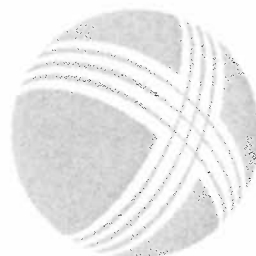


Christopher.Sargent1

Document (5).pdf
03/01/12 10:43 AM

xerox



**OHIO DEPARTMENT OF HEALTH
REV BACK-UP DOCUMENT COVER SHEET**

(Prepared on 2/29/2012 1:52:46 PM)

<u>Batch #</u>	<u>Received</u>	<u>Ref. #</u>	<u>Bus. Unit</u>	<u>Fund</u>	<u>Dept</u>	<u>Rptg</u>	<u>Grant</u>	<u>Agv Use</u>	<u>Acct</u>	<u>Total Amt</u>
12-4126	2/29/2012									
		2-0188	DOH01	SED0	DOH101110	DOH0182				
		2-1306	DOH01	4700	DOH301110	DOH04Q2		453000		\$2,000.00 /
		2-2310	DOH01	4700	DOH101110	DOH03Q2		425075		\$900.00
		2-2410	DOH01	4700	DOH301110	DOH21Q2		425075		\$45.00 3
		2-2442	DOH01	4700	DOH301110	DOH34Q2		425075		\$950.00
		2-2622	DOH01	4700	DOH101110	DOH35Q2	DOHO94POM1	425075		\$500.00 5
		2-2632	DOH01	4700	DOH101110	DOH35Q2		450570		\$1,422.00
		2-3550	DOH01	5850	DOH301110	DOH12G2	DOHO20N1M4	450570		\$524.00 7
		2-3650	DOH01	5850	DOH101110	DOH13G2		425075		\$1,750.00
		2-C009	DOH01	4700	DOH101830	DOH83Q2		425075		\$950.00 9
		G-G141	DOH01	3870	DOH502730	DOH54J1	DOHF54J1F1	452525		\$36.00
		R-00A2	DOH01	GRF	DOH201110	DOH00A2		551000		\$3,765.25 11
								452525		\$296.00 12
								Activity Total:		\$13,138.25

Glen Hess
Prepared By

Authorized Signature

OHIO DEPARTMENT OF HEALTH REV BACK-UP DOCUMENT COVER SHEET

(Prepared on 2/29/2012 2:30:57 PM)

Batch #	Received	Ref. #	Bus. Unit	Fund	Dept	Rating	Grant	Agv Use	Acct	Total Amt
12-4117	2/29/2012									
		2-04F1	DOH01	5G40	DOH501420	DOH04F2			425047	\$20.00 ²
		2-1401	DOH01	4700	DOH501420	DOH45Q2			425047	\$4,231.50 ³
		2-1408	JFS01	1980	JFS200002	JFS90J0500	JFSFSTFO	JFSRC300	425060	\$480.00 ⁴
		2-1412	DOH01	4700	DOH501420	DOH32Q2			425047	\$800.00 ⁵
		2-BASE	DOH01	4700	DOH501420	DOH45Q2			450570	\$800.00 ⁶
		2-FVIO	DPS01	5BK0	DPS850001			DPSA005BK1	425060	\$40.50 ⁷
									Activity Total:	\$6,372.00

* This Batch Includes \$1,720.00 In Cash *

- Reference # 2-1401 contains \$1,720.00 in Cash

Myra Bell

Prepared By

Authorized Signature



State of Ohio Environmental Protection Agency

STREET ADDRESS:

Lazarus Government Center
50 W. Town St., Suite 700
Columbus, Ohio 43215

TELE: (614) 644-3020 FAX: (614) 644-3104
www.epa.ohio.gov

MAILING ADDRESS:

P.O. Box 1049
Columbus, OH 43216-1049

February 5, 2010

Tom Angelo, Director
Water Pollution Control Center
2323 Main Avenue
Warren, Ohio 44484

Dear Mr. Angelo:

Re: Proposed Brine Study

We have reviewed your letters dated January 13 and February 2, 2010 discussing the City of Warren's proposal to discharge brine. We have also received e-mails providing the requested analytical data on a representative sample of the wastewater Warren proposes to accept. Based on the information provided by the City of Warren, Patriot Energy Services and Wastewater Management, the 8-week pilot study may proceed as proposed.

The influent concentration of brine shall not exceed 50,000 mg/l of total dissolved solids, which will be verified by daily specific conductivity tests on the mixed brine. It is acceptable to begin on February 8, 2010, provided all required test elements are in place. To ensure all parties are clear about the required analytical tests, and the testing frequency, they are listed in the enclosed table. Ohio EPA also reserves the right to withdraw this authorization of the pilot study if there are significant impacts to either the WWTP or the Mahoning River.

After the study is complete, the City of Warren shall cease acceptance of the brine and shall submit a report to Ohio EPA discussing the findings. As previously discussed, the study will more clearly identify the amount of brine that Warren can receive without causing WWTP or water quality issues. After internal review, Ohio EPA will meet with representative from the City of Warren and Patriot Energy Services to discuss our evaluation of the data and the requirements for Warren's NPDES permit modification application and pretreatment program updates.

