

DeweyBurdPubEm Resource

From: Burrows, Ronald
Sent: Wednesday, August 25, 2010 10:00 AM
To: DeweyBurdHrgFile Resource
Subject: Energy Labs_2010_RadChem_v0-1.pdf - Adobe Reader
Attachments: Energy Labs_2010_RadChem_v0-1.pdf

From Energy Lab's website: http://www.energylab.com/asp/PricingGuide/docs/ELI_2010_Price_Guide_-_RadChem_v0-1.pdf

Hearing Identifier: Powertech_Uranium_Dewey_Burdock_LA_Public
Email Number: 121

Mail Envelope Properties (44CD2E65B0FF0E499CB32BC30CF781F0108E913D45)

Subject: Energy Labs_2010_RadChem_v0-1.pdf - Adobe Reader
Sent Date: 8/25/2010 10:00:18 AM
Received Date: 8/25/2010 10:00:34 AM
From: Burrows, Ronald

Created By: Ronald.Burrows@nrc.gov

Recipients:
"DeweyBurdHrgFile Resource" <DeweyBurdHrgFile.Resource@nrc.gov>
Tracking Status: None

Post Office: HQCLSTR01.nrc.gov

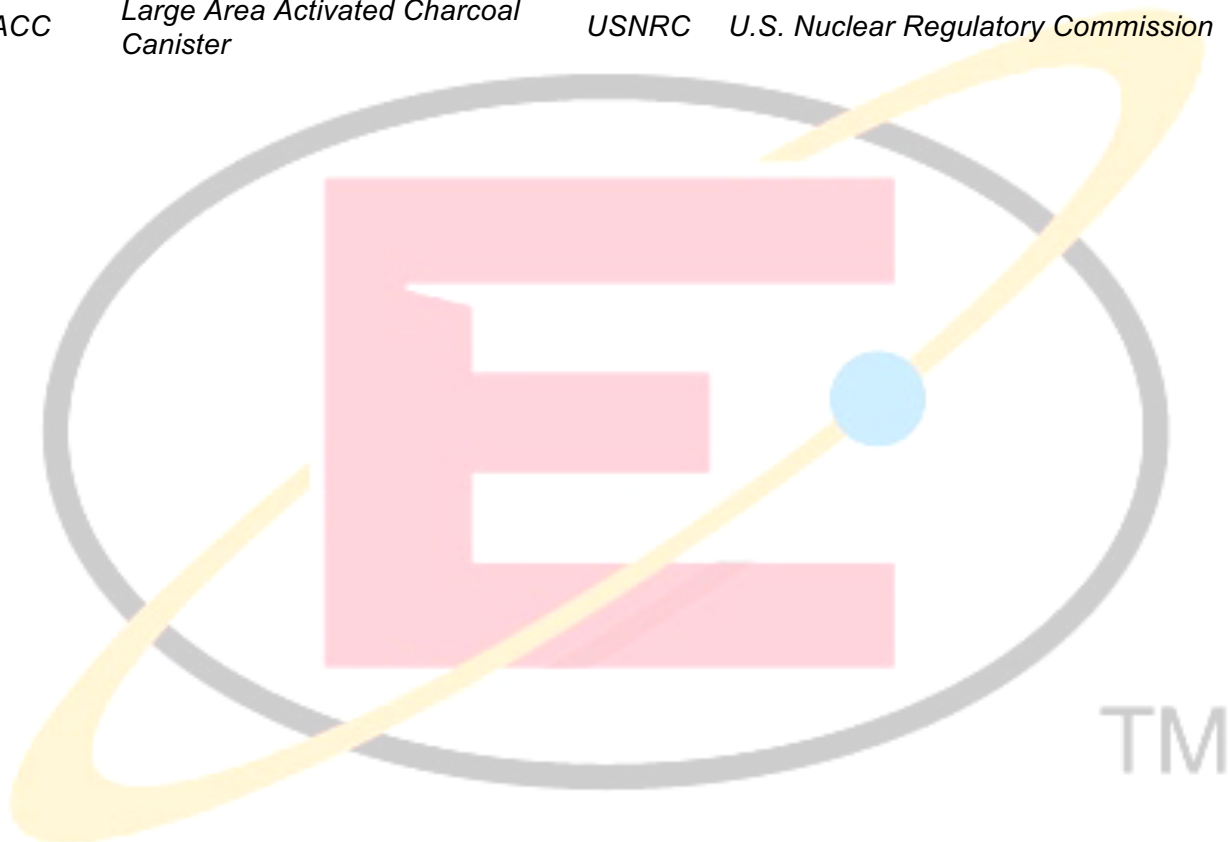
Files	Size	Date & Time
MESSAGE	115	8/25/2010 10:00:34 AM
Energy Labs_2010_RadChem_v0-1.pdf		149034

Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:

RADIOCHEMISTRY

List of Acronyms

<i>A</i>	<i>Standard Methods</i>	<i>NERHL</i>	<i>North Eastern Health Radiological Laboratory</i>
<i>ASTM</i>	<i>American Society for Testing & Materials</i>	<i>NORM</i>	<i>Naturally Occurring Radioactive Materials</i>
<i>E or EPA</i>	<i>US Environmental Protection Agency</i>	<i>SW</i>	<i>Solid Waste – 846</i>
<i>HNO₃</i>	<i>Nitric Acid</i>	<i>TSP</i>	<i>Total Suspended Particulate</i>
<i>LAACC</i>	<i>Large Area Activated Charcoal Canister</i>	<i>USNRC</i>	<i>U.S. Nuclear Regulatory Commission</i>



RADIOCHEMISTRY

1. MATRIX DIGESTIONS – Prior to analysis

MATRIX	PREPARATION TECHNIQUE	AMOUNT OF SAMPLE REQUIRED	PRICE
Drinking Water	HNO ₃ to pH <2	1000 mL plastic	N/A
Drinking Water – ²²² Radon	None Required	3-40 mL VOA vials – no headspace	N/A
Mine and Process Water – Soluble Constituents	HNO ₃ to pH <2	2000 mL plastic	15.00
Mine and Process Water – Total Constituents	SW 3010	2000 mL plastic	15.00
Solids – Core, Sediments, Sludges, Soils, Rock	SW 3050	100 g	25.00
Vegetation – USNRC Guidelines	Ashing, Acid Digestion	4 Kg+	100.00
Biomass – USNRC Guidelines	Ashing, Acid Digestion	1 Kg	100.00
Air Filters	Acid Leaching	Filter sample and blank filter	25.00
Oils	Acid Leaching	100 g	25.00

2. RADIOCHEMICAL ANALYSES – Drinking Water

ANALYSIS	METHOD	Drinking Water MCL	REPORTING LIMIT	UNITS	PRICE
Gamma Emitting Radionuclides	E901.1	NA	dependent on sample size	pCi/L	\$75.00
Gross Alpha Radioactivity	E900.0	15	1.0	pCi/L	50.00
Gross Beta Radioactivity	E900.0	50 (see note)	2.0	pCi/L	50.00
Gross Alpha and Beta Radioactivity	E900.0	NA	1.0/2.0	pCi/L	75.00
Gross Radium Alpha (minus Radon & Uranium)	00-02	15	1.0	pCi/L	50.00
²²⁶ Radium (Alpha Emitting Isotopes)	E903.0	5.0 (see note)	0.2	pCi/L	75.00
²²⁸ Radium	RA-05	5.0 (see note)	1.0	pCi/L	75.00
²²² Radon	ASTM D5072-92	300	100	pCi/L	50.00
Radioactive Strontium	E905.0	NA (see note)	2.0	pCi/L	100.00
Tritium	E906.9	NA (see note)	1200	pCi/L	75.00
Isotopic Uranium (²³⁴ U, ²³⁵ U, ²³⁸ U)	E907.0	30	1	ug/L	100.00
Uranium	E908.0	30	1	ug/L	25.00
Uranium (this method is currently being reviewed by EPA for approval for drinking water)	E200.8	30	1	ug/L	10.00
Sample Location: Entry point to distribution					
Notes: Gross Beta Activity MCL = 4 mRem/year ~ = 50 pCi/L. Regulation specifies monitoring for vulnerable systems. The Radium MCL is for a combined Radium 226+Radium 228 = 5.0 pCi/L.					

