

DAN NAPIER, CIH
INDUSTRIAL HYGIENE

LICENSE #773462

111 N. Sepulveda Boulevard, Suite 355
Manhattan Beach, California 90266-6861
Telephone 310/800 644-1924
Fax 310/937-8642
www.cihcsp.com
Email dan@cihcsp.com

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Meta Study of Lead in Air levels associated with Micro Planer devices that remove Traffic Stripe and Markings.

UPDATED

As new data is provided I will make every effort to evaluate the data and add the Results of testing that meet the §1532.1. Lead. Standard criteria and was completed by or under the direct supervision of a Certified Industrial Hygienist.

Please contact me if you have data that meets the above requirements.

Dan Napier, CIH, CP 2267

January 27, 2017

See Additional Data at the Bottom of this Report.
Previously Reported on December 18, 2016

Industry Wide Objective Data Study, by Dan Napier, CIH CP 2267 Exp 2020

Lead Air Monitoring Results During Lead Containing Stripe in Both White and Yellow Traffic Stripe Removal.

The work methods for this stripe removal are as follows: Traffic Stripe is removed from the road surface using a micro planer attachment on "Bobcat", "Schebechi poly planer 450" or "Road-Pro" equipment. The device has a water mister to maintain a moist atmosphere inside the planer head. There is an attached HEPA Vacuum system that collects the fine dust created during the operation. Some systems have only a HEPA Vacuum system. The operation leaves large dimension chips, (approximately 0.2 to 3 millimeter chips) that are collected with a regenerating road sweeper. The work area is pre-cleaned with a Road Sweeper and post-cleaned with the

same sweeper. Air monitoring has been conducted at all work stations, the operators of both the micro planer and the sweeper operator. Air monitoring has been conducted at the job limits. In this study the air monitoring data collected at various locations throughout California was reviewed and compiled on the table below. All tests were conducted while operating the Micro unit, assisted by a regenerative sweeper. Air Monitoring was conducted in compliance with OSHA and NIOSH Standards. All data was collected during operations using the micro planer and street sweeper equipment. This data includes locations throughout the State of California the dates are indicated on the table, as well as the general location. In all cases the levels were below the detection limit for the NIOSH Method is NIOSH Method 7082 Issue 2. That method was utilized unless otherwise so stated. Please refer to NIOSH Standards when analyzing left censored data. These data are reported as the highest level for each day, usually there were four or more data points collected. A copy of records for this work are maintained at DNA Industrial Hygiene, those records are confidential and are not part of this public document. Those original records are and remain the sole property of the individuals or companies that conducted air monitoring.

Date	Location	Lead level $\mu\text{g}/\text{m}^3$
20 May 2005	State Route 34 at Rice Road, Oxnard	Below Detection $<2\mu\text{g}/\text{m}^3$
8 April 2008	State Route 52 at Mast Boulevard, San Diego	Below Detection $<3.2\mu\text{g}/\text{m}^3$
16 June 2008	State Route 243 Near Banning	Below Detection $<2.5\mu\text{g}/\text{m}^3$
11 August 2008	State Route 160 at Isleton & Walnut	$<2.4 \mu\text{g}/\text{m}^3$
12 August 2008	State Route 160 near Sacramento	Below Detection $<1.7\mu\text{g}/\text{m}^3$
20 October 2008	Interstate Route I 805 at H and Telegraph Canyon Road, San Diego	Below Detection $<2\mu\text{g}/\text{m}^3$
21 November 2008	Intersection of Lomita and Western Avenue, Lomita	$2.7 \mu\text{g}/\text{m}^3$
17 April 2009	Bridge Deck Interstate Route 15 Near San Bernardino. Significant Visible Dust clouds were generated during this work. Visibility was less that three feet inside the work area.	$9.6 \mu\text{g}/\text{m}^3$
24 March 2009	State Route 118 near Simi Valley	Below Detection $<2\mu\text{g}/\text{m}^3$

26 June 2009	Interstate Route I 405 at Vermont, Torrance	0.16 $\mu\text{g}/\text{m}^3$ Niosh 7105
28 January 2010	State Route 18 in Lucerne Vally	Below Detection <6.8 $\mu\text{g}/\text{m}^3$
5 April 2010	Interstate Route 405 at Golden West Boulevard OC, Anaheim	Below Detection <3.2 $\mu\text{g}/\text{m}^3$
17 April 2011	Interstate Route I 405 at Interstate Route 710, significant visible dust was present during the work.	5.8 $\mu\text{g}/\text{m}^3$
20 July 2011	State Route 1 at Mission Street, Santa Cruz	Below Detection <2.4 $\mu\text{g}/\text{m}^3$
10 August 2011	Interstate Route I 5 at San Ysidro Overpass, San Ysidro	Below Detection <2.4 $\mu\text{g}/\text{m}^3$
26 August 2011	Interstate Route I 8 at East Mile Marker 7.6 San Diego	Below Detection <2.3 $\mu\text{g}/\text{m}^3$
6 December 2011	State Route 60 at Euclid Avenue	Below Detection <9.2 $\mu\text{g}/\text{m}^3$
14 August 2012	I 15 @ 94 th Street, 11-SD-15-0.5/W4.0	Below Detection <2.6 $\mu\text{g}/\text{m}^3$
9 August 2012	Interstate Route I 15 from 94 th Street the southern end of I 15	Below Detection <2.5 $\mu\text{g}/\text{m}^3$
12 July 2013	08-0P3804 SR 210 Chino/Ontario	Below Detection <1.4 $\mu\text{g}/\text{m}^3$
16 January 2014	I-5 WB from San Gabriel Drive to Lakewood Blvd, Stripe Removing Equipment #Rx500	Below Detection <2 $\mu\text{g}/\text{m}^3$
28 April 2014	07-1W5804 CA I-105 near Normandy Avenue	2.5 $\mu\text{g}/\text{m}^3$ Single Point, others were below detection <1.9 $\mu\text{g}/\text{m}^3$
7 April 2014	ID 0612000265 06-Mad-145-0.0/5.6 State Route 145 (Road 27 at Avenue 5 ½)	Below Detection <3.9 $\mu\text{g}/\text{m}^3$
5 September 2014	State Route 60 at and near I-15 interchange in Eastvale CA, Removing stripe on HOV,	Below Detection <2 $\mu\text{g}/\text{m}^3$

