

RX for Artificial Turf Fields

A prescription for field safety
and player health

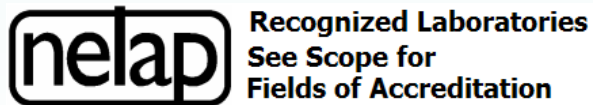
**A Companion Guide to Assist in
Reading Test Results & Evaluating
the Risk of Lead (Pb) in Yarns**



Dr. Blair Leftwich (800) 378-1296 - Toll Free - (806) 794-1296

Trace Analysis, Inc

- **Specialist in advanced environmental analysis**
- **NELAP Certified**
 - National Environmental Laboratory Accreditation Program
- **HUB Certified**
- **DBE Certified**
- **NCTRCA Certified**
- **DEQ – Oklahoma Dept of Envir Quality**



DBE



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Common Citations of Test Result Data

- In describing the results of the lead (Pb) content of artificial turf fibers, results are often quoted in one of these three manners:
 - ppm = parts per million
 - mg/Kg = milligrams per kilogram of weight
 - x.xx% = as a percentage of weight of the item



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Converting ppm to mg/Kg to %

- To convert parts per million (ppm) to milligrams per kilogram (mg/Kg) or % of weight:

– **As an Example:**

3 ppm = 3 mg/Kg = 0.0003 % by weight

20 ppm = 20 mg/Kg = 0.002% by weight

600 ppm = 600 mg/Kg = 0.06 % by weight

3,000 ppm = 3,000 mg/Kg = .3 % by weight

15,000 ppm = 15,000 mg/Kg = 1.5 % by weight



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16 Average Fibers = 1 gram (+/-)

Approximately the weight of a single US dollar bill



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mg = Milligram = 1,000th of a gram



If a single dollar bill weighs 1 gram

**A MILLI-gram is
1 thousand times less**



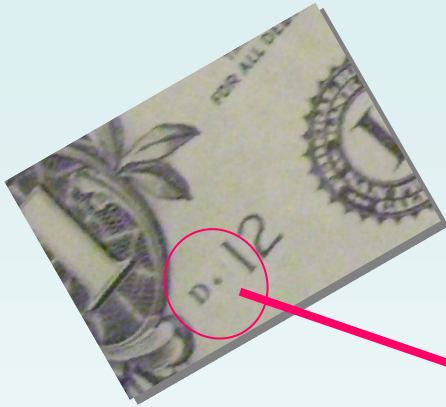
The printed dot represents a milligram*

* approximation



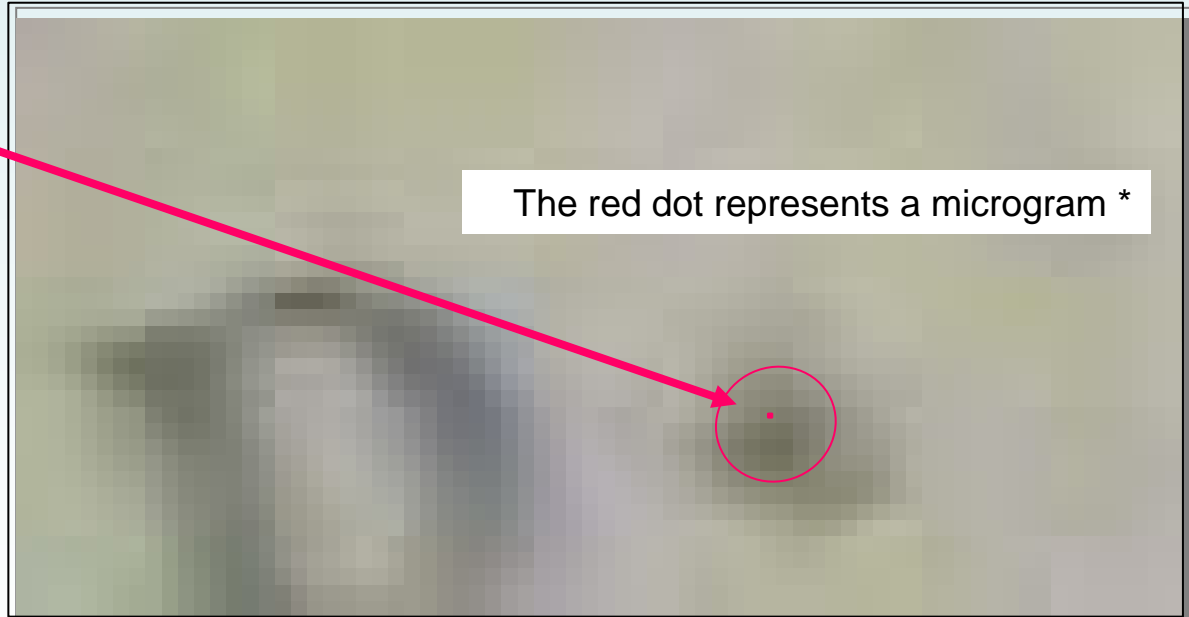
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ug = Microgram = 1 millionth of a gram



