

Table S1 - Element Concentrations of Study Samples (<150 µm size fraction) and comparative values*

| Sample | Description | Arsenic and Metals (ppm) | | | | | | | | | | Carbon (%) | |
|--|---------------------|--------------------------|------|------|------------|-------|------|-----------|--------------|------|-------------|------------|-----------|
| | | As | Ba | Cr | Cu | Fe | Mn | Ni | Pb | Ti | Zn | organic | inorganic |
| 014-SOIL-2 ¹ | garden soil | 2.79 | 97.4 | 22.0 | 15.8 | 11346 | 304 | 8.66 | 652 | 384 | 484 | 2.18 | 1.84 |
| 014-DUST-LR-1 | living room dust | 33.4 | - | 76.2 | 169 | 5869 | 238 | 23.0 | 243 | - | - | 22.9 | 1.99 |
| 014-DUST-CBR-2 | child bedroom dust | 7.90 | 300 | 48.0 | 402 | 17155 | 241 | 17.3 | 5094 | 54.3 | 2103 | 17.3 | 1.79 |
| 014-DUST-PBR-3 | parent bedroom dust | 6.40 | 383 | 128 | 131 | 9093 | 199 | 25.6 | 14032 | 43.6 | 2045 | 17.4 | 0.96 |
| Soil quality standards ² | Background | 18 | 220 | 70 | 92 | n.v. | n.v. | 82 | 120 | n.v. | 290 | | |
| | Non-potable gw | 18 | 390 | 160 | (180) 140 | n.v. | n.v. | (130) 100 | 120 | n.v. | 340 | | |
| Previously published for City of Ottawa ³ | Median | 2.8 | 772 | 43.4 | 12.1 | 20750 | 532 | 15.8 | 33.8 | - | 100 | | |
| | Soil 90th %ile | 3.9 | 834 | 56.7 | 18.6 | 25950 | 662 | 22.0 | 107 | - | 180 | | |
| | Maximum | 9.9 | 903 | 74.5 | 42.5 | 33200 | 873 | 27.9 | 547 | - | 380 | | |
| | Median | 4.1 | 442 | 69.2 | 157 | 13150 | 267 | 51.5 | 222 | - | 633 | | |
| | Dust 90th %ile | 12.8 | 682 | 157 | 382 | 19120 | 366 | 103 | 969 | - | 1226 | | |
| | Maximum | 79.5 | 1480 | 330 | 601 | 40350 | 424 | 243 | 3226 | - | 1840 | | |
| Summarized in previous review ⁴ | Median | 5.15 | - | - | 170 | - | - | - | 164 | - | - | | |
| | Dust Maximum | 16.7 | - | - | 1144 | - | - | - | 1200 | - | - | | |
| | Range | - | - | - | - | - | - | - | 19 - 33000 | - | - | | |
| Reported range from 10 studies around the world ⁵ | Dust Minimum | - | - | - | 3 | - | - | - | <0.1 | - | 15 | | |
| | Dust Maximum | - | - | - | 48800 | - | - | - | 38604 | - | 205000 | | |

* Comparative data provided for illustrative purposes. Reported data is for sieved fraction that is finer than that of referenced values.

Bold values exceed 90th percentile (soil or dust) from previously published Ottawa study; **underlined** soil values exceed soil quality standards

¹ Garden soil sample containing the highest metal (e.g. Pb, Zn, Cu) content of three samples taken at the property.

² Residential/Parkland Soil Quality Standards - (OMOE 2009). Background condition or Non-potable groundwater condition. () = fine textured soil; n.v. = no value

³ From Rasmussen et al., 2001 (11) - 100-250 µm size fraction.

⁴ From Liou et al., 2002 (9) and references therein. Median and Max are study of fine carpet dust. More comprehensive list of tabulated floor Pb data (no medians)

⁵ From Rasmussen et al., 2004 (7). Common household dusts of cities and towns (not including mining towns or other industrial/geochemical hotspots). Various size fractions.

