

**PERKINS & TROTTER, PLLC**

A PROFESSIONAL LIMITED LIABILITY COMPANY

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October 8, 2009

Mr. Dara Hall  
Arkansas Department of Environmental Quality  
Legal Division  
5301 Northshore Drive  
North Little Rock, AR 72118-5317

**Re: Cooper Tire & Rubber Company  
Permit Appeal – Submittal of Mercury Information**

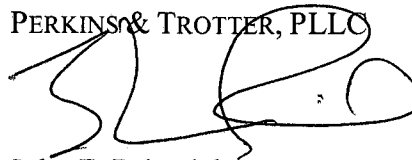
Dear Dara:

As we discussed, Cooper Tire & Rubber Company has prepared additional information concerning the inclusion of total recoverable mercury as a permit limitation for the Texarkana facility. As we discussed during our meeting of September 16 and again by telephone, the atmospheric deposition of mercury accounts for any mercury that may be detected at the Cooper facility. In order to support Cooper's request to remove the mercury limit from the permit and so that ADEQ has a technical justification to do so, please consider the Mercury Deposition Memorandum prepared by FTN Associates on behalf of Cooper.

Should you have any questions concerning this submittal or removing the mercury limitation from the permit, please contact me. Additionally, I am currently working on a draft PAR as we discussed and hope to have our final issue related to a compliance schedule for zinc resolved soon so that we can finalize the PAR.

Sincerely,

PERKINS & TROTTER, PLLC



John F. Peiserich

Attachment (1)



water resources / environmental consultants

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## MEMORANDUM

**DATE:** October 5, 2009

**TO:** **Charles Allen**  
Cooper Tire and Rubber Company

**FROM:** **Jim Malcolm** and **Christina Laurin**  
FTN Associates, Ltd.

**SUBJECT:** Mercury Deposition in Runoff Estimates at the Cooper Tire and Rubber Company Facility in Texarkana, Arkansas  
FTN No. 6038-024

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The most recent draft of the National Pollutant Discharge Elimination System (NPDES) discharge permit renewal for the Cooper Tire facility in Texarkana, Arkansas (Permit No. AR0038822) included limitations for mercury based on detections of mercury reported in the monitoring to support the application. The facility does not use mercury as a raw material, and based on information from raw materials suppliers for the facility, it does not occur as a contaminant in raw materials except as described below. To support a request for removal of mercury limits from the NPDES permit, atmospheric deposition of mercury to the site was investigated as the likely source of mercury occurring in effluent from the plant (i.e., site runoff).

The Cooper Tire facility in Texarkana, Arkansas, manufactures tires for passenger cars and light trucks. The permitted outfall at the facility is comprised primarily of stormwater runoff, with some condensate from air conditioning units. Because the site is entirely roof or concrete, there is no opportunity for mercury from atmospheric deposition to be retained or modified through bacterial action, and it is reasonable to assume that all mercury entering the site through atmospheric deposition will leave the site in stormwater runoff.

An estimate of annual mercury deposition at the Cooper Tire facility in Texarkana, Arkansas, was developed using historical (2004 to 2008) mercury wet deposition data from the Mercury Deposition Network (MDN) of the National Atmospheric Deposition Program (<http://nadp.sws.uiuc.edu/mdn/>). Figure 1 shows the locations of the collection sites in the MDN. Data from the site closest to Texarkana (Site 21) in northeast Texas was used to estimate the annual deposition. It is important to note that the predominate wind direction in this region is from the southwest. Therefore, the Site 21 data are well-suited to represent site-specific conditions at the Cooper Tire facility.