If a single dollar bill weighs 1 gram

**A MICRO gram is
1 million times less**



* approximation



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Federally Defined Limits of Risk

1% Total Lead (Pb) Content = 10,000 ppm

Existing EPA Lead (Pb) Limit
in playground soil
= 400 ppm or 0.04 %

Upcoming ASTM **Voluntary** Standards for Lead (Pb)
In Artificial Turf Yarn
= 300 ppm or 0.03%

(until Sept 1, 2011 = 100ppm or 0.01%)



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California's Exposure Limits

- California Prop 65 - MADL* for lead (Pb)
 - 0.5 ug/day (micro grams per day) for children

(* Maximum Allowable Dose Limit was set as 1/1000th of the OSHA standard of 500 mg of exposure in air from figures set in 1973)

- Re-established today, OEHHA (California OSHA), knowing what science has proven of the risks of lead exposure, of any amount, to children for developmental and reproductive harm, states that they would set this level EXPONENTIALLY LOWER and would prefer to see a “zero” lead (Pb) tolerance for children under the age of 12



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NJDHSS & Junfeng Studies

- Studies completed in New Jersey & EU on exposed, worn & aging artificial turf yarn fibers
 - Potential absorption for lead (Pb) in fiber particles
 - between 15 and 50%
 - Potential absorption for lead (Pb) in dust from fiber
 - up to 90%



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Exposure to DUST

- Daily exposure to lead (Pb) dust can accumulate lead in both blood and soft tissue
 - Lead (Pb) will be expelled from a healthy human's soft tissue & blood system at approximately 50% every 20 +/- days
- Studies show that lead (Pb) in dust could be absorbed at rates of up to 90% of ingested, digested materials
 - If dust on fibers contain 300 ppm ...
 - A child would need to ingest approximate 0.00183 gram during play (or 2 one/thousandth gram or 1.83 milligram) to assimilate 0.5 ug (micrograms) of lead (Pb) per day



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EPA/HUD & CPSC Pb Guidance

⊕	EPA/HUD Amount for 10ug/dl Lead in Blood				CPSC Amount for 15ug/Day Lead in Blood			
	Weight of Fibers/Dust Ingested (g)		Equivalent Number of Whole Fibers Ingested		Weight of Fibers/Dust Ingested (g)		Equivalent Number of Whole Fibers Ingested	
<u>(mg/kg)</u>	<u>10%*</u>	<u>50%**</u>	<u>10%*</u>	<u>50%**</u>	<u>10%*</u>	<u>50%**</u>	<u>10%*</u>	<u>50%**</u>
5,000	1	0.2	16	3	0.03	0.006	0.5	0.1
1,000	5	1	80	16	0.15	0.03	2.5	0.5
600 (CPSC 2008)	8	2	128	32	0.25	0.05	4	0.8
400 (EPA Limit)	13	3	200	40	0.4	0.08	6	1
300 (CPSC 2009)	17	4	267	53	0.5	0.1	8	2
100 (CPSC 2011)	50	10	800	160	1.5	0.3	25	5
10	500	100	8,000	1,600	15	3	250	50
1	5,000	1,000	80,000	16,000	150	30	2,500	500

□

*Assuming 10% of the lead ingested is assimilated
 **Assuming 50% of the lead ingested is assimilated



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RX - Prescription for Healthy Fields

Properly Maintained = Reduced Risk

- Reduce lead (Pb) exposure risk on aging field surfaces
 1. A maintenance schedule of “wipe” testing fields for possible lead (Pb) accumulation on surface fibers
 2. Keeping field maintained and groomed reducing surface dust and particles that could be ingested
 3. Students and players should wash after use
 4. Food, beverages and other ingestible items should not be allowed on the field
 5. Equipment and clothing should be cleaned after use



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Contact Information

Corporate Offices

Please contact us for professional “wipe” test kits

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