Table S2 - μ -XRF mapping summary and enumeration of particle types by element associations

| Sample | ID | Mount type | Dwell time per pixel (s) | Spot size (μm) | Map details | | | | Total area mapped (mm^2) | total # pixels | Metal-rich spot enumeration by apparent particle size (μm)* | | | |
|--------|-------|--------------|--------------------------|-----------------------------|-----------------|-----|------------------------|------------------------|-------------------------------------|----------------|--|---|---|------------------------|
| | | | | | Grid dimensions | | Step (μm) | area (mm^2) | | | total # pixels | < 10 Type and (#) | 10 to 50 Type and (#) | 60 to 150 Type and (#) |
| | | | | | X | Y | | | | | | | | |
| PBR | Map 1 | UL/Kapton | 2 | 0.008 | 60 | 51 | 0.010 | 0.31 | 3060 | | Fe(4), Zn(6), Zn-Ca(1), Pb(10), Ti(3) | Fe(5), Zn(3), Zn-Ca(1), Zn-Ca-Ba(1), Zn-Ba(1), Pb-Zn(2), Pb-Ba(1), Pb(1), Ti(1) | Fe(2), Fe-Ca(1) | |
| | Map 2 | UL/Kapton | 2 | 0.008 | 80 | 80 | 0.010 | 0.64 | 6400 | 0.95 | 9460 | Fe(9), Cu(1), Zn-Ba(1), Zn-Pb(1), Pb(18), Ti(7) | Fe(9), Cu(1), Zn-Ba(4), Zn-Pb(1), Zn-Pb-Fe(1), Pb-Fe(1), Pb(5), Ti(3) | Fe(1), Fe-Ca(1) |
| CBR | Map 1 | UL/Kapton | 2 | 0.008 | 51 | 50 | 0.008 | 0.16 | 2550 | | Fe(2), Zn(3), Zn-Pb(2), Pb(2) | Fe(7), Fe-Ca(2), Mn-Fe(1), Cu(1), Zn(4), Zn-Ca(1), Zn-Pb(1), Pb(3) | Zn-Pb(1) | |
| | Map 2 | UL/Kapton | 2 | 0.008 | 82 | 82 | 0.008 | 0.43 | 6724 | 0.59 | 9274 | Fe(8), Pb(8), Ti(5) | Fe(7), Cu(2), Zn(1), Zn-Ca(4), Zn-Ba(2), Zn-Pb(3), Pb(4), Ti(2) | Fe(3), Zn-Ba(1), Pb(1) |
| LR | Map 1 | UL/Kapton | 2 | 0.008 | 51 | 51 | 0.010 | 0.26 | 2601 | | Fe(2), Ti(1), Ti-Fe(3) | Fe(6), Fe-Ca-(2), Ti-Fe(1) | Ti(1) | |
| | Map 2 | Thin Section | 2 | 0.008 | 80 | 80 | 0.010 | 0.64 | 6400 | | Fe(8), Fe-Ca-[Mn](4), Fe-[Mn,Pb](1), Mn-Fe-[Zn,Pb](7), Ti(7), Ti-Ca(1), Ti-Fe(2) | Fe(3), Zn-Fe(3), Fe-Ca-[Mn,Pb,Zn](7), Mn-Fe-[Zn,Pb](1), Ti(3), Ti-Ca(1), Ti-Fe(1) | Fe-Ca-[Mn,Pb,Zn](2) | |
| | X27a | UL/Kapton | 2 | 0.015 | 101 | 101 | 0.015 | 2.30 | 10201 | 3.20 | 19202 | - | - | - |
| | Map A | UL/Kapton | 2 | 0.008 | 68 | 67 | 0.015 | 1.02** | 4556** | | Fe(4), Ca-Fe-Mn(1), Ti(6), Cr-As-[Fe,Zn,Cu](5), Cr-[Fe,Cu]3 | Fe(5), Fe-Ca(6), Ca-Fe-[Mn,Pb,Zn](1), Fe-Mn(5), Fe-Ti(1), Ti(6), Ti-Ca(2), Cr-As-[Fe,Zn,Cu](4), Cr-[Fe,Zn,Cu](1), Pb(1) | Fe(1), Cr-As[Fe,Zn,Cu](1) | |
| Soil | Map 1 | UL/Kapton | 2 | 0.008 | 51 | 51 | 0.010 | 0.26 | 2601 | | Fe(1), Mn-Fe-[Pb,Zn](6), Ti-Ca(3), Fe-Ti(1) | Fe(3), Fe-[Mn](2), Fe-[Mn,Zn], Fe-Ca-[Mn,Pb,Zn](9), Ti-Ca-Fe(1) | Fe-[Mn,Zn](2), Fe-Ca-[Mn,Pb,Zn](6) | |
| | Map 2 | UL/Kapton | 2 | 0.008 | 51 | 51 | 0.010 | 0.26 | 2601 | 0.52 | 5202 | Mn-Fe-[Pb, Zn](7), Ti(2) | Fe-Ca-[Mn,Pb,Zn](8) | Fe-Ca-[Mn,Pb,Zn](5) |