Ted Strickland, Governor
Lee Fisher, Lieutenant Governor
Chris Korleski, Director

Ohio EPA is an Equal Opportunity Employer


♻️ Printed on Recycled Paper

Printed in-house

Tom Angelo, Director
February 5, 2010
Re: Proposed Brine Study
Page Two

If you have any questions or comments, please contact Donna Kniss of the Northeast District Office at (330) 963-1285 or via email at donna.kniss@epa.state.oh.us.

Sincerely,



George Elmaraghy, Chief
Division of Surface Water

:dk

Enclosure

cc: Andrew Blocksom, Patriot Energy Services/Patriot Water LLC
Tom Weber, Wastewater Management
Laurie Stevenson, Director's Office
Keith Riley, Northeast District Office
Rich Blasick, Northeast District Office
Donna Kniss, Northeast District Office
Paul Novak, Division of Surface Water
Ryan Laake, Division of Surface Water
Eric Nygaard, Division of Surface Water

From: Stephen Helmer

To: Robert Leidy

Date: Tuesday, March 02, 2010 8:29:04 AM

Cc:

Subject: FW: Warren WWTP Study

[OAC 3701-39-02.1.pdf](#) (610 KB [HTML](#))

[Request for Reg Concurrence.pdf](#) (424 KB [HTML](#)) [Warren WWTP Test Study.pdf](#) (440 KB [HTML](#))

fyi

Stephen Helmer

Program Administrator
Bureau of Radiation Protection
Phone: 614-728-3611

From: Chuck McCracken

Sent: Thursday, February 25, 2010 3:03 PM

To: donna.kniss@epa.state.oh.us

Cc: Stephen Helmer; Michael Snee; Jim Collelli; David Lipp; Kenneth Barnhart

Subject: Warren WWTP Study

02.25.2010

Donna:

After discussing the issue with other members of our team, we came to the conclusion that although it would be a more concise study of the radiological effect of introducing Oil & Gas Well Production Wastewater into the Warren WWTP, it was not necessary to make them clean out the sludge tank before restarting the test study. The premise of using "real life scenario" test conditions to do the study under is indeed justified.

That said, we are requesting that the radiological parameters be modified (see attached Warren WWTP Test Study.pdf) to help us better determine the radiological consequence (if any) of the addition of this waste stream.

Also attached is a copy of the criteria that must be met in order for the sludge to be considered "exempt from licensure" by ODH (see attached OAC 3701-39-02.1.pdf). Warren WWTP will need to have the post test sludge analyzed to demonstrate compliance with rule OAC 3701-39-02.1 (B)(1)(c) or OAC 3701-39-02.1 (B)(1)(d).

Finally, to help with your requests for approval of use of a waste stream (i.e., incinerator ash), I have attached a document that we provide to waste brokers and/or Ohio landfill permit holders that outlines the process that they must use to request our official regulatory position on the exempt disposal of a waste stream. If your requestor was directed to get ODH's regulatory position, this would be the process they would follow.

Any questions on any of the above, please call.

Charles D. McCracken

Supervisor, Bureau of Radiation Protection
Ohio Department of Health
Ph: 614.466.5136
Fx: 614.466.0381

Standards for handling radioactive material.

- (A) In accordance with section 3748.21 of the Revised Code, this rule does not apply to any person to the extent that the person is subject to regulation by the United States nuclear regulatory commission. As used in this rule, naturally occurring radioactive material (NORM) means any nuclide that is radioactive in its natural physical state, but does not include source material, byproduct material, or special nuclear material. As used in this rule, technologically enhanced means the chemical properties or physical state of natural sources of radiation have been altered or the potential exposure pathways of natural sources of radiation to humans have been altered to increase the human radiation exposure. In all cases where special nuclear material is referenced, that term shall refer to quantities not sufficient to form a critical mass.
- (B) The following activities are exempt from licensure, unless the director determines that the dose received by an average member of the critical group would exceed the dose limit specified in rule 3701:1-38-22(B) of the Administrative Code:
- (1) The handling, distribution, or processing of:
- (a) Soil containing technologically enhanced radium-226 or radium-228 with a radon emanation rate less than 0.74 becquerels (twenty picocuries) per square meter per second, provided that the concentration of technologically enhanced radium-226 or radium-228 in the soil, averaged over any one hundred square meters, and averaged over the first fifteen centimeters of soil below the surface, does not exceed one becquerel (twenty-seven picocuries) per gram;
 - (b) Soil containing technologically enhanced radium-226 or radium-228 with a radon emanation rate equal to or greater than 0.74 becquerels (twenty picocuries) per square meter per second provided that the concentration of technologically enhanced radium-226 or radium-228 in the soil, averaged over any one hundred square meters, and averaged over the first fifteen centimeters of soil below the surface does not exceed 0.185 becquerel (five picocuries) per gram;
 - (c) Media, other than soil, containing technologically enhanced radium-226 or radium-228 with a radon emanation rate less than 0.74 becquerels (twenty picocuries) per square meter per second provided that the concentration of technologically enhanced radium-226 or radium-228 does not exceed one becquerel (twenty-seven picocuries) per gram;
 - (d) Media, other than soil, containing technologically enhanced radium-226 or radium-228 with a radon emanation rate is equal to or greater than 0.74 becquerels (twenty picocuries) per square meter per second provided that the concentration of technologically enhanced radium-226 or radium-228 does not exceed 0.185 becquerel (five picocuries) per gram;
 - (e) Soil containing NORM other than technologically enhanced radium-226 or radium-228 provided that the concentration of NORM averaged over any one hundred square meters, and averaged over the first fifteen

centimeters of soil below the surface is five becquerels (one hundred thirty-five picocuries) per gram or less;

