

NHMRC Lead Document

12+ Years of Activity in NLM

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Lead Expert Working Group Presentation 20 July 2015

NHMRC Pb Document

- **Committee**
- **Process** -because of vast amount of information and limited time frame was a review of recent reviews by Cochrane Public Health Group U Melb – US EPA/NTP/(Health Canada)
- **Personal concern** – deficiency endemic areas (PP/BH/Isa) not included -rationale had own programs
- **Public comment** -strongest criticism re endemic areas
- **External reviews** 3 US Experts (EPA review)
 - Dr Mary Jean Brown [US CDC]
 - Professor David Bellinger [Professor of Neurology at Harvard Medical School and Professor in the Department of Environmental Health at Harvard School of Public Health (HSPH)]
 - Professor George Rhoads, Interim Dean and Professor of Epidemiology, Rutgers University School of Public Health, New Jersey USA

Lead Working Committee

- Adjunct Associate Professor **Sophie Dwyer** PSM (Chair) Executive Director, Health Protection, Chief Health Officer Branch, Queensland Health
- **Associate Professor Peter Baghurst** Discipline of Paediatrics and Reproductive Health, Faculty of Health Sciences, University of Adelaide; Former Head, Public Health Research Unit, Women's and Children's Hospital, South Australia
- Professor **Brian Gulson** Emeritus Professor, Graduate School of the Environment, Macquarie University, NSW; Honorary Research Fellow, CSIRO
- Ms **Rosalind Harrison** Toxicologist, Public and Environmental Health Service, Department of Health and Human Services, Tasmania
- Ms **Vikki Lynch** Advisor, Health Risk Management, Environmental Health, Department of Health and Human Services, Victoria
- Dr **Martin Matisons** Principal Toxicologist, Environmental Health Directorate, Department of Health, Western Australia
- **Professor Michael Moore** was an Emeritus Professor of Toxicology at the University of Queensland
- Ms **Stephanie Newell** Consumer Representative
- Dr **David Simon** Director, Scientific Services, Public Health Services, SA Health, Government of South Australia
- Dr **Simon Slota Kan** Senior Public Health Officer, Regulation, Health Protection & Emergency Management, Department of Health and Human Services, Victoria; General Practitioner, Swinburne University Health Service; Former Senior Rural Medical Practitioner, Northern Territory Department of Health
- Professor **Wayne Smith** Director, Environmental Health Branch, NSW Health
- **Dr Neil Wigg** PSM Retired. Former Associate Professor, Paediatrics and Child Health, University of Queensland, and former Senior Director, Community, Child and Youth Health, Children's Health Queensland

Red Font: World renowned experts in Pb and children's health

Main outcomes - 1

Health Effects

- PbB >10µg/dL robust data - harmful effects in adults and children: increased blood pressure, abnormally low haemoglobin, abnormal kidney function, long-term kidney damage and abnormal brain function
- PbB < 10µg/dL health effects less clear – **association** of reductions in IQ and academic achievement; higher occurrence behavioural problems in children (poor attention, impulsivity, hyperactivity)
- PbB < 5µg/dL – weaker evidence of **associations** reductions in IQ and academic achievement in children but the literature suggests that uncontrolled confounding had an important influence on the findings for IQ (i.e. factors that affect IQ, other than Pb exposure, were not controlled for in the studies)/(also Health Canada 2005)
- Insufficient evidence to support **causal** association between PbB < 10µg/dL and any health effects
- Increasing scientific evidence that suggests PbB < 10µg/dL may have subtle health effects that can **only be detected when comparing large groups of people such as communities or regions (populations)**. However, PbB < 10µg/dL **do not** cause **noticeable health effects** in **individuals**.
- (And thus alarmist terms like **Pb poisoning** in such children/adults should not be used)

Main Outcomes -2

Managing exposure to Pb -1

- Education is usually one part of a multifactorial approach to managing Pb exposure. Where an individual's PbB is of concern, **education** on how to identify potential sources of Pb exposure and strategies to minimise further exposure is usually provided to families and communities by medical practitioners and public health authorities
- Health professionals or public health authorities may also recommend **medical treatment** for individuals with a concerning PbB levels
 - Calcium supplementation is sometimes used as a preventive treatment for people who have been exposed to Pb
 - Chelation therapy as a medical treatment for people with high PbB (70µg/dL adults, 45µg/dL children)

