Message

From: Greene, Nikia [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=32A08A414A4F40199B557C0819EB7D0B-GREENE, NIKIA]
Sent: 12/10/2019 5:10:13 PM
To: Partridge, Charles [Partridge.Charles@epa.gov]; Lynn Woodbury [woodburyl@cdmsmith.com]; OBrien, Wendy [OBrien.Wendy@epa.gov]
CC: Wall, Dan [wall.dan@epa.gov]
Subject: RE: meconium literature

Of course, this is the priority.

Nikia Greene
Remedial Project Manager
U.S. EPA, Region 8
(406)-457-5019
greene.nikia@epa.gov

From: Partridge, Charles <Partridge.Charles@epa.gov>
Sent: Tuesday, December 10, 2019 10:08 AM
To: Lynn Woodbury <woodburyl@cdmsmith.com>; OBrien, Wendy <OBrien.Wendy@epa.gov>
Cc: Wall, Dan <wall.dan@epa.gov>; Greene, Nikia <Greene.Nikia@epa.gov>
Subject: RE: meconium literature

Lynn,

Can you do a quick literature search to see if we are missing any studies? We need to know that we have a good grasp on the literature before we release a press release today or tomorrow. Of course only with Nikia's agreement and direction.

cp

From: Woodbury, Lynn <woodburyl@cdmsmith.com>
Sent: Tuesday, December 10, 2019 8:48 AM
To: OBrien, Wendy <OBrien.Wendy@epa.gov>
Cc: Partridge, Charles <Partridge.Charles@epa.gov>
Subject: RE: meconium literature

Wendy –

Here is literature I have pulled thus far…see attached. I have added highlights in most documents specific to the meconium results.

A few items of note:

- There are two published MIREC studies with meconium data – Ettinger 2017 (arsenic) and Arbuckle 2016 (cadmium, lead, manganese, mercury). Both are referenced in the McDermott paper in the discussion.

- The Turker et al. (2013) study is also one that is being referenced in the McDermott paper; however, I didn't find this study to be especially helpful because of the way the meconium concentrations are being reported. First, the authors indicated the values are being expressed as ng/g/kg (i.e., as a dose per mass of infant body weight). Because individual body weight values aren't provided, we would need to convert based on an assumption the

median reported body weight applies to all samples, which is not ideal. Second, I suspect there may be a typo in the reported units. In other places within the article text, it appears the Greek mu character (µ) was manually added after the fact. Given expected meconium concentrations in other studies, I suspect the 'n' character in ng/g/kg was supposed to replaced by µ. The other oddity about this study is that the detection limits are reported as µg/mL, which is unexpected as meconium is a solid. These are Turkish researchers publishing an English translation in a Japanese journal…I'm thinking something may have gotten lost in translation. I have not included this results of this study in the presentation, but it may be worth reaching out to the researchers to clarify their results as McDermott does rely upon this study in their results interpretation.

- The Friel et al. (1989) study looked promising at first, but it too has limitations due to the way the results were reported. Meconium concentrations were reported as µg/kg, BUT the kg in the denominator is not based on the mass of meconium, but the mass of the infant. I estimated the meconium concentration based on the total metal mass reported and then normalized it based on the average mass of stool passed for full-term infants (8.9 g), which is not ideal, but provides another dataset to support our findings.

Let me know if you need any additional literature,
Lynn

++++++++++++++++++++++++++++
Lynn Woodbury | CDM Smith | 555 17th Street, Suite 500 | Denver, CO 80202 | direct: 303.383.2382 | fax: 303.308.3003 | woodburyL@cdmsmith.com

---

From: OBrien, Wendy <OBrien.Wendy@epa.gov>
Sent: Tuesday, December 10, 2019 8:11 AM
To: Partridge, Charles <Partridge.Charles@epa.gov>; Woodbury, Lynn <woodburyl@cdmsmith.com>
Subject: meconium literature

Can anyone share the literature cited in the presentation with me? I have the Canadian study and the Aziz study. Thx.

Wendy O'Brien, DVM, PhD, DABT
Toxicologist, Technical Assistance Branch
Laboratory Services and Applied Sciences Division
USEPA Region 8
1595 Wynkoop Street
Denver, CO 80202

Phone: 303.312.6712
FAX: 303.312.6882

CONFIDENTIALITY NOTICE: This e-mail, including all attachments, is for the sole use of the intended recipients and may contain Confidential and privileged information. Any unauthorized use, disclosure or distribution is prohibited. If you are not the intended recipient, please contact the sender and destroy all copies of this message.