^aThe MDCs are after the comma.

^bUncertainties represent the 95% confidence level, based on total propagated uncertainties.

TABLE 4

**CONCENTRATION OF CARBON-14
IN SOIL SAMPLES
BY LIQUID SCINTILLATION ANALYSIS
AP6, REVISION 17; AP9, REVISION 4; CP3 REVISION 2
AMERICAN RADIOLABELED CHEMICALS
MARYLAND HEIGHTS, MO**

ORISE Sample ID	NRC Region III Sample ID	Concentrations, TPUs, and MDCs^a (pCi/g wet weight for soils)			
2006S0001	02-01	24.4	±	2.8 ^b	, 3.0
2006S0002	02-02	3.5	±	1.8	, 2.9
2006S0003	02-03	18.8	±	2.5	, 3.0
2006S0004	02-04	978	±	73	, 3

^aThe MDCs are after the comma.

^bUncertainties represent the 95% confidence level, based on total propagated uncertainties.

TABLE 5

**CONCENTRATION OF CARBON-14
IN WATER SAMPLES
BY LIQUID SCINTILLATION ANALYSIS
AP6, REVISION 17; AP9, REVISION 4; CP3 REVISION 2
AMERICAN RADIOLABELED CHEMICALS
MARYLAND HEIGHTS, MO**

ORISE Sample ID	NRC Region III Sample ID	Concentrations, TPUs, and MDCs^a (pCi/L for water)			
2006W0001	02-01W	1,550	±	210 ^b	, 230
2006W0002	02-02W	8,430	±	730	, 250

^aThe MDCs are after the comma.

^bUncertainties represent the 95% confidence level, based on total propagated uncertainties.