

Olson, Kirby, NMENV

From: Olson, Kirby, NMENV
Sent: Thursday, August 25, 2016 11:00 AM
To: 'Blankenship, Bill'
Subject: RE: LANL evporation basins - HAP estimate 2014 NPR

Hi Bill,

I looked over this data and I think it supports sampling every 2 years and not calculating the TAPs. I agree with your calculations about the total HAPs being relatively consistent. The concentrations are very low; so even though the total for 2015 is twice the total for 2012, the difference between the years is only 0.001 tpy. Even for the TAPs that increased in water concentration (antimony and molybdenum) I calculated that the corresponding increase in air emissions (I just used a proportion ratio without adjusting for the different evaporation rate) was equivalent to 0.3% of the screening threshold for antimony and 1.8% of the screening threshold for molybdenum, so even though they increase they are still far below the screening thresholds.

I would still like to write in that LANL will submit the water sampling data (either an electronic copy of the lab report or in spreadsheet, the format doesn't matter) so we have data in our files to support the bases for the permit conditions. I'm drafting the revised conditions this morning. Would you like me to send them to you?

Regards,

Kirby

From: Blankenship, Bill [mailto:bblankenship@lanl.gov]
Sent: Tuesday, August 16, 2016 1:54 PM
To: Olson, Kirby, NMENV <Kirby.Olson@state.nm.us>
Subject: LANL evporation basins - HAP estimate 2014 NPR

Kirby –

I reviewed the HAP estimate from the 2014 NPR application for the Model 420 sprayer at the evaporation basins. Copied below is the calculation from the application. I added a column "HAPs" to sum the total HAPs for comparison. Total potential HAPs are 0.004 tpy. This was at a pump rate of 35 gallons per minute and an assumed 100% evaporation. In the current Title V mod, the pump rate is similar at 37.5 gallons per minute (5 sprayers x 7.51 gallons per minute) but an assumed evaporation rate of 42.5% was used. Total HAP estimate is 0.001 tpy. If you decrease the 2014 estimate by applying the same evaporation rate the total HAP estimate is then 0.0017 tpy (0.42 x 0.004 tpy). I think the 2014 estimate (from 2012 analytical data) is quite similar to the current 2015 estimate in the minor mod. Hope this helps.

From 2014 NPR application:

Water Sample Analytical Results

Compound	ug/L	HAP	TAP	VOC
Methylene chloride	4.25	x		
Chloroform	1.52	x		x
Antimony	3.19	x	x	
Arsenic	11.2	x		

Barium	42.2		x
Chromium	5.26	x	x
Copper	13.4		x
Manganese	11.6	x	x
Molybdenum	97.7		x
Nickel	7.13	x	x
Selenium	12.4	x	x
Vanadium	13.1		x

Notes

- 1 Analytical data from September 11, 2012 water sampling.
- 2 Compounds listed are all that were measured above detection levels.
- 3 1 ug/L = 1 part per billion

Emission Estimates

Compound	lb/hr	TAP Screening	
		Limit, lb/hr	tpy
Methylene chloride	0.00007443	n/a	0.000326
Chloroform	0.00002662	n/a	0.000117
Antimony	0.00005587	0.0333	0.000245
Arsenic	0.00019616	n/a	0.000859
Barium	0.00073909	0.0333	0.003237
Chromium	0.00009212	0.0333	0.000404
Copper	0.00023469	0.0667	0.001028
Manganese	0.00020316	0.333	0.000890
Molybdenum	0.00171112	0.333	0.007495
Nickel	0.00012487	0.0667	0.000547
Selenium	0.00021717	0.0133	0.000951
Vanadium	0.00022943	0.00333	0.001005

HAPs

0.000326
0.000117
0.000245
0.000859

0.000404

0.00089

0.000547
0.000951

Notes

0.004 total

Bill

Bill Blankenship
LANL Air Quality Team
(505) 665-0823

TAP	LANL 2012 water [] (ug/l)	LANL 2012 water [] ppm	LANL 2015 water [] ppm	ratio of 2015/2012
antimony	3.19	0.00319	0.00629	1.971786834
barium	42.2	0.0422	0.0339	0.803317536
chromium	5.26	0.00526	0	0
copper	13.4	0.0134	0.0181	1.350746269
manganese	11.6	0.0116	0.0133	1.146551724
molybdenum	97.7	0.0977	0.346	3.541453429
nickel	7.13	0.00713	0	0
selenium	12.4	0.0124	0	0
vanadium	13.1	0.0131	0.00915	0.698473282

Calculated % of TAP threshold for ones with significant increases. Assumed linear relationship between water [] and air emissions.

molybdenum

air emissions

water []

$$0.0977 = 0.0017$$

therefore

~~$$0.346 \text{ should} = 3.54 \cdot 0.0017 = 0.00602$$~~

10⁶ in air emissions

$$= 0.00602$$

threshold

$$\frac{0.00602}{0.333} = 0.018 \text{ which is } 1.8\% \text{ of threshold}$$

antimony

$$0.00319 = 0.00005587$$

air emissions

$$0.00005587 = 0.00011$$

$$0.00005587 = 1.97 \cdot 0.00005587 = 0.00011$$

$$\frac{0.00011}{0.0333} = 0.0033 \text{ which is } 0.3\% \text{ of threshold}$$

