

# LEAD *Action* NEWS

LEAD Action News vol. 13 no. 3, May 2013 ISSN 1324-6012

Incorporating Lead Aware Times (ISSN 1440-4966) & Lead Advisory Service News (ISSN 1440-0561)

The newsletter of The LEAD (Lead Education and Abatement Design) Group Inc.

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## Lead in Tasmanian Drinking Water & Lead Poisoning as a Criminal Defence



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# Rosebery: the 7th Tasmanian town found to have drinking water supplies contaminated with high levels of lead

*Media releases and news articles compiled by Isla MacGregor, Tasmanian Public and Environmental Health Network (TPEHN), Edited by Zac Gethin-Damon, The LEAD Group Inc.*

*Acknowledgment: TPEHN and THMTT would like to express our sincere gratitude to Lindsay Tuffin, Editor of Tasmaniantimes.com who unfailingly provides our networks with the right to have our views published online in the public interest. With the exception of the ABC (and occasionally Southern Cross TV), who have covered our views on the issues throughout the Rosebery controversy, no print media has given us right of reply or contacted us for fair comment since the release of the DHHS final report in 2010. Thank you Lindsay.*

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On 31<sup>st</sup> march 2013 ABC Radio National's Background Briefing broadcast a program titled

## **Don't Drink the Water**

Reporter from Background Briefing Ian Townsend visited the north east of Tasmania to investigate the the background to the five towns,at that time, where drinking water supplies were found to be contaminated with heavy metals by the Ben Lomond Water authority. The five towns are Ringarooma, Avoca, Whitemark on Flinders Island, Pioneer and Royal George. Royal George does not have a reticulated water supply so technically is not the responsibility of the Ben Lomond Water authority. The discovery of arsenic and lead contamination of the St Pauls River had been found in 2010 by Midlands Council and residents in Royal George have been sourcing their water from a Council supplied tank since this time.

Ian interviewed Amber Jones who lives in the town of Ringarooma. Every day she takes a five litre plastic water container down to the towns communal water tank recently supplied by Ben Lomond Water for the 370 town residents use.

*'It leaks all the way. I get home with about half,' she says.*

*'When there's five drinking it, and then brushing your teeth, and you can imagine like the amount of veggies you have to boil for tea and stuff, we sort of go through a fair bit of water,' Ms Jones says.*

*'You've got to be constantly saying to the kids, "Don't drink the water! Don't drink the water!"' says Ms Jones. 'If they're in the bath and they're playing tea parties or something, and they are trying to drink it, you're like: "Don't drink the water!" Yeah, it's pretty frustrating.'*

Acting CEO Andrew Beswick said *'"They're generally lead issues... lead concentrations in the water above Australian Drinking Water Guideline standards,..... Avoca also has a high cadmium level... We're talking about in the order of two to four times the Australian Drinking Water Guideline standards.'*

*In fact, a third of Tasmania's town water schemes do not meet Australian Drinking Water Guideline standards. Last year, nine towns recorded high levels of chemicals or metals. Twenty-two towns are on permanent Boil Water Alert. Another 13 towns were told to temporarily boil their water last year, because of high levels of bacteria.*

*Rob White, a Professor of Criminology at the University of Tasmania, has been studying the state's contaminated towns.*

*'We're supposed to be living in a clean, green, pristine state, and what we're doing is boiling our water? Going to a communal water tank? Surely we've got to think down the track that there's got to be something wrong systemically that needs to be addressed.'*

*Professor White says a lot of the metal contamination is coming from old mines.*

*'We have legacy waste. We have heavily, heavily polluted waters in some of our rivers and nothing substantial really is being done in some of these areas,' he says.*

*'We're now giving the go-ahead to new projects without addressing the old ones, and so why should we trust that the new potential mining projects or forestry projects, which are already proven to contaminate the environment, why should we trust that those aren't going to have their own legacy impacts?'*

*In the town of Ringarooma, residents say they weren't told about the lead in the bore water until three months after it appeared at high levels. The bore water had been turned off six weeks after high lead levels were found in late-August, but at the time no one was told why.*

*The residents are now worried that the lead might have been in the town bore on and off for years, because before 2009 no one was testing the water for heavy metals. It was only after Ben Lomond Water replaced the council water boards that testing for heavy metals started.*

