

## Drury, Andrew (EGLE)

---

**From:** Eric Marko <EMarko@nthconsultants.com>  
**Sent:** Friday, May 21, 2021 3:04 PM  
**To:** Drury, Andrew (EGLE)  
**Cc:** Carlson, Nicholas (EGLE); Theodore Pagano; Jeff Kummer; Rhiana Dornbos; Mary Mello  
**Subject:** RE: Michigan Potash Update and question

**CAUTION: This is an External email. Please send suspicious emails to [abuse@michigan.gov](mailto:abuse@michigan.gov)**

Hello, Andy.

Thank you for the discussion today and for your patience as we gathered information to respond to your questions. Please see the response below (confirming our discussion today) to your first question(s) in your e-mail dated May 6, 2021.

1. There is a proposed allowance of 120 hours of operation per year when processing sour brine with the thermal oxidizer bypassed. Does the H<sub>2</sub>S emission estimate reflect this bypass? The emission estimate assumes a 99.5% H<sub>2</sub>S destruction efficiency for the thermal oxidizer, which is used to calculate the hourly emission rate, but does not appear to provide a scrubber control efficiency. According to the vendor, would the scrubber control efficiency also be 99.5% when processing sour brine? If not, what would the scrubber H<sub>2</sub>S emission rate be when processing sour brine during bypass of the thermal oxidizer?

**Response:** The proposed emission rates of 1.8 and 3.3 lb/hr H<sub>2</sub>S represent operation of the water sweetening system when processing sweet and sour brine, respectively, with the associated controls operating for each brine condition (i.e., the caustic scrubber when processing sweet brine, and the thermal oxidizer/caustic scrubber when processing sour brine). The anticipated maximum H<sub>2</sub>S emission rate is less than 3.3 lb/hr when processing sour brine (H<sub>2</sub>S up to 400 ppm, by weight) and bypassing the thermal oxidizer. As we discussed, there is no need to update the H<sub>2</sub>S emission rates or air toxics analysis.

Since this bypass is proposed for more than 24 hours, compliance with the 24 hour H<sub>2</sub>S ITSL has to be based on the emissions during thermal oxidizer bypass.

**Response:** Because the thermal oxidizer bypass scenario H<sub>2</sub>S emission rate is less than 3.3 lb/hr used to demonstrate compliance with the 24-hr ITSL, there is no need to update the analysis.

In addition, the annual average hourly emission rate used for the annual H<sub>2</sub>S ITSL cannot be less than 10% of the peak one hour H<sub>2</sub>S emission rate per Rule 227(2). The peak hourly rate may be the emissions during thermal oxidizer bypass when processing sour brine.

**Response:** Because the annual average hourly emission rate (1.8 lb/hr H<sub>2</sub>S) is **more than** 10% of the peak hourly rate (3.3 lb/hr H<sub>2</sub>S), Rule 227(2) is satisfied and the annual average hourly rate may be used for the annual H<sub>2</sub>S ITSL.

Please call me if you have questions.

Best,

**Eric Marko**

Assistant Project Engineer

Mobile: 440.781.2429

[emarko@nthconsultants.com](mailto:emarko@nthconsultants.com)



---

**From:** Drury, Andrew (EGLE) <DRURYA@michigan.gov>

**Sent:** Friday, May 14, 2021 10:16 AM

**To:** Eric Marko <EMarko@nthconsultants.com>

**Cc:** Carlson, Nicholas (EGLE) <CarlsonN1@michigan.gov>; Theodore Pagano <tpagano@mipotash.com>; Jeff Kummer <jkummer@mipotash.com>; Rhiana Dornbos <RDornbos@nthconsultants.com>; Mary Mello <MMello@nthconsultants.com>

**Subject:** RE: Michigan Potash Update and question

Eric,

I apologize for missing you call yesterday; I was in meetings most of the day.

Next week is fine for the additional information. The key is to meet the H<sub>2</sub>S screening levels if the oxidizer is not operating, which is why we need the emission rate during oxidizer bypass.