- (f) Media, other than soil, containing NORM other than technologically enhanced radium-226 or radium-228 provided that the concentration of NORM is five becquerels (one hundred thirty-five picocuries) per gram or less; or
 - (g) Materials in the recycling process contaminated with scale or residue not otherwise exempted or other equipment containing NORM with a radiation exposure level that does not exceed 0.25 micrograys (twenty-five microrads) per hour above background at any accessible point.
- (2) The manufacture, wholesale or retail commercial distribution, use, or disposal of the following products or materials, or the recycling of equipment used to produce, contain, or transport the following:
- (a) Potassium or potassium compounds that have not been isotopically enriched in the radionuclide potassium-40;
 - (b) Fossil fuel or byproducts from fossil fuel combustion, including bottom ash, fly ash, and flue-gas emission control byproducts; or
 - (c) Material used for building construction, industrial processing, sandblasting, metal casings, or other NORM in which the radionuclide content has not been concentrated to a level higher than is found in its natural state, or zirconium-bearing sands and products produced from those sands provided that the radioactive constituent is consistent with the radioactive levels stated in the material safety data sheet accompanying the zirconium-bearing materials,
- (3) The wholesale and retail commercial distribution, including custom blending, possession, and use of the following products or materials or the recycling of equipment or containers used to produce, contain, or transport these products as follows:
- (a) Phosphate or potash fertilizer;
 - (b) Phosphogypsum for agricultural uses if such commercial distribution and uses meet the requirements of 40 C.F.R. 61.204, 40 C.F.R. 61.207, and 40 C.F.R. 61.208 as specified in appendix E to this rule; or
 - (c) Materials used for building construction if the materials contain NORM that has not been concentrated to higher levels than found in its natural state.
- The exemptions contained in this paragraph do not apply to the manufacture of phosphate or potash fertilizer.
- (4) The possession, storage, use, transportation, or commercial distribution of natural gas and natural gas products or of crude oil and crude oil products containing NORM. The exemptions contained in this paragraph do not apply

to the processing of natural gas or crude oil or the manufacture of natural gas products or crude oil products containing NORM.

- (5) Possession of produced waters from crude oil or natural gas production provided that the produced waters are reinjected in a well approved by the United States environmental protection agency or discharged under the authority of the United States environmental protection agency.
- (6) The possession, storage, use, transportation or commercial distribution of compressed gases and compressed gas products containing NORM. The exemptions contained in this paragraph do not apply to the processing of compressed gas or compressed gas products containing NORM.
- (C) Information provided by a licensee or applicant for a license or license renewal that constitutes a "trade secret" as defined in section 1333.61 of the Revised Code is not subject to public disclosure in accordance with sections 1333.61 to 1333.69 of the Revised Code.

Effective: 12/22/2008

R.C. 119.032 review dates: 09/15/2008 and 12/01/2013

CERTIFIED ELECTRONICALLY

Certification

12/12/2008

Date

Promulgated Under: 119.03
 Statutory Authority: 3748.02
 Rule Amplifies: 3748.04
 Prior Effective Dates: 6/6/1997, 10/19/98, 7/22/01, 10/20/02,
 4/14/03, 8/15/05, 2/6/06



OHIO DEPARTMENT OF HEALTH

216 South High Street
Columbus, Ohio 43261

Red Star Hand Carving

614.464.7121

Kevin D. Jackson, M.D., Director of Health

To: Requesting Organization / Representative

Subject: Request for Regulatory Concurrence

Chapter 3748 of the Ohio Revised Code (ORC) and Ohio Administrative Code (OAC) rules adopted there under establish that the Ohio Department of Health, Bureau of Radiation Protection (ODH/BRP) is the State of Ohio Radiation Control Agency and the licensing agency for possession and use of radioactive materials. However, there are certain types and quantities of radioactive materials that are exempt from ODH/BRP licensing requirements. Individuals or organizations seeking to dispose of radioactive materials that they have determined are exempt from ODH/BRP licensure may elect to submit a written request for ODH/BRP regulatory concurrence. Please be advised that the disposal facility owner/operator has the final decision on whether or not a waste is acceptable for disposal at their facility. ODH/BRP will render a regulatory position on subject materials provided by the requesting organization. The minimum required information is as follows:

1. Identify the specific OAC regulations that you have determined applies to the material in question.
 - OAC 3701-39-02.1, **Standards for Handling Radioactive Material**
 - OAC 3701:1-44-09, **Unimportant Quantities of Source Material**
 - OAC 3701:1-40-08, Exempt Concentrations and Appendix
 - OAC 3701:1-40-09, Certain Items Containing Byproduct or Accelerator Produced Material
 - OAC 3701:1-40-11, Exempt Quantities and Appendix
 - OAC 3701:1-40-12, Self-Luminous products
 - OAC 3701:1-40-13, Gas and Aerosol Detectors Containing Byproduct or Accelerator Produced Material
2. Provide a detailed history of the subject material including but not limited to:
 - Where did it come from?
 - What was it used for?
 - Who currently possesses it or controls access to it? (Name, address, phone)
 - Where is the subject material physically located right now?
 - If it's not physically located in Ohio, what (if any) has been the host state's involvement thus far? (include host state contact information)