* Metal-rich spots are high count-rate regions (operator judgment, typically 1000s of counts per second to hundreds of counts per second for smallest particles and lowest energies).

Apparent particle size is average of short and long dimension of contiguous pixel grouping on map. Elements in square brackets "[]" are identified trace to minor associated elements.

** Remapping portion of X27a region at finer to spot size and to confirm target locations (not included in totals). Particle enumeration not completed on X27 data due to different detector and setup.

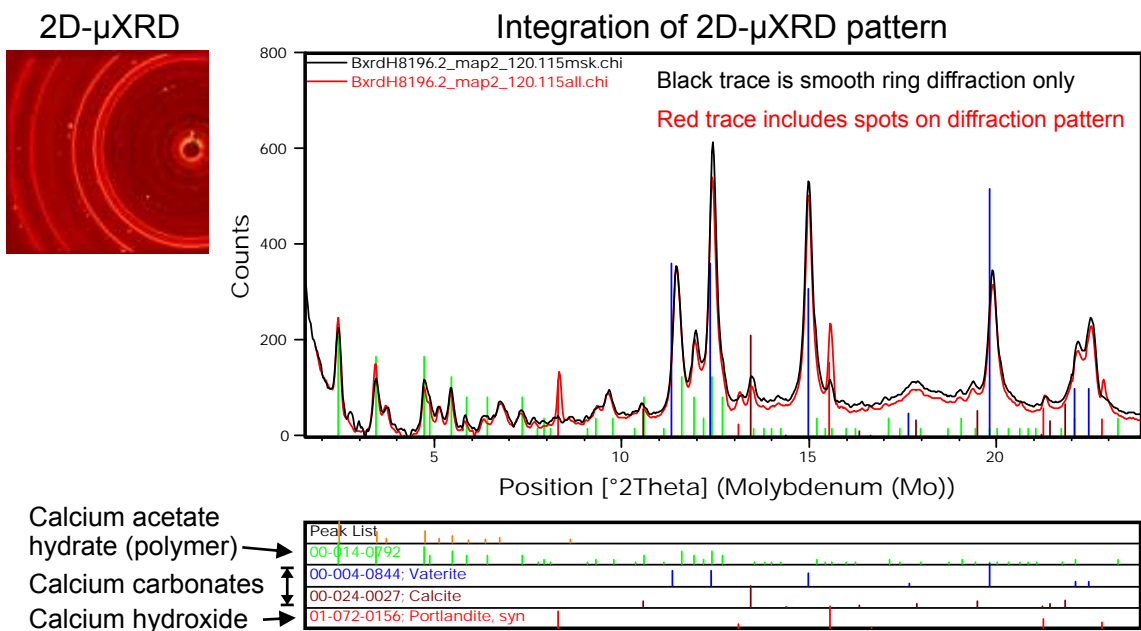


Figure S1. Analysis of Ca-rich particle (trace Cu, Fe, Mn, Ni, Pb, Sr, Zn) in 014-CBR. Ring pattern in 2-D XRD image (top left) is indicative of very fine crystallinity. Spots indicate the presence of other larger crystallites. The integrated XRD pattern (right) was analysed both with (red trace) and without (black trace) the isolated spots in the 2-D pattern. The analysis clearly identifies this particle as a weathered polymer modified portland cement product. Portlandite is present as discrete crystallites, while other phases are very fine to nano-crystalline.