Andrew Drury, Senior Engineer Specialist  
General Manufacturing/Chemical Process Unit, Permit Section  
Air Quality Division  
Michigan Department of Environment, Great Lakes, and Energy  
**NEW PHONE** 517-648-6663 | [drurya@michigan.gov](mailto:drurya@michigan.gov)  
[Follow Us | Michigan.gov/AIR](https://www.michigan.gov/AIR)

---

**From:** Eric Marko <[EMarko@nthconsultants.com](mailto:EMarko@nthconsultants.com)>

**Sent:** Thursday, May 13, 2021 5:08 PM

**To:** Drury, Andrew (EGLE) <[DRURYA@michigan.gov](mailto:DRURYA@michigan.gov)>

**Cc:** Carlson, Nicholas (EGLE) <[CarlsonN1@michigan.gov](mailto:CarlsonN1@michigan.gov)>; Theodore Pagano <[tpagano@mipotash.com](mailto:tpagano@mipotash.com)>; Jeff Kummer <[jkummer@mipotash.com](mailto:jkummer@mipotash.com)>; Rhiana Dornbos <[RDornbos@nthconsultants.com](mailto:RDornbos@nthconsultants.com)>; Mary Mello <[MMello@nthconsultants.com](mailto:MMello@nthconsultants.com)>

**Subject:** RE: Michigan Potash Update and question

**CAUTION: This is an External email. Please send suspicious emails to [abuse@michigan.gov](mailto:abuse@michigan.gov)**

Hi, Andy.

Thank you for the questions. I left a brief voicemail but wanted to follow-up with this e-mail. We are requesting a few more days to provide response as we verify the design/values for response to question number 1 below, we'll provide a response by the end of next week. With respect to question number 2, MPO is proposing to install a monitor to record

the H<sub>2</sub>S concentration of the feedstock (inlet brine) to identify when the brine is sour and if the thermal oxidizer is required to operate. The monitoring would take place at the control room and the data would be logged.

Thank you, please call if you have questions.

**Eric Marko**

Assistant Project Engineer

Mobile: 440.781.2429

[emarko@nthconsultants.com](mailto:emarko@nthconsultants.com)



---

**From:** Drury, Andrew (EGLE) <[DRURYA@michigan.gov](mailto:DRURYA@michigan.gov)>

**Sent:** Thursday, May 6, 2021 11:01 AM

**To:** Rhiana Dornbos <[RDornbos@nthconsultants.com](mailto:RDornbos@nthconsultants.com)>

**Cc:** Carlson, Nicholas (EGLE) <[CarlsonN1@michigan.gov](mailto:CarlsonN1@michigan.gov)>; Smith, Cindy (EGLE) <[SMITHC17@michigan.gov](mailto:SMITHC17@michigan.gov)>; Nixon, Shane (EGLE) <[NIXONS@michigan.gov](mailto:NIXONS@michigan.gov)>; Owens, Caryn (EGLE) <[OwensC1@michigan.gov](mailto:OwensC1@michigan.gov)>; Eric Marko <[EMarko@nthconsultants.com](mailto:EMarko@nthconsultants.com)>; Theodore Pagano <[tpagano@mipotash.com](mailto:tpagano@mipotash.com)>; Jeff Kummer <[jkummer@mipotash.com](mailto:jkummer@mipotash.com)>; Mary Mello <[MMello@nthconsultants.com](mailto:MMello@nthconsultants.com)>

**Subject:** Michigan Potash Update and question

Rhiana,

The AQD has verified the dispersion modeling. We are continuing our review and should begin drafting conditions shortly.

I do have two questions.

1. There is a proposed allowance of 120 hours of operation per year when processing sour brine with the thermal oxidizer bypassed. Does the H<sub>2</sub>S emission estimate reflect this bypass? The emission estimate assumes a 99.5% H<sub>2</sub>S destruction efficiency for the thermal oxidizer, which is used to calculate the hourly emission rate, but does not appear to provide a scrubber control efficiency. According to the vendor, would the scrubber control efficiency also be 99.5% when processing sour brine? If not, what would the scrubber H<sub>2</sub>S emission rate be when processing sour brine during bypass of the thermal oxidizer?

Since this bypass is proposed for more than 24 hours, compliance with the 24 hour H<sub>2</sub>S ITSL has to be based on the emissions during thermal oxidizer bypass. In addition, the annual average hourly emission rate used for the annual H<sub>2</sub>S ITSL cannot be less than 10% of the peak one hour H<sub>2</sub>S emission rate per Rule 227(2). The peak hourly rate may be the emissions during thermal oxidizer bypass when processing sour brine.

2. How will H<sub>2</sub>S be monitored in the sweetening process to ensure the thermal oxidizer is used when the brine is sour and to ensure compliance with any sulfur related emission limits?

Please provide a response by May 13 so we can continue our review of the H<sub>2</sub>S emissions.

Please let me know if you have any questions.

Thank you,

Andrew Drury, Senior Engineer Specialist  
General Manufacturing/Chemical Process Unit, Permit Section  
Air Quality Division  
Michigan Department of Environment, Great Lakes, and Energy  
**NEW PHONE** 517-648-6663 | [drurya@michigan.gov](mailto:drurya@michigan.gov)  
[Follow Us | Michigan.gov/AIR](#)