3. Provide a detailed physical description of the subject material including, but not limited to:

- Physical size (provide dimensions)
- Photographs (provide a 360 degree view)
- MSDS sheets (if any)
- Physical amount (volume, weight, number of pieces)

4. Provide a detailed radiological analysis of subject material including, but not limited to:

- Radiological survey results (activity in ccpm and/or dose rates on contact and at 30 cm)
- Supporting quality assurance (calibration records, source checks, surveyor credentials)
- Radioisotopic analysis of material (HPGe Gamma specific printout or alpha spectroscopy with radionuclide identifications and concentrations)
- Supporting quality assurance (calibration records, results, spikes, duplicates, operator credentials)

Upon receipt of a request for regulatory concurrence, ODH/BRP will evaluate the documentation submitted and make a determination of whether or not we agree that the subject material is exempt from the cited OAC licensing requirement. Upon completion of our review, a letter of regulatory concurrence or non-concurrence will be issued to each requesting organization.

If you have any question, please contact Jim Colleli of my staff at 614-728-0882 direct or E-mail: Jim.Colleli@odh.ohio.gov.

Sincerely,



Chuck McCracken, Supervisor
Decommissioning & waste Management
Ohio Department of Health
Bureau of Radiation Protection

Warren WWTP Test Study: Oil and Gas Well Production Wastewater
Required Analyses

B - Beginning of eight week test period T - End of eight week test
D - Daily W - End of each Monday-Friday 5 day test period
A - As needed, or non-routine (e.g., after rain event)

Parameter	001	Influent after return streams	801	901	Sludge ¹
Acute toxicity, <i>ceriodaphia dubia</i>	W ³		W ³	W ³	
Acute toxicity, <i>pimephales promelas</i>	T ³		T ³	T ³	
Chronic toxicity, <i>ceriodaphia dubia</i>	W		W	W	
Chronic toxicity, <i>pimephales promelas</i>	T		T	T	
Specific conductivity	D, A ⁵	D, A ⁵	W, A	W, A	
Total dissolved solids	W, A ^{4, 5}	W, A ^{4, 5}	W, A ⁴	W, A ⁴	
Chlorides	W, A ⁴	W, A ⁴	W, A ⁴	W, A ⁴	B, T
Fluorides	T, A	T, A	T, A	T, A	B, T
Sulfates	T, A	T, A	T, A	T, A	
total alkalinity	T, A	T, A	T, A	T, A	
total suspended solids	T, A	T, A	T, A	T, A	
total phosphorus	T, A	T, A	T, A	T, A	
pH	W	W	W	W	
HEM oil and grease	T	T	T	T	
SGT-HEM oil and grease	T	T	T	T	
Metals ²	T				
Barium, Strontium ³	W	W			B, T ⁶
Low level mercury	T				
Hexavalent chromium	T				
Volatile organic compounds	T				
Base neutral organic compounds	T				
Acid organic compounds, including pesticides and total phenols	T				
MBAS	T				
CBOD ₅	T				
COD	T				
total organic carbon (TOC)	T				
Total nitrogen	T				
Ammonia-nitrogen	T				
Nitrate/nitrite nitrogen	T				
Total alpha radiation in pCi/l	W, T				B, T
Total beta radiation in pCi/l	W, T				B, T
Total uranium in pCi/l	T, A ⁷				A ⁷
Total radium in pCi/l (or Ra 226 + Ra 228),	T, A ⁷				A ⁷
Total thorium in pCi/l	T, A ⁷				A ⁷

Notes:

1. Sludge after dewatering, before processing
2. Metals (for sludge see note 5): aluminum, antimony, silver, barium, beryllium, boron, cadmium, chromium, copper, iron, nickel, lead, selenium, strontium, zinc
3. Calculated endpoint
4. Conduct analyses on WET test samples
5. To develop a brine specific TDS/specific conductivity ratio
6. Metals regulated by 40 CFR 503
7. Required if there is a significant increase in total alpha or total beta radiation
8. During 100,000 gpd weeks

Robert Leidy

From: Stephen Helmer
Sent: Tuesday, March 02, 2010 8:30 AM
To: Robert Leidy
Subject: FW: Monitoring Table
Attachments: Warren Test Parameter Table_r1.docx

DONNA

Blockson

fyi

Tom Heider

Stephen Helmer

Program Administrator
Bureau of Radiation Protection
Phone: 614-728-3611

Lic. 0000

From: Chuck McCracken
Sent: Tuesday, February 16, 2010 5:54 AM
To: Michael Snee; Stephen Helmer
Subject: FW: Monitoring Table

From: Donna Kniss [donna.kniss@epa.state.oh.us]
Sent: Friday, February 12, 2010 9:09 AM
To: Chuck McCracken
Subject: Monitoring Table

I have attached the monitoring requirements table that we have sent to Warren to use during their 8 week test. Please let me know if you recommend any changes.

If I receive any additional rad data from any source, I'll forward it to you. Thank you for your assistance.

