

DustSafe

A COMMUNITY SCIENCE PROGRAM EXAMINING HOUSEHOLD DUST

DustSafe is a citizen-science initiative based in the Department of Environmental Sciences at Macquarie University. DustSafe is a local chapter of the global program: 360 Dust Analysis, which encompasses research groups in Australia, Asia, the United Kingdom, and the United States of America (Fig. 1).

Together, these programs are focussed on characterising household dust in an effort to understand the potential health exposure hazards residing in that dust.

PRELIMINARY FINDINGS

DustSafe has already received 95 household dust samples from all over Australia (Fig 1.). Preliminary investigations have been focussed on metal(loid) trace elements (hereafter metals) including As, Cd, Cr, Cu, Mn, Ni, Pb and Zn (Table 1). Based on the samples received so far, Zn is the most abundant element. Lead makes up about 7% of the analysed composition (Fig 2.). Cadmium has not been detected in any samples so far.

The mean and median dust metal concentrations (Table 1) show that Cu, Mn, Pb and Zn are the most abundant in household dust. This is likely to be associated with paint and road dusts entering the home.

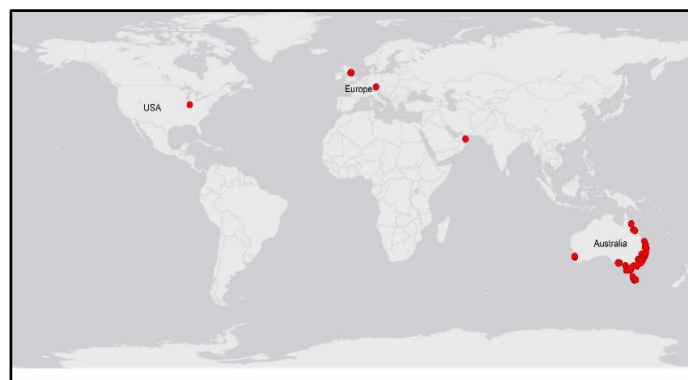


Figure 1. Analysed 360 Dust Analysis sample locations.

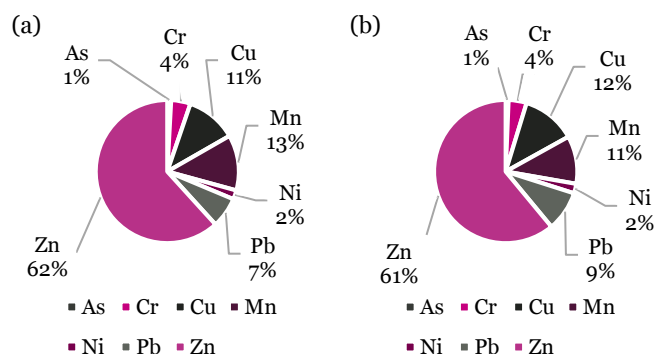


Figure 2. Percentage values represent fraction of median concentrations of all metals in the sample population. (a) Dust metal fractions for Australian samples (n=95). (b) Dust metal fractions for Sydney samples (n=52).

GET INVOLVED

To get involved with DustSafe Australia or 360 Dust Analysis globally, simply log on to:

www.360dustanalysis.com

Here you will find details about sample collection and how to collect and send your sample for analysis.

You can also follow the 360 Dust Analysis updates on Facebook:

<https://www.facebook.com/360dustanalysis/>

Table 1. Mean and median dust metal concentrations (mg/kg).
 LOD = limit of detection (4 mg/kg)

Element	Australia (n=95) Mean	Australia (n=95) Median	Sydney (n=52) Mean	Sydney (n=52) Median
As (arsenic)	17	13	12	111
Cd (cadmium)	<LOD	<LOD	<LOD	<LOD
Cr (chromium)	82	66	78	67
Cu (copper)	214	173	237	201
Mn (manganese)	206	189	197	176
Ni (nickel)	43	31	47	36
Pb (lead)	381	405	399	149
Zn (zinc)	1525	931	1448	1001

LOOKING AHEAD

DustSafe will look next at asbestos, anti-microbial resistance markers, micro-plastics and flame retardants in household dust samples.