### National Atmospheric Deposition Program Mercury Deposition Network

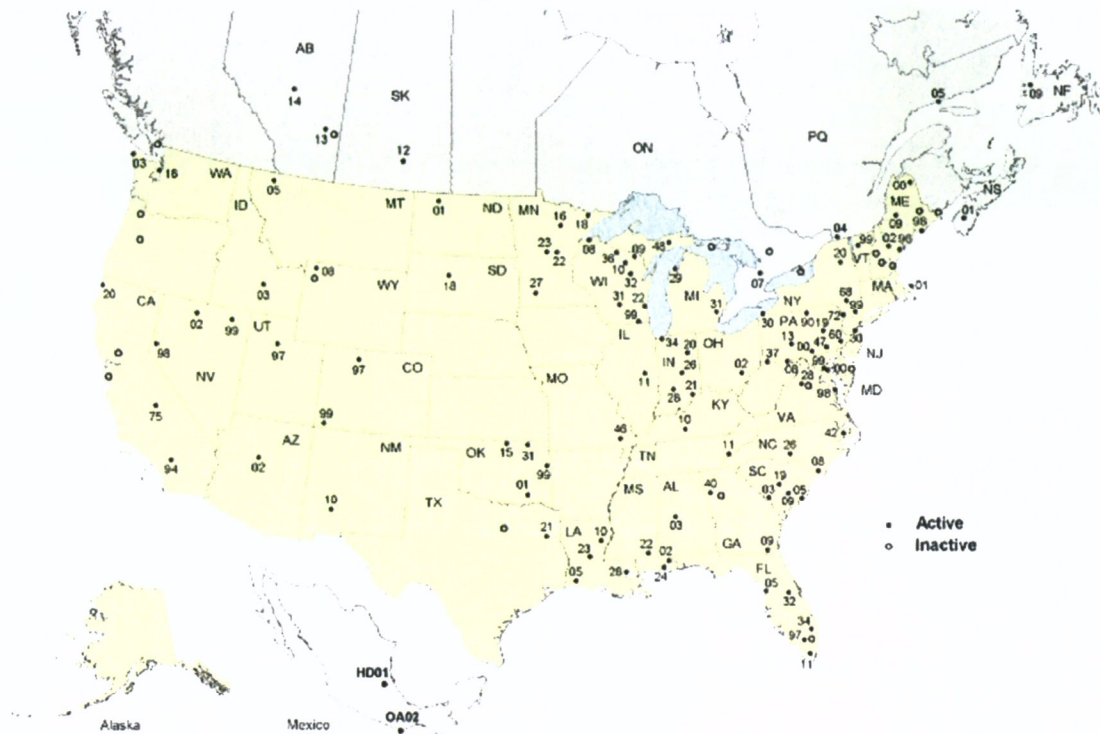


Figure 1.

Data from Site 21 included weekly precipitation totals, mercury concentration measured in the precipitation, and calculated mercury wet deposition reported as weight per area. The average of the annual totals of the weekly mercury wet deposition data for 2004 – 2008 was 10,034 ng/m<sup>2</sup>.

Because wet deposition rates are related to rainfall, and it was possible that precipitation amounts at Texarkana differed from the amount of precipitation at Site 21, the average annual wet deposition rate from Site 21 was adjusted using the following equation:

$$\text{Site 21 deposition} * (\text{Texarkana precipitation} / \text{Site 21 precipitation})$$

The average of annual precipitation totals for 2004 through 2008 from Site 21 and the Webb Airfield weather station in Texarkana were used for the Site 21 and Texarkana precipitation values, respectively.

Deposition of mercury from the atmosphere occurs both during rain events (wet deposition) and in between rain events (dry deposition). Mercury from both wet and dry deposition is present in site runoff. Mercury dry deposition rates are currently not measured on a regular basis in the MDN. Modeling of mercury deposition reported in the Mercury Report to Congress (EPA 1997) estimated an annual mercury dry deposition rate of 3,000 ng/m<sup>2</sup> for the Texarkana area. The more recent Regulatory Impact Analysis of the Final Clean Air Mercury Rule (EPA 2005) addresses the issue of estimating mercury dry deposition with the following statement: "Scientists currently believe through analysis of very limited measurements that wet and dry deposition are approximately equal in magnitude." Given this, the annual total mercury deposition (wet deposition + dry deposition) for Texarkana was assumed to be 19,000 ng/m<sup>2</sup>, or approximately twice the estimated wet deposition rate.