Donna

Donna J. Kniss
Ohio Environmental Protection Agency
Division of Surface Water
Northeast District Office
2110 East Aurora Road
Twinsburg, Ohio 44087
330-963-1285
fax 330-487-0769

donna.kniss@epa.state.oh.us

Ohio Environmental Protection Agency This communication and any response to it may constitute a public record and thus may be publicly available to anyone who requests it.

3/2/2010

Warren WWTP Test Study: Oil and Gas Well Production Wastewater
Required Analyses

B - Beginning of eight week test period
D - Daily
A - As needed, or non-routine (e.g., after rain event)
T - End of eight week test
W - End of each Monday-Friday 5 day test period

Parameter	001	Influent after return streams	801	901	Sludge ¹
Acute toxicity, <i>ceriodaphia dubia</i>	W ³		W ³	W ³	
Acute toxicity, <i>pimephales promelas</i>	T ³		T ³	T ³	
Chronic toxicity, <i>ceriodaphia dubia</i>	W		W	W	
Chronic toxicity, <i>pimephales promelas</i>	T		T	T	
Specific conductivity	D, A ⁵	D, A ⁵	W, A	W, A	
Total dissolved solids	W, A ^{4,5}	W, A ^{4,5}	W, A ⁴	W, A ⁴	
Chlorides	W, A ⁴	W, A ⁴	W, A ⁴	W, A ⁴	
Fluorides	T, A	T, A	T, A	T, A	B, T
Sulfates	T, A	T, A	T, A	T, A	B, T
total alkalinity	T, A	T, A	T, A	T, A	
total suspended solids	T, A	T, A	T, A	T, A	
total phosphorus	T, A	T, A	T, A	T, A	
pH	W	W	W	W	
HEM oil and grease	T	T	T	T	
SGT-HEM oil and grease	T	T	T	T	
Metals ²	T	T	T	T	
Barium, Strontium ³	W	W			B, T ⁶
Low level mercury	T				
Hexavalent chromium	T				
Volatile organic compounds	T				
Base neutral organic compounds	T				
Acid organic compounds, including pesticides and total phenols	T				
MBAS	T				
CBOD ₅	T				
COD	T				
total organic carbon (TOC)	T				
Total nitrogen	T				
Ammonia-nitrogen	T				
Nitrate/nitrite nitrogen	T				
Total alpha radiation in pCi/l	W, T, B				B, T
Total beta radiation in pCi/l	W, T, B				B, T
Total uranium in pCi/l	T, W, B				*B, T
Total radium in pCi/l (or Ra 226 + Ra 228)	T, W, B				*B, T
Total thorium in pCi/l	T, W, B				*B, T

Warren Test Parameter Table_r1
February 10, 2010

* ADD to STUDY Requirements

pCi/g
"
"
"

Notes:

1. Sludge after dewatering, before processing
2. Metals (for sludge see note 5): aluminum, antimony, silver, barium, beryllium, boron, cadmium, chromium, copper, iron, nickel, lead, selenium, strontium, zinc
3. Calculated endpoint
4. Conduct analyses on WET test samples
5. To develop a brine specific TDS/specific conductivity ratio
6. Metals regulated by 40 CFR 503
7. Required if there is a significant increase in total alpha or total beta radiation
8. During 100,000 gpd weeks

Robert Leidy

From: Stephen Helmer
Sent: Tuesday, March 02, 2010 8:31 AM
To: Robert Leidy
Subject: FW: Radioactive Materials Committee meeting on 3/9/10

fyi

Stephen Helmer

Program Administrator
Bureau of Radiation Protection
Phone: 614-728-3611

From: Michael Snee
Sent: Monday, March 01, 2010 1:49 PM
To: Robert Owen; Stephen Helmer; Chuck McCracken; Kenneth Barnhart; David Lipp; Jim Colleti
Subject: FW: Radioactive Materials Committee meeting on 3/9/10

FYI

Michael Snee
Ohio Department of Health
Bureau of Radiation Protection

From: Michael Snee
Sent: Monday, March 01, 2010 1:48 PM
To: 'gcskip3@sbglobal.net'
Subject: re: Radioactive Materials Committee meeting on 3/9/10

Mr. Skipper,

The agenda for the March 9 Radioactive Materials Committee meeting does not include a discussion on NORM issues at gas and oil well drilling sites. The committee will be discussing draft rules on the medical use of radioactive material that were recently posted for public comment. They will also review rules, concerning the licensing of source material, that are due for a required five year rule review. The meeting is open to the public, but the committee will follow the agenda.

ODH has been designated as the Ohio radiation control agency, see ORC 3748.02. As such, ODH is the state agency for all radiation control issues in Ohio. This would include NORM and TENORM issues.

The Ohio Department of Health (ODH) has recently been approached by both the Ohio Department of Natural Resources and the Ohio Environmental Protection Agency concerning potential NORM and TENORM (technologically enhanced NORM) issues in the gas and oil industries. ODH is currently evaluating the concerns and reviewing existing state regulations on the issue.

If you have any questions, I can be reached at 614-644-2727.

3/2/2010

Michael Snee
Ohio Department of Health
Bureau of Radiation Protection

From: George Skipper [gcskip3@sbcglobal.net]
Sent: Sunday, February 28, 2010 9:56 PM
To: BRadiation
Subject: Radioactive Materials Committee meeting on 3/9/10

Dear Sir or Madam,
I'm writing to inquire about the Radiation Advisory Council agenda for the Radioactive Materials Committee meeting on March 9th. Specifically, will there be any discussion on normally occurring radioactive materials (NORM), especially at gas and oil well drilling sites?