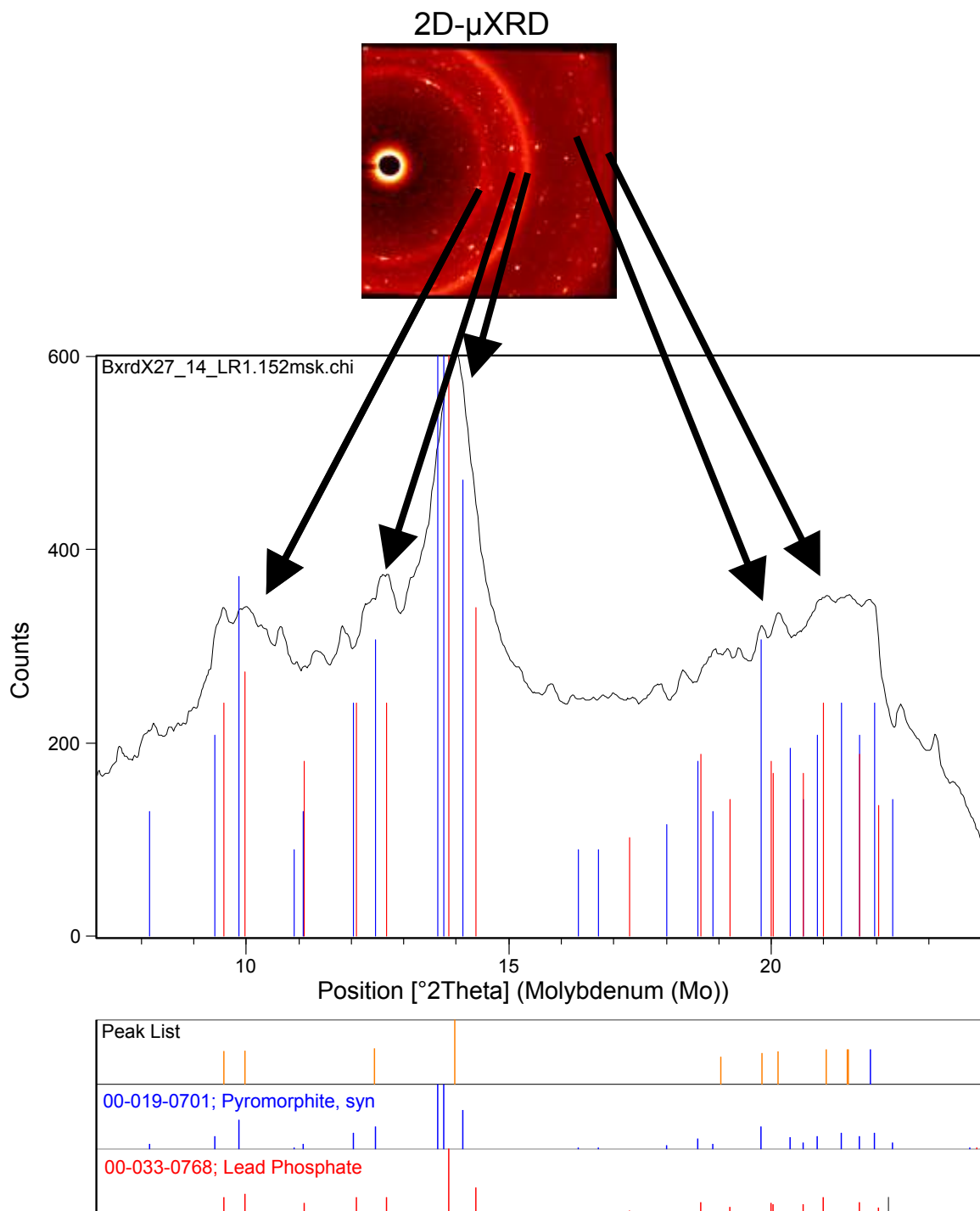


Figure S2. Poorly crystalline pyromorphite in LR dust. 2-D μ XRD pattern (top) of Pb-rich particle in LR dust (image flipped left to right from source for presentation purposes). Integrated pattern (below) with fine spots masked and not included in integration. Arrows point to broad rings that closely match a reference pattern for pyromorphite. Main diffraction ring appears shifted slightly to higher 2-theta than reference. A similar lead phosphate pattern is also shown that also provides a reasonable fit.