	Bobcat operator, & Sweeper operating in conjunction with stripe removal	
17 January 2015	I-5 WB Lakewood Blvd Exit & On Ramps, Stripe Removal equipment #pm201	Below Detection <2µg/m ³
20 January 2015	I-5 WB Lakewood Blvd On & Exit Ramp to Paramount Exit, Stripe removal Equipment, RX700	Below Detection <2µg/m ³
29 March 2015	880/101 San Jose, Stripe Removal on bridge decks	Below Detection <2µg/m ³
6 October 15	I-405 Exit to NB SR 710 Santa Fe, Removing Yellow and white stripe	Below Detection <2µg/m ³
7 August 2016	SB I-405 Near Carson Street workers removing reflectors, removing stripe and sweeping, highway Caltrans No. 07-287404	Below Detection <0.38µg/m ³
17 January 2017	I-5 NB inside cab of Bobcat Operator, yellow stripe removal	Below Detection <0.38µg/m ³
15 May 17	HWY 99, Merced Bobcat Operator Caltrans No. 10-0Y7404	Below detection <0.38 µg/m ³
9 February 2018	CA-33 Milepost 22.16 inside cab of Bobcat Operator, yellow & white stripe removal Caltrans No. 07-1XC904	Below Detection <0.38µg/m ³
27Mar18	Route 65 Milepost 8-14 Bobcat Operator Caltrans No. 06-0U9904	Below detection <0.38 µg/m ³
18Apr18	US-101 SB Milepost 24-19 Bobcat Operator Caltrans No. 05-1J7404	Below detection <0.38 µg/m ³

All levels measured were conducted by a Certified Industrial Hygienist (CIH), or a CHST working under the direct supervision of a CIH. The data clearly demonstrates that the system can not and does not create an exposure above the 30 µg/m³ action level, even during conditions that should trigger a stop work condition. The proper use of this equipment does not create measurable levels using NIOSH Method 7082 Issue 2. The detection level is (2 µg Pb). Improper use does create a low level of exposure, but it is readily discernable since it is accompanied by a dense dust cloud. That level is however substantially less than the action level.

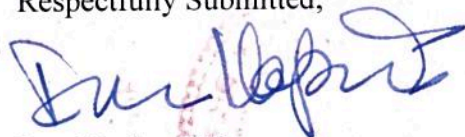
The recorded detection levels that are indicated above 2 µg/m³ are the result of calculations when the work period is significantly less than eight hours. In many cases the available work time is

less than eight hours or the task is simply completed in less than eight hours. In all cases where the test indicated below detection levels the reader must understand the laboratory detection level of less than 2 µg was always met. The method requires that the smaller volume of collected air must be considered when developing the detection level. For example the study conducted on December 6, 2011 was completed in less than two hours. Therefore the detection level was simply higher, but in that case the analytical level of detection found that lead was not detected.

Further notes and comments. There is a misunderstanding of the code by many regulators. The code requires annual testing ONLY when lead is detected above the 30 µg/m³ level. The next paragraph indicates that If the levels are below the action level further testing need not be accomplished, unless a substantial change in the work happens. Travel on a northbound road versus a westbound road is not a substantial change, nor is a road in Northern California substantially different from a road in Southern California. The tests have been conducted in all the various parts of California, in all conditions and locations. The action level has never been approached, the detection level has seldom been met. We have not observed any substantial impact of temperature or humidity.

The first edition of this study was presented at the American Industrial Hygiene Conference and Exposition in Austin Texas in 2013. This study meets OSHA requirements for an industry wide study. The study is a meta study, the full reports are available for reading at the author's office. We require an appointment for anyone who desires to review the studies that the META study is based upon. Due to the privacy of the companies and individuals who have made this study possible, copies of the original studies are not available. Personal review is available in office. The author has not been compensated in any way for the work accomplished in this study.

Respectfully Submitted;



Dan Napier, MS
Certified Industrial Hygienist
CP 2267

