


"Asselin, David (DEQ)" <AsselinD1@michigan.gov> 
To: Sylwia Chrostowski <Sylwia.Chrostowski@usecology.com> and 1 more...
RE: MCC Partners Liner

August 18, 2014 8:37 AM

Sylwia,

Thanks for the update. The calculation looked good and I thought you had perhaps added another factor of 10 to the diluent for conservatism. The updated value of .031 cubic yards per sheet will still get the concentration below 50 pCi/g. As such, the material may be processed as proposed at Michigan Disposal to achieve a radium-226 concentration less than 50 picocuries per gram and then be disposed of at Wayne Disposal.

Please let me know if you have any questions.

David Asselin

Physicist
REP Unit, Radiological Protection Section
Office of Waste Management and Radiological Protection
Michigan Department of Environmental Quality
Telephone: (517) 284-6575
Email: asselind1@michigan.gov

From: Sylwia Chrostowski [mailto:Sylwia.Chrostowski@usecology.com]
Sent: Monday, August 18, 2014 8:06 AM
To: Asselin, David (DEQ)
Cc: Skowronek, Robert (DEQ)
Subject: RE: MCC Partners Liner

Sorry David, I just noticed I have a typo from copying and pasting the procedure from the previously approved plan. I highlighted it in yellow for you to see. The calculation is correct and we will be using 0.031 cubic yards not 0.30 cubic yards.

The liner is cut to 4'x4' sheets. Each sheet is 30 mils thick. Therefore each sheet of liner will require **0.30 cubic yards** of diluent as follows:

$4 \text{ ft} \times 4 \text{ ft} \times 30 \text{ mil} \times 0.001 \text{ inches}/1 \text{ mil} \times 1 \text{ ft}/12 \text{ inches} \times 1 \text{ yd}^3/27 \text{ ft}^3 \times 21.5 \text{ yd}^3 \text{ diluent}/1 \text{ yd}^3 \text{ liner} = 0.031$



Sylwia Chrostowski
Approval Coordinator

EQ, a US Ecology Company
49350 North I-94 Service Drive
Belleville, MI 48111
o \734.699.6294
e \ Sylwia.Chrostowski@usecology.com

Customer Service: 800-592-5489
Emergency Response: 800-839-3975
www.eqonline.com

From: Asselin, David (DEQ) [<mailto:AsselinD1@michigan.gov>]
Sent: Monday, August 18, 2014 7:30 AM
To: Sylwia Chrostowski
Cc: Skowronek, Robert (DEQ)
Subject: RE: MCC Partners Liner

Sylwia,

Now that I'm becoming familiar with blending requests, Bob has asked me to start assisting with responses. It doesn't look like you've received a response yet, so I didn't want to keep you waiting until Bob got back into the office.

I have reviewed your proposed methodology for processing the liner. The material may be processed as proposed at Michigan Disposal to achieve a radium-226 concentration less than 50 picocuries per gram and then be disposed of at Wayne Disposal.

If you have any questions, please contact me or Bob Skowronek.

Thank you,

David Asselin

Physicist
REP Unit, Radiological Protection Section
Office of Waste Management and Radiological Protection
Michigan Department of Environmental Quality
Telephone: (517) 284-6575
Email: asselind1@michigan.gov

From: Sylwia Chrostowski [<mailto:Sylwia.Chrostowski@usecology.com>]
Sent: Thursday, August 14, 2014 2:45 PM
To: Skowronek, Robert (DEQ)
Cc: Asselin, David (DEQ)
Subject: MCC Partners Liner

Hi Bob!

The Range Resource MCC site approvals we just completed generated a box of liner. MDI proposes to manage the liner in its treatment tanks the same way that MDI has managed the TENORM sludge. We will place the sheets of liner into a treatment tank and blend at the appropriate ratio with inert, non-radioactive diluent. The liner and diluent will be blended in an MDI treatment tank with an MDI excavator. The blended material will be transferred from MDI to WDI.

Since the correlation curve was not designed with the liners and because the size of the liner makes it difficult to sample we won't be able to use the blending curve on this material. There was some variation in the samples, so in order to be conservative we will be taking the highest concentration on the analysis. The highest Ra-226 concentration on the analysis was 901pCi/g.

| Ra-226 (pCi/g) | Ton Diluent Per Ton TENORM |
|-------------------|-------------------------------|
| 901 | 21.5 |

The liner is cut to 4'x4' sheets. Each sheet is 30 mils thick. Therefore each sheet of liner will require 0.30 cubic yards of diluent as follows:

$$4 \text{ ft} \times 4 \text{ ft} \times 30 \text{ mil} \times 0.001 \text{ inches}/1 \text{ mil} \times 1 \text{ ft}/12 \text{ inches} \times 1 \text{ yd}^3/27 \text{ ft}^3 \times 21.5 \text{ yd}^3 \text{ diluent}/1 \text{ yd}^3 \text{ liner} = 0.031$$

MDI will count 4'x4' liner sheets transferred to the blending tank and for each 4'x4' liner sheet transferred will add no less than 0.031 cubic yards of diluent.

If the liner tears and cannot be transferred in whole 4'x4' sheets, we will default to the following extremely conservative approach: The liner will be transferred from storage tank to blending tank in partial quantities one bucketful at a time with an MDI excavator. The excavator bucket volume is a fixed, known quantity. We will conservatively assume that each bucket of liner is equal to the volume of a full excavator bucket. This is a highly conservative approach in that we'll be equating the volume of liner to the volume of the excavator bucket when in fact each bucket of liner will have significant void space between the pieces of liner that we will not be taking credit for. To illustrate the point with simple math, say that the excavator bucket is 3.0 cubic yards but that the volume of actual liner inside a single bucket-load is only 0.1 cubic yards and the balance is void space. We'll have to add $3.0 \times 21.5 = 64.5$ cubic yards of diluent even though technically speaking we only need to add $0.1 \times 21.5 = 2.15$ cubic yards. As you can see, this is highly conservative but we have no other practical way of measuring the liner volume per bucket transferred so are proposing this very conservative approach as our Plan B in the event we are unable to transfer the liner in 4'x4' intact sheets.

Please let me know if you have any more questions.



Sylwia Chrostowski
Approval Coordinator

EQ, a US Ecology Company

49350 North I-94 Service Drive

Belleville, MI 48111

o \ 734.699.6294

e \ Sylwia.Chrostowski@usecology.com

Customer Service: 800-592-5489

Emergency Response: 800-839-3975

www.eqonline.com