Mackil, Molly J. (DNREC)

From: CATHY.K.MALAST@saic.com on behalf of Malast, Cathy K. <CATHY.K.MALAST@saic.com>
Sent: Tuesday, May 23, 2006 7:52 AM
To: DeFriece John R. (DNREC)
Subject: RE: Dioxin question

Hello again John,

Another question, bearing in mind I've not looked at the PCB TMDL since last August. Does that TMDL address the PCBs listed under "dioxin", i.e., PCB 77, PCB 81, PCB 126, PCB 169, PCB 105, PCB 114, PCB 118, PCB 123, PCB 156, PCB 157, PCB 167, PCB 189?

Cathy

From: DeFriece John R. (DNREC) [mailto:John.DeFriece@state.de.us]
Sent: Mon 5/22/2006 3:21 PM
To: Malast, Cathy K.
Subject: RE: Dioxin question

Cathy,

I suspect the listing has more to do with the staging of the TMDLs. The stage I PCB TMDL is already out, and deals with Zones 1-5. I think stage 2 will add Zone 6 (De. Bay), and possibly some numeric load allocations for permittees in the other zones.

The TMDL was actually promulgated by EPA Regions II & III, based on DRBC's SWQS (they have not adopted the ?TEQ std. yet). Because of the trackdown/BMP approach ("narrative WQBELs"), the differing numeric criteria among the various States & DRBC is not a problem we need to worry about just yet.

The dioxins TMDL is not due until 2012 or so.

John

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-----Original Message-----
From: CATHY.K.MALAST@saic.com [mailto:CATHY.K.MALAST@saic.com <mailto:CATHY.K.MALAST@saic.com>]
Sent: Monday, May 22, 2006 2:59 PM
To: DeFriece John R. (DNREC)
Subject: RE: Dioxin question

Hello John,

Hope you had a nice time away from the office.

I'm back on OxyChem and I was working on THE wq spreadsheet when the question arose. I found DE's dioxin TEQ thingy after I sent the email.
Regarding DRBC, I wasn't sure if meant just 2,3,7,8-TCDD or the same as DE considers it. Regarding DE's, is it sort of double listing to have both PCBs and "dioxin" 303(d) listed?

Cathy

From: DeFriece John R. (DNREC) [mailto:John.DeFriece@state.de.us <mailto:John.DeFriece@state.de.us>]
Sent: Mon 5/22/2006 10:04 AM
To: Malast, Cathy K.
Subject: RE: Dioxin question

Cathy,

Hi. I was out all last week, so I'm catching up on requests & e-mails.
Under the heading of "Nothing is ever simple", our "dioxin" standard is actually for all "dioxin-like" congeners (including PCBs, dioxins, and
furans) as Toxic Equivalents (TEQs) to 2,3,7,8-TCDD.

TEQ = ? {(Sample Concentration of Congeneri) x (TEFi)}

"TEF" is the "Toxicity Equivalence Factor" (see table below). There are over 400 congeners for PCBs, Dioxins, and Furans. Only 29 have TEFs > 0.
To make life a little easier, I have attached a spreadsheet with the TEFs and CAS numbers for the 29 congeners.

If the discharge is to the De. River watershed and only PCBs are in question, then the requirements under the Delaware River Basin Commission's
(DRBC) PCB TMDL for Zones 1-5 of the De. River apply. The .url attachments are just links to DRBC requirements. The gist is to prepare a "Pollutant Minimization Plan" to trackdown PCB sources and implement BMPs to reduce PCB discharges. I think OxyChem is the only permittee you're working on that would be affected by these requirements. I am not sure what will happen (or
how) with them, since they have proposed to close the site.

Zone 6 of the De. River is still in the preliminary monitoring stage for a DRBC PCB TMDL. I think that neither Allen Family Foods nor Perdue have been flagged for congener monitoring:

"Point source discharges considered in monitoring for Zone 6 PCB TMDLs in Delaware"

1. Dover, City of McKee Run
2. Harrington STP
3. Kent County STP
4. Reichhold Chemicals

Please remind me which facility we are talking about, and I can be much more specific. Do they already have any congener monitoring results?

I've gone through these TEQ calculations for several DE. facilities. I can probably provide an example spreadsheet so you don't have to start from scratch for TEQ calculations.

Pls. feel free to call me at (302)739-9946 if you'd like to discuss this.

Thanks,

John

1. DeSWQS References
Delaware's Surface Water Quality Standards (DeSWQS) are available at
http://www.dnrec.state.de.us/DNREC2000/Divisions/Water/WaterQuality/WQStanda
<http://www.dnrec.state.de.us/DNREC2000/Divisions/Water/WaterQuality/WQStand
a>
rd.pdf
<http://www.dnrec.state.de.us/DNREC2000/Divisions/Water/WaterQuality/WQStand
ard.pdf> .
Page 31 of 48 of .pdf file:

Chemical
Systemic Toxicants
Human Carcinogens

Fish Ingestion
Fish and Water Ingestion
Fish Ingestion
Fish and Water Ingestion

2,3,7,8-TCDD (Dioxin) (as TEQ)1

0.00003 (MCL)
5.1E-09
5.0 E-09

Footnote on Page 33 of 48 of the .pdf file:
1 Criteria is for the "total toxic equivalence (TEQ) to 2,3,7,8-TCDD". The toxic equivalence for a sample is the sum of the concentration for each congener multiplied by its associated Toxicity Equivalence Factor (TEF) listed in table below.
TEQ = ? ((Concentration of Congener in sample)x (TEF)) where the TEF is unitless and the concentration is in ug/l.

Congener

TEF value
Congener
TEF value

Dibenzo-p-dioxins

Non-ortho PCBs

2,3,7,8-TCDD
1
PCB 77
0.0001

1,2,3,7,8-PnCDD
1
PCB 81
0.0001

1,2,3,4,7,8-HxCDD
0.1
PCB 126
0.1

1,2,3,6,7,8-HxCDD
0.1
PCB 169
0.01

1,2,3,7,8,9-HxCDD
0.1

1,2,3,4,6,7,8-HpCDD
0.01
Mono-ortho PCBs

OCDD
0.0001
PCB 105
0.0001

PCB 114
0.0005

Dibenzofurans

PCB 118

0.0001

2,3,7,8-TCDF
0.1
PCB 123
0.0001

1,2,3,7,8-PnCDF
0.05
PCB 156
0.0005

2,3,4,7,8-PnCDF
0.5
PCB 157
0.0005

1,2,3,4,7,8-HxCDF
0.1
PCB 167
0.00001

1,2,3,6,7,8-HxCDF
0.1
PCB 189
0.0001

1,2,3,7,8,9-HxCDF
0.1

2,3,4,6,7,8-HxCDF
0.1

1,2,3,4,6,7,8-HpCDF
0.01

1,2,3,4,7,8,9-HpCDF
0.01

OCDF
0.0001

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-----Original Message-----
From: CATHY.K.MALAST@saic.com [mailto:CATHY.K.MALAST@saic.com <mailto:CATHY.K.MALAST@saic.com>]
Sent: Friday, May 19, 2006 2:38 PM
To: DeFriece John R. (DNREC)
Subject: Dioxin question

Good afternoon John,

Long time no email. Quick question regarding 303(d) listing for dioxin:
does "dioxin" refer to one compound, e.g., 2,3,7,8- TCDD, or a group of compounds, e.g., those analyzed by EPA Method 1613B?

Cathy