Also, am I correct in stating ODNR's DMRM, not DOH, has the responsibility for addressing this NORM issue and that DMRM currently has authority under ORC 1509 to establish rules in the Administrative Code to implement a monitoring program? Further, does DOH have any responsibility for addressing NORM at drilling sites, beyond the identification of standards and action levels for implementation by DMRM?

Is OAC 3701-39-02.1 the proper code section for evaluating action levels at drilling sites, or is there another code section that's applicable?

If there will be comments/discussion regarding NORM and I attend the meeting, will there be an opportunity for me to ask questions:?

Finally, I'm not familiar with the Columbus area. Is East 35 Chestnut St. just north of Spring St. (rt. 33), between Fourth and Third St.? Is parking available on-site, either surface or underground?




I would appreciate any information and answers you can provide. Thank you very much for your assistance.

Sincerely,

George Skipper
35967 Solon Road
Bentleyville, Ohio 44022
440.349.3804

3/2/2010

From: Stephen Helmer
To: Robert Leidy
Date: Tuesday, March 02, 2010 8:32:07 AM
Cc:
Subject: FW: Oil and gas well wastewater

 [JPEG image.jpg](#) (30 KB [HTML](#))
 [PBT brine rad data.pdf](#) (975 KB [HTML](#))  [Attachment B.PDF](#) (712 KB [HTML](#))

fyi

Stephen Helmer
Program Administrator
Bureau of Radiation Protection
Phone: 614-728-3611

From: Michael Snee
Sent: Tuesday, February 09, 2010 10:03 AM
To: Stephen Helmer; Kenneth Barnhart; Jim Colleli; David Lipp
Subject: FW: Oil and gas well wastewater

Michael Snee
Ohio Department of Health
Bureau of Radiation Protection

From: Chuck McCracken
Sent: Tuesday, February 09, 2010 9:58 AM
To: Michael Snee
Subject: FW: Oil and gas well wastewater

FYI

OEPA NEDO is working with two cities (Youngstown and Warren) on gas-well brine treatment facilities. The request for assistance that is being sent to Bob will ask us to weigh in on the radiological component of the brine.

When were we planning to meet again to discuss staff's research?

Chuck

From: Donna Kniss [mailto:Donna.Kniss@epa.state.oh.us]
Sent: Tuesday, February 09, 2010 9:04 AM
To: Chuck McCracken
Cc: Brian Hall; Rich Blasick; Virginia Wilson
Subject: Re: Oil and gas well wastewater

Chuck:

Unfortunately, it took more time for me to draft the letter; brine related issues (see below) have taken up a lot of time. The letter is in Central Office DSW for review, and hopefully will be sent out soon.

FYI, I have attached two PDFs of rad results. "PBT brine rad data" is from a sample of treated brine supplied by Pennsylvania Brine Treatment to Youngstown. PBT/Hart is working with D and L Energy and Youngstown to site a brine treatment facility; Youngstown has been conducting toxicity testing to evaluate how much brine they could accept.

Warren is working with Patriot Energy, Stallion, and Wastewater Management, and is beginning an eight week test to determine how much brine they could accept. The data they provided was from a similar type of facility, and is "Attachment B". Unfortunately, the scan they sent me is upside down, so you will have to rotate it.

Donna

Donna J. Kniss
Ohio Environmental Protection Agency
Division of Surface Water
Northeast District Office
2110 East Aurora Road
Twinsburg, Ohio 44087
330-963-1285
fax 330-487-0769

donna.kniss@epa.state.oh.us

>>> Chuck McCracken <Chuck.McCracken@odh.ohio.gov> 2/8/2010 5:09 PM >>>

02.08.2010

Donna:

It's been a little over a month since we last communicated on the NORM issue.

Is OEPA still intending to send a letter seeking ODH assistance with the oil & gas NORM issue?

Please advise.

Charles D. McCracken

Supervisor, Bureau of Radiation Protection
Ohio Department of Health
Ph: 614.466.5136
Fx: 614.466.0381

From: Donna Kniss [mailto:Donna.Kniss@epa.state.oh.us]
Sent: Wednesday, January 06, 2010 10:14 AM
To: Chuck McCracken
Subject: Oil and gas well wastewater

Chuck:

As we discussed Monday, I have attached the rad info I have encountered while researching the potential impacts of oil and gas well wastewater discharges to waters of the state. The first PDF is a paragraph from a 1987 report I found when I was searching USEPA's archives. The second PDF is an appendix from the New York Supplemental Generic Environmental Impact Statement, which can be found at

<http://www.dec.ny.gov/energy/47554.html>

The third PDF is Director Korleski's letter to the entities we knew were involved in the various proposals. We intend to post this, and supplemental info, on the OEPA website.

I am working on the letter requesting ODH's assistance in evaluating TENORM. Should I address it to Dr. Jackson? I searched the Radiation Protection Program pages, and the Table of Organization on the website, but they didn't list anyone's name other than the Director, Dr. Jackson.