To estimate the concentration of mercury from atmospheric sources in runoff from the Cooper Tire site, the average annual total mercury deposition rate was multiplied by the site area, and divided by the average annual total runoff from the site (assuming 100% runoff of precipitation falling on the site). The result of this calculation is an estimate of 18 ng/L of mercury in runoff from atmospheric deposition. A more detailed summary of the calculations is given in Table 1.

Table 1. Estimation of mercury in runoff due to atmospheric deposition.

Site Area = 50 ac*4046.8 m <sup>2</sup> /ac	202,340	m <sup>2</sup>
Avg annual wet deposition Hg load at TX21 (2004 - 2008)	10,034	ng/m <sup>2</sup>
Avg annual precipitation at TX21 (2004 - 2008)	1,116	mm
Avg annual precipitation at Texarkana, AR (2004 - 2008) = 42.3 in = 1075 mm	1,075	mm
Estimated annual wet deposition Hg load at Texarkana, AR	9,665	ng/m <sup>2</sup>
Estimated annual total Hg load at Texarkana, AR based on EPA 2005	19,000	ng/m <sup>2</sup>
Estimated total annual Hg deposition to site	3,844,460,000	ng
Estimated annual runoff at site	217,515,500	L
Estimated atmospheric Hg concentration in site runoff	18	ng/L

Mercury concentrations measured at NPDES Outfall 001 on the site over the last year are summarized in the table below. The March 26, 2008 sample is clearly an outlier when compared with the remainder of the data. This 2008 sample was a composited sample, whereas the remaining samples were 'grab' samples (grab samples have much less chance of becoming contaminated during the sampling event and subsequent storage and compositing process). The 2009 data from the MDN that could be used for comparison to these measurements, are not available on the MDN website at the time of this writing. However, the concentrations measured in the multiple recent samples from Outfall 001 are all in the same order of magnitude as the estimate of mercury from atmospheric deposition (Table 2), and are actually all less than the calculated value.



Table 2. Mercury concentrations at Outfall 001.

Date	Mercury (ng/L)
3/26/2008	31.3 *
3/11/2009	8.44
4/2/2009	12.1
5/6/2009	9.68
5/14/2009	5.51
6/10/09	7.59
7/21/09	5.00

\*Average of 4 samples collected over 24 hours.

Several materials used at the Cooper Tire facility are potential sources of mercury in site runoff. These include carbon black, coal powder, and resins used in production and boiler fuel. Mercury emissions from these materials were estimated for the SARA Section 313 Toxic Release Inventory (TRI) for this facility in 2008. The non-boiler mercury emissions are associated with particulates. It was conservatively assumed this mercury would be deposited on the site and appear in the stormwater runoff. EPA estimates that approximately half of mercury emitted from boilers will be deposited within 100 km (from "Emissions Inventory and Emissions Processing for the Clean Air Mercury Rule (CAMR)," EPA 2005). How close to the emission point deposition occurs is dependent on stack height and wind speed. Based on this information It was also assumed that boiler emissions, which are non-particulate, would not be deposited on the site.

Table 3. Mercury emissions reported in Cooper Tire Texarkana TRI, deposited onsite.

Source	Release (lbs)
Carbon Black Handling in process	0.000007
Weigh Station	0.00000006
Banbury Mixer	0.000002
Carbon Black Handling on site	0.00001521
<b>Total</b>	<b>0.00002427</b>

Approximately 0.00002 lbs of mercury deposited onsite in 2008 was due to facility operations. This amount is equivalent to 9,072,000 ng/year, or 0.3% of the estimated annual total atmospheric mercury deposition to the site. Dividing the operations-related mercury deposition by the estimated annual precipitation to the site (Table 1) results in a runoff mercury concentration of 0.04 ng/L. This concentration is almost an order of magnitude lower than the method 1631 (low-level Hg) detection limit of approximately 0.2 ng/L (the reporting limit or MQL is actually around 0.5 ng/L). Therefore, the potential contribution of mercury in site runoff due to facility operation is undetectable using the best, existing, analytical methodology.



Mr. Charles Allen  
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If you have any questions or comments regarding the above information, please do not hesitate to contact me or Pat Downey at (501) 225-7779.

JTM/klw

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