RADIOCHEMISTRY

3. RADIOCHEMICAL ANALYSES - Applicable to most matrices listed above (after digestion) Reporting Limits are matrix dependent

ANALYSIS	METHOD	REPORTING LIMIT	UNITS	PRICE
Gamma Emitting Radionuclides	E901.1	dependent on sample size	pCi/L	\$75.00
Gross Alpha Radioactivity	E900.0	1.0	pCi/L	50.00
Gross Beta Radioactivity	E900.0	2.0	pCi/L	50.00
Gross Alpha and Beta Radioactivity	E900.0	1.0/2.0	pCi/L	75.00
Gross Radium Alpha (minus Radon & Uranium)	00-02	1.0	pCi/L	50.00
²¹⁰ Lead	E905.0 Mod.	1.0	pCi/L	75.00
²¹⁰ Polonium	RMO-3008	1.0	pCi/L	75.00
⁴⁰ Potassium	E901.1	dependent on sample size	pCi/L	75.00
²²⁶ Radium (Alpha Emitting Isotopes)	E903.0	0.2	pCi/L	75.00
²²⁸ Radium	RA-05	1.0	pCi/L	75.00
²²² Radon	ASTM D5072-92	100	pCi/L	50.00
Radioactive Strontium	E905.0	10	pCi/L	100.00
Isotopic Thorium (²²⁸ Th, ²³⁰ Th, ²³² Th)	E907.0	0.2	pCi/L	100.00
²³⁰ Thorium	E907.0	0.2	pCi/L	75.00
²³² Thorium	E200.8/SW 6020	1.0	pCi/L	25.00
Tritium	E906.9	1200	pCi/L	75.00
Isotopic Uranium (²³⁴ U, ²³⁵ U, ²³⁸ U)	E907.0	0.2	pCi/L	100.00
Uranium, natural	E908.0	0.2	pCi/L	25.00
²³⁵ Uranium	E200.8/SW 6020	1.0	pCi/L	10.00
Uranium, natural	E200.8/SW 6020	0.0003 0.2	mg/L pCi/L	25.00

4. BIOASSAY - Uranium and other radionuclides in urine per USNRC Guideline 8.22.

ANALYSIS	REQUIRED VOLUME, mL	QC REQUIRED	REPORTING LIMIT	UNITS	PRICE
Isotopic Uranium	1000 plastic	client specific	0.1	pCi/L	125.00
Uranium	100 plastic	25%	5.0	µg/L	25.00

RADIOCHEMISTRY

5. RADIOLOGICAL FIELD SERVICES

SERVICE	PRICE
Radon - inside air by charcoal canister method (Ramses II Detector)	\$20.00
Consulting Radiation Safety Officer – USNRC Accepted	100.00/hour
Surface Gamma Surveys - baseline, decontamination and decommissioning, process operations	by Quote
Air Quality Sampling - TSP, High Volume Air Sampling	by Quote
Equipment Decontamination and Release Surveys	by Quote
Emanation Coefficient	by Quote
Naturally Occurring Radioactive Materials (NORM) Surveys – oilfield related	by Quote
Large Area Activated Charcoal Canister (LAACC) Tailings Surveys - Radon Flux by Method E115	by Quote
Indoor Radon and Radon Progeny Measurements – Single or Multiple Site	by Quote
Custom Radiation Safety Courses - mining, milling, and reclamation projects	by Quote

6. RADIOLOGICAL EQUIPMENT CALIBRATION AND REPAIR

SERVICE	PRICE
Portable Radiation Detection Instrument	\$75.00/ea
Probes for the above instrument	75.00/ea
Stand-alone Detector - SAC-R5, RD-14, etc.	75.00/ea
Alpha and Beta Sources, plated disc	50.00/ea
NOTE: All the above calibrations include a certificate and plateau graph where appropriate. Source calibrations include statistical analysis.	
Air Sampling pumps - low volume or high volume samplers	50.00/ea
Rotometers	50.00/ea
General laboratory and field instrument repair and adjustment - excludes post repair calibration	by Quote
Instrument design or modification	by Quote