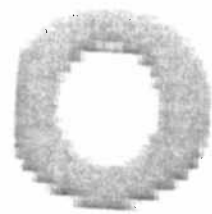
Thank you for taking the time to discuss this issue with us on Monday.

Donna



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Environment Protection Agency

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shall be a public record and
shall be available to anyone who requests it.

ERIE DIVISION

1962 WAGER ROAD

ERIE, PA 16509

(814) 825-8533 FAX (814) 825-9234

CHERI BROLASKI, LABORATORY DIRECTOR

http://www.microbac.com E-Mail: erie@microbac.com

STATE CERT ID.

25-067, 10121

C-PA-05

CHEMISTRY · MICROBIOLOGY · FOOD SAFETY · CONSUMER PRODUCTS
WATER · AIR · WASTES · FOOD · PHARMACEUTICALS · NUTRACEUTICALS**PRELIMINARY CERTIFICATE OF ANALYSIS**

PENNSYLVANIA BRINE TREATMENT

MR. ELTON DELONG, JR. (SPARKY)

5148 US 322

FRANKLIN, PA 16323

Date Reported
Date Received 1/12/2010
Order Number 1001-02981
Invoice No.
Cust # 016369
Sampler Customer

Permit No.
Cust P.O.

SUBJECT: GAS WELL WASTEWATER

TEST	METHOD	RESULT	UNITS	ANALYSIS DATE	TIME	TECH	ACCRED.
008 GAS WELL WASTEWATER							

Date Sampled: 1/12/2010

Time Sampled: 9:45 am

.....continued

pH - Exceeds 15 Min Hold Time

SM 4500-H+ B

8.6 Units

1/14/2010 14:30 DS

Solids, Dissolved

SM 2540 C

118000 mg/L

1/14/2010 16:00 DS

Solids, Suspended

SM 2540 D

<10 mg/L

1/15/2010 10:30 DS

BOD5

SM 5210 B

360 mg/L

1/13/2010 14:37 MAB

Chloride

SM 4500-Cl-E (Discrete)

101000 mg/L

1/15/2010 12:29 CAP

Sulfate

SM 4500-SO4 D

9 mg/L

1/15/2010 15:30 DS

Alkalinity As CaCO3

SM 2320 B

110 mg/L

1/26/2010 10:10 BJJ

Fluoride, Direct

SM 4500-F C

<1.0 mg/L

1/25/2010 11:05 CP

009 GAS WELL WASTEWATER

Date Sampled: 1/12/2010

Time Sampled: 9:45 am

Phosphorus, Total

EPA 365.1 (DISCRETE)

<0.1 mg/L

1/26/2010 16:33 BJJ

COD

HACH 8000

1060 mg/L

1/20/2010 15:05 CP

Ammonia Distilled

SM 4500-NH3 B/G DISCRETE

87.3 mg N/L

1/18/2010 16:20 CP

Nitrogen, Nitrate + Nitrite

EPA 1979 353.2 (DISCRETE)

<1 mg/L

1/13/2010 16:40 CAP

010 GAS WELL WASTEWATER

Date Sampled: 1/12/2010

Time Sampled: 9:45 am

TOC (Total Organic Carbon)

SM 5310 C

218 mg/L

1/15/2010 OST

THE TECH INITIALS "OST" (OUTSIDE TESTING) INDICATE THAT THESE ANALYSES WERE SUB-CONTRACTED TO MICROBAC LABORATORIES, INC./PITTSBURGH DIVISION. (W.O. 1001-00713).

011 GAS WELL WASTEWATER

Date Sampled: 1/12/2010

Time Sampled: 9:45 am

Gross Alpha

EPA 900.0

988 +/- 256 pCi/L

1/28/2010 9:49 OST

Gross Beta

EPA 900.0

524 +/- 177 pCi/L

1/28/2010 9:49 OST

Uranium

ASTM D5174

0.0219 +/- 0.0035 pCi/L

1/27/2010 9:49 OST

Radium 226

EPA 903.1

0.397 +/- 0.396 pCi/L

1/22/2010 9:49 OST

The data and information on this, and other accompanying documents, represent only the sample(s) analyzed and is rendered upon condition that it is not to be reproduced wholly or in part for advertising or other purposes without approval from the laboratory.

USDA EPA NELAP Testing Food Sanitation Consulting Chemical and Microbiological Analyses and Research

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ERIE DIVISION
1962 WAGER ROAD
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(814) 825-8533 FAX (814) 825-9254
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STATE CERT ID

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C-PA-05

CHEMISTRY · MICROBIOLOGY · FOOD SAFETY · CONSUMER PRODUCTS
WATER · AIR · WASTES · FOOD · PHARMACEUTICALS · NUTRACEUTICALS

PRELIMINARY CERTIFICATE OF ANALYSIS

PENNSYLVANIA BRINE TREATMENT
MR. ELTON DELONG, JR. (SPARKY)
5148 US 322
FRANKLIN, PA 16323

Date Reported
Date Received 1/12/2010
Order Number 1001-02981
Invoice No.
Cust # 016369
Sampler Customer

Permit No.
Cust P.O.