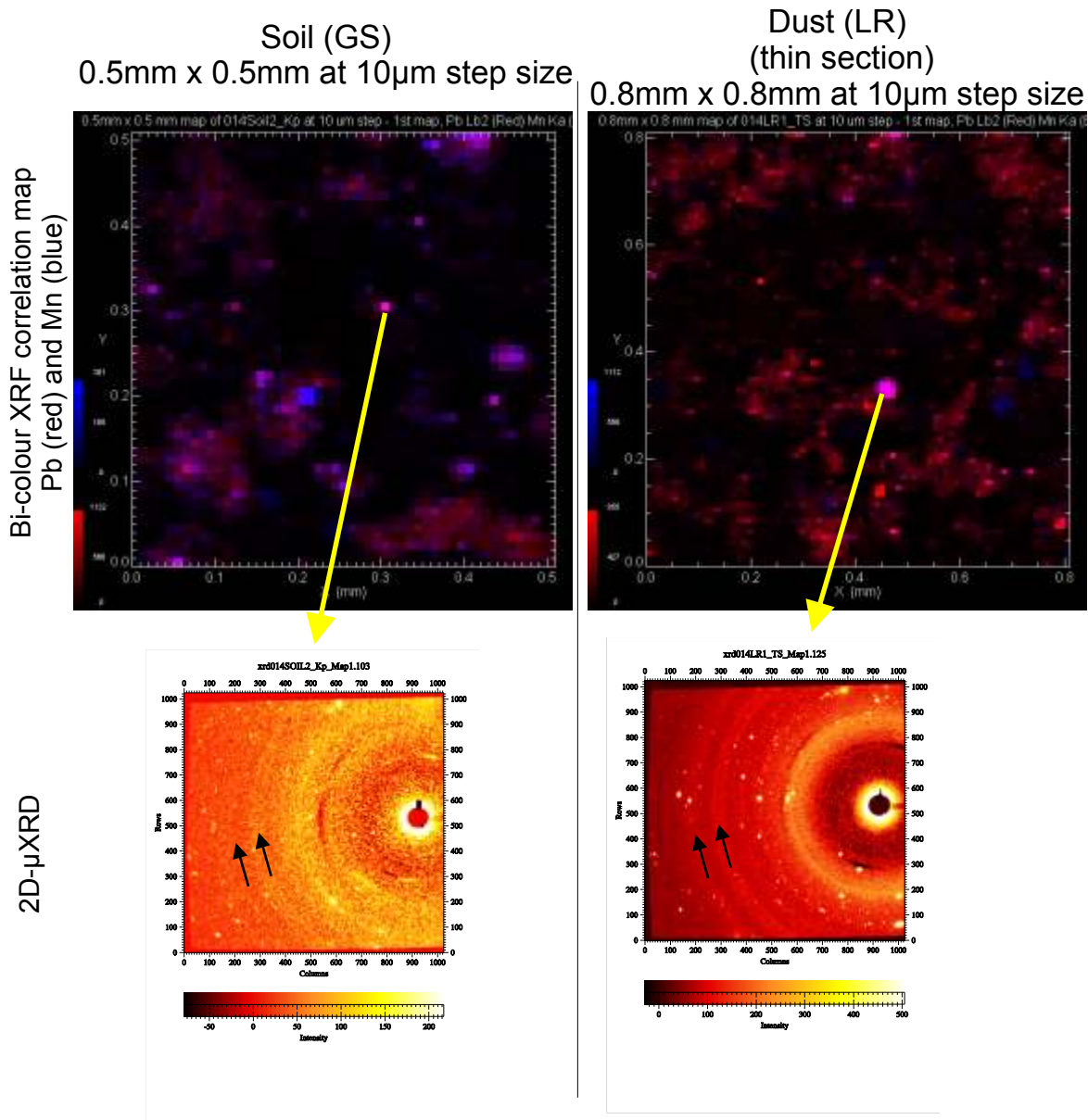


Figure S3. (Left) Lead in soil is strongly associated with Mn (note purple in XRF correlation map). This is not a common association in bedroom house dust, but does appear in living room dust (Right). Both targets show some similar features in the 2D-XRD patterns, namely weak and broad diffraction at ca. 2.4 \AA and 2.1 \AA (indicated by arrows). The very weak diffraction evident in the soil on the left arises from a very small (ca. 10 μ m) particle.