

Changes Ahead for Lead in Soil Screening Levels?

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Current US EPA Soil Lead Screening Levels (RSLs)

Residential	Commercial/Industrial
400 mg/kg	800 mg/kg
<p>Basis:</p> <ul style="list-style-type: none">• IEUBK Model• 10 µg/dL target blood lead level for young children	<p>Basis:</p> <ul style="list-style-type: none">• Adult Lead Model (ALM)• 10 µg/dL target blood lead level for unborn children of pregnant workers• Baseline blood lead information from 1988-1994• Model originally supported a range of screening levels from 800 to 1200 mg/kg

CDC Blood Lead Level of Concern / Reference Level for Young Children

Year	Value ($\mu\text{g}/\text{dL}$)	
1975	30	Less than 30 considered "normal"
1978	30	Modified lead poisoning definition
1985	25	Greater than 25 = "elevated blood lead"
1991	10	"Level of concern"
2005	10	Retained 10 based on practical factors
2012	5	Statistically-based Reference Value
2016?	4?	Update expected soon

Will EPA use a Target Blood Lead Level of 5 $\mu\text{g}/\text{dL}$ in the IEUBK Model?

- Recent communication with EPA indicates:
 - EPA plans to change the target blood lead level to 5 $\mu\text{g}/\text{dL}$ for the IEUBK
 - EPA will present this as a risk target, not related to the CDC reference level
 - This suggests that when CDC updates the reference level periodically, the IEUBK target blood lead level will not necessarily change
 - EPA plans to make several revisions to IEUBK exposure parameter default values at the same time
 - The impact of changes to the target blood lead and the exposure parameters will partially off-set each other for the residential RSL

Will EPA use a Target Blood Lead Level of 5 $\mu\text{g}/\text{dL}$ in the ALM Model?

- Recent communication with EPA indicates:
 - A change to the ALM target blood lead level has not been discussed
 - Everyone assumes if the target blood lead level is changed for the IEUBK, it will also be changed for the ALM
 - No other changes for the ALM appear to be planned at this time

Expected Impact of Changes on Soil Lead Screening Levels

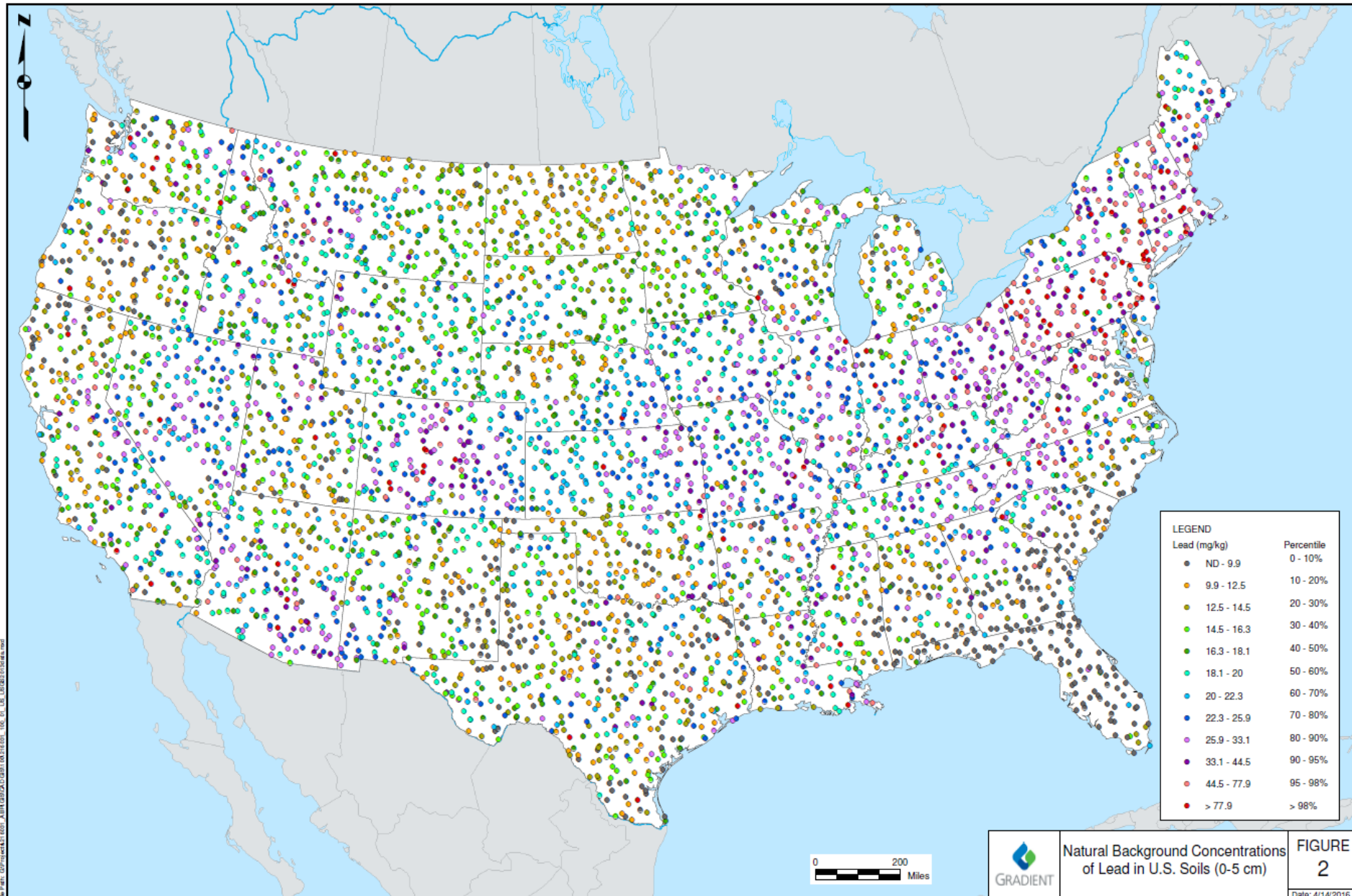
Residential	Commercial / Industrial
200 mg/kg	800 mg/kg
Decrease from current 400 by a factor of 2	Current flexibility to go up to 1200 mg/kg will no longer exist.

Natural Background Levels of Lead in Soil

- 2013 US Geological Survey study of soils at more than 5000 locations in US
- Locations selected to represent natural background, but some will include impact of diffuse anthropogenic sources

Region	Number Samples	Geo mean (mg/kg)	95 th %tile (mg/kg)
Midwest	1239	19.4	36.9
Northeast	267	37.9	130.2
South	1436	15.1	41.2
West	1897	18.3	37.3

Map of USGS Soil Lead Data



Anthropogenic Levels of Lead in Soil

- Urban areas affected by historic leaded gas emissions, lead paint, industrial emissions
- Soil lead levels are highly variable, and cities in the midwest and northeast tend to have higher soil lead concentrations than those in the south and west
- We found 26 cities with areas with median soil lead concentrations above 200 mg/kg (Baltimore, Boston, Chicago, Cincinnati, Cleveland, Hartford, Honolulu, Jersey City, Milwaukee, New Orleans, Oakland, Sacramento, Tampa, Washington DC, etc.)

Implications of Revised Soil Lead Screening Level in Areas with Diffuse Anthropogenic Sources of Lead

- Background sampling may be needed around sites
- Site boundaries for purposes of remediation may need to be defined by something other than soil lead levels, e.g. by air modeling
- Forensic analysis, i.e. chemical fingerprints, may be needed to separate facility lead from anthropogenic background lead

When Will This Happen?

- Soon...
- After the election...
- After appointments are made under the new administration...