SUBJECT: GAS WELL WASTEWATER

TEST	METHOD	RESULT	UNITS	ANALYSIS		
				DATE	TIME	TECH ACCRED.
GAS WELL WASTEWATER						

Date Sampled: 1/12/2010

Time Sampled: 9:45 am

.....Continued

Radium 228

EPA 904.0

Thorium

-0.021 +/- 0.397

pCi/L

1/21/2010

9:49

OST

see below

pCi/L

1/23/2010

9:49

OST

THORIUM-228 0.876 +/- 0.281 pCi/L

THORIUM-230 0.0969 +/- 0.087 pCi/L

THORIUM-232 0.0125 +/- 0.0398 pCi/L

THE TECH INITIALS "OST" (OUTSIDE TESTING) INDICATE THAT THE RADIUM, THORIUM AND URANIUM
ANALYSES WERE SUB-CONTRACTED TO GEL LABORATORIES LLC.
(W.O. MILA00502).

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All samples received in proper condition and results conform to ISO 17025 unless otherwise noted

Accred.

- ✱ This symbol at the end of the test line means the test analysis met the requirements of NELAP (PA ID 25-00067)
- ✱ This symbol at the end of the test line means the test analysis met the requirements of AIHA (ID 100386)
- ✱ This symbol at the end of the test line means the test analysis met the requirements of NY ELAP (NY ID 10121)

ABBREVIATIONS:

MG/KG	Microgram per Kilogram (PPM)	Negative	Bacteria or target analyte not detected
UG/L	Microgram per Liter (PPB)	CFU	Colony Forming Unit
UG/KG	Microgram per Kilogram (PPB)	ND	Not Detected as or below the reporting limit
MG/L	Milligram per Liter (PPM)	TIC	Tentatively Identified Compound
1000 UG	1 MG	+	Detected (also see "ND")
Positive	Bacteria or target analyte detected	++	Greater than

For any feedback concerning our services, please contact Cheri Brolaski, Laboratory Director at cbrolaski@microbac.com or Jame Nokes, President at president@microbac.com



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NELAP accredited by PA, NY. Visit our website to view our current NELAP accreditations for various drinking water, wastewater and solid & chemical materials, air & emissions analyses

MEMBER



Eureka Resources, LLC
DEP 11-25-09 RESPONSES

Attachment B



Table B-1
SUMMARY OF LAB RESULTS OF RADIONUCLIDE IN
UNTREATED WATER
Eureka Resources, LLC., Williamsport, PA

POLLUTANT	Result	Uncertainty	Total
pCi/L			
VARGENSON UNTREATED FLOWBACK #2			
Gross Alpha	11,620	± 1239	12,859
Gross Beta	3,163	± 526.2	3,689.2
Radium-226	680.6	± 15.32	695.92
Radium-228	59.34	± 11.37	70.71
Seewald Final Report on Untreated Vargenson Flowback #2			
Gross Alpha	182.8	± 82.98	265.78
Gross Beta	117.4	± 33.50	150.9
OGONTZ 3H- PIT WATER/UNTREATED			
Gross Alpha	1,327	± 521.3	1,848.3
Gross Beta	2,831	± 572.9	3,403.9
Radium-226	30.71	± 3.80	34.51
Radium-228	4.57	± 10.04	14.61
Pit 8 Flowback Composite			
Gross Alpha	123.1	± 52.24	175.3
Gross Beta	192.3	± 55.14	247.4
Radium-228	3.77	± 9.43	13.2
Total Uranium	0.19	± 0.006	0.20
TEEL#8 FLOWBACK MIDDLE			
Gross Alpha	3,787	± 387.6	4,174.6
Gross Beta	1,238	± 159.3	1,397.3
Radium-226	158.9	± 5.10	164
Radium-228	10.03	± 1.34	11.37
Total Uranium	0.874	± 0.033	0.91
Thorium-228	1.72	± 0.715	2.44
Thorium-230	0.494	± 0.352	0.85
Thorium-232	0.123	± 0.172	0.30
MAXIMUM Gross Alpha			
			12,859
MAXIMUM Gross Beta			
			3,689
MAXIMUM Radium 226			
			695.92
MAXIMUM Radium 228			
			70.71
MAXIMUM Total Uranium			
			0.91
MAXIMUM Thorium 228			
			2.44
MAXIMUM Thorium 230			
			0.85
MAXIMUM Thorium 232			
			0.30

Table B-2
RADIONUCLIDE EMISSIONS FROM UNTREATED WATER
Eureka Resources, LLC., Williamsport, PA

Radionuclide	Concentration		
	Liquid (10 ⁻³ Ci/m ³)	Liquid (Ci/m ³)	Air (Ci/m ³)
Gross Alpha	12.859.00	1.29E-05	1.29E-08
Gross Beta	3.689.20	3.6892E-06	3.69E-09
Radium-226	695.92	6.9592E-07	6.96E-10
Radium-228	70.71	7.071E-08	7.07E-11
Total Uranium	0.91	9.07E-10	9.07E-13
Thorium-228	2.44	2.436E-09	2.44E-12
Thorium-230	0.85	8.46E-10	8.46E-13
Thorium-232	0.30	2.95E-10	2.95E-13

Notes:

- (1) Source: laboratory analytical data for gas well water
(2) Based on calculations methodology in Appendix D to 40 CFR Part 61 (attached)

Sample calculations:

$$\text{Gross Alpha emissions} = 1.29 \text{ E-}05 \text{ Ci/m}^3 \times 10^{-3} = 1.29\text{E-}08 \text{ Ci/m}^3$$