Main Outcomes -3

Managing exposure to Pb continued -2

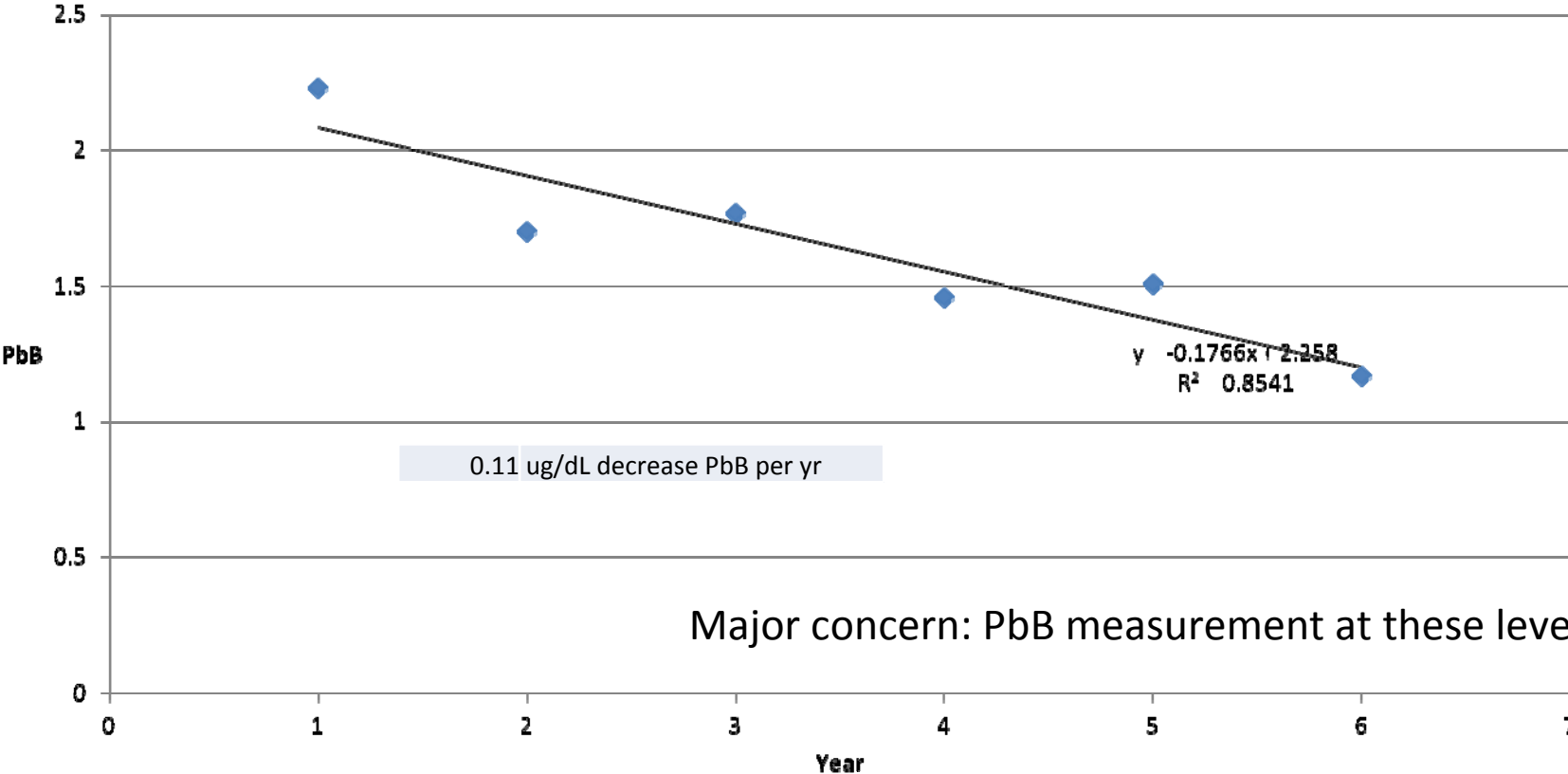
- Overall, the body of evidence for interventions to reduce lead exposure was small and of poor quality.
 - Most studies were not appropriately designed or large enough to make accurate comparisons between participants receiving the intervention and those receiving no intervention or the usual care.
 - Several studies did not report whether the source of Pb exposure had been identified or confirmed whether it had been removed.
 - The results of these studies may have been misleading if some participants were exposed to other sources of Pb in addition to those targeted by the intervention strategy, or due to the release of Pb that had previously been stored in bones.
- The findings of studies **cannot** be applied to communities at **high risk of exposure to Pb** from nearby Pb mines, smelters or other Pb industries. In these communities, Pb management strategies are linked to community based screening, education and community wide engagement activities.

Recommendations

- PbB > 5µg/dL suggests that a person has been, or continues to be, exposed to Pb at a level that is above what is considered the average 'background' exposure in Australia
- NHMRC recommends that if a person has a PbB >5µg/dL , source of exposure should be investigated and reduced, particularly if the person is a child or pregnant woman.
- Individuals should have their PbB level tested if:
 - there is a reason to suspect they have swallowed or breathed Pb from a particular source (more than the very small amounts in most people's everyday environments);
 - or someone in their household has had a blood test that showed a level >5µg/dL;
 - or they have unexplained health problems that could be due to Pb
- Reduce the amount of Pb in the environment (e.g. in soil, dust, air and products) as much as possible

NHANES PbB Children 1999-2010

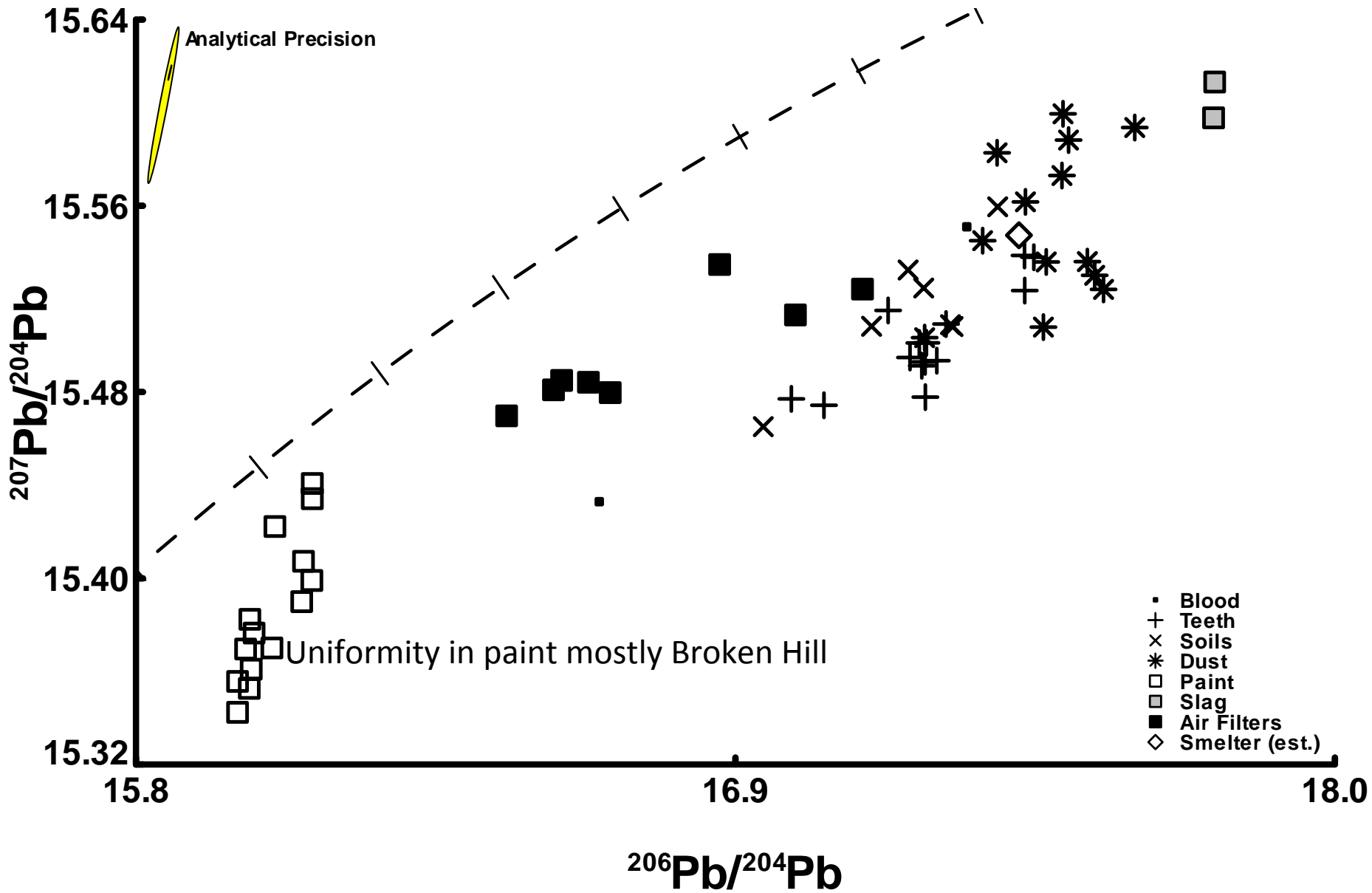
NHANES PbB



12+ years of activities around NLM

- 1992: Initial contact Graham Vimpani (BK connection)/girls PbB >25µg/dL – teeth analyses
- 1994: Talk John Hunter Hospital/ meeting GV & BG with Pasminco GM
- 1994+: Liz O'Brien/Theresa Gordon suggest contact Ros Cook 14-4th St
- Several houses high precision Pb isotopic analyses teeth, paint(layers), ceiling dust, wipes, soil. Also slag. **Pro Bono**. Blood samples refused from HAH.
- 1996+: “Supervising” Tony Morrison
- 1997: House dust investigation SEM/EDX (Jeff Davis)
- 1998-99: Major proposal to NSW EPA sources & pathways/ recontamination/dust resuspension/air filters(?fire). Rejected
- 2000: Roseberry Park Estate – land contamination for Pasminco – soil profiles/slag/ores/smelter feedstock
- 1999+: Class action against Pasminco (Ros Cook)
- 2002: Huang - STOTEN moss & smelter emissions
- 2003: A Current Affair. Blood & paint – didn't go to air
- 2004: EHP paper published (partial data)

Isotopic Data from Gulson et al. Env Health Persp. 2004



Smelter feedstock complexities

Not straightforward without usage tonnages

Broken Hill (several mines)

?RDA

Pinnacles

?China

Woodlawn

Korea

Elura

Peru

Thalanga

Canada

Cobar

Peak Hill

Rosebery

Hellyer

Teutonic Bore

Port Pirie

Slag variations

Potentially useful if slag becomes an issue