*'In Ringarooma, where the lead is in the bore supply, it may simply be from some change in geology in the mineralisation that is naturally in the ground in an area,' Mr Beswick says. 'We really do not know. In Avoca, the cadmium levels are coming, we believe, out of the sediment of the South Esk River, which has come down from the various creeks from mining operations that have occurred in the past.'*

*The link between the contamination and past mining is most obvious in the town of Royal George, also in Tasmania's northeast, where three years ago the town's drinking water source, the local river, was found to have arsenic 200 times the allowed drinking water standard and lead 50 times the standard.*

*Royal George has had its communal water tank for years now. Pat Thomas lives across the road from the tank, and says she'd like a better water supply, 'where you could turn it on and get some nice pure water' without worrying about toxic contaminants from mine tailings.*

*'I don't think there's many places in Tasmania you can get that now,' she says. 'That's a thing of the past.'*

*It has now been over 9 months since Ben Lomond Water found the lead in the drinking water supplies in Ringarooma back in September 2012. They have not made any public statement about the source of the lead.*

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On 10<sup>th</sup> May 2013 the Tasmanian Minerals Conference put out the following media release:

**In Tasmania, they came, they mined, they left ... 681 times**

**The downside legacy of mining in Tasmania from the days before modern environmental management and rehabilitation is 681 abandoned mines throughout the state.**

They date back to mines that operated in the 1890s and up to the 1970s. Of those 681 abandoned mines, 215 contain rock that is potentially acid-producing.

Board member of the Environment Protection Authority Louise Cherrie told the Tasmanian Minerals Conference today that each mine with the ingredients for acid drainage potentially impacts on soil, groundwater and surface water. Only one of the legacy sites, Savage River Mines, has remediation funding.

“It is a phenomenon of the past,” she said. “Today mining companies have to meet the full cost of rehabilitation in advance through payments into a trust fund.”

It was a point underlined by Minerals Council of Tasmania executive director Terry Long.

“We have finance assurance bonding. We can’t let this happen again.”

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**Rosebery Number 7 in the Growing List Of Tasmanian Towns That Have Metal Contaminated Drinking Water Supplies**

On Friday 17<sup>th</sup> May the Cradle Mountain Water authority released to the Tasmanian media results from routine drinking water quality monitoring in Rosebery which found high levels of lead in the reticulated drinking water supply to some areas of residential Rosebery. That afternoon a local ABC journalist contacted the Tasmanian Public and Environmental Health Network (TPEHN) for comment.

On Monday 20<sup>th</sup> May TPEHN re-issued some of the main points contained in our Media Release that we had raised to the media after the Background Briefing program ***Don't Drink the Water*** went to air on 31<sup>st</sup> March:

***Rosebery drinking water contaminated with toxic heavy metals:***



**Cradle Mountain Water's announcement today about high levels of lead found in drinking water in Rosebery is no surprise to the Tasmanian Public and Environmental Health Network.**

Spokesperson Isla MacGregor said "Rosebery is now the seventh town in Tasmania with drinking water supplies contaminated with toxic heavy metals. Five of the seven towns have been impacted on by local mines, Whitemark's and Ringarooma's water was sourced from areas near where mining has occurred."

The seven towns with drinking water supplies contaminated with lead are Whitemark, Pioneer, Ringarooma, Avoca, Royal George, Rosebery and Gormanston. Royal George's water is also contaminated with arsenic and cadmium and Avoca with cadmium also.

These poisoned water results from Rosebery cast serious doubts over the rigour and integrity of the EPA's 2008-2009 investigation in Rosebery, an investigation which was highly criticised by the Toxic Heavy Metals Taskforce Tasmania.

The Tasmanian Department of Health has allowed public health to be put at risk, by failing to act upon high levels of toxic metals in seven towns' drinking water supplies. Tasmania must now be viewed as a Third World state with over one third of Tasmanian towns failing to provide raw drinking water that meets Australian Drinking Water Guidelines.

The ABC Radio National Background Briefing program Don't Drink the Water which went to air in April this year, highlighted the alarming levels of Lead, Cadmium and Arsenic found in drinking water in five towns that the Department of Health and Human Services and Ben Lomond Water Authority did not take timely action on and prevent further harm to the public.



*Don't Drink the Water* exposed information that showed the Tasmanian Department of Health and Human Services (DHHS) for failing to:

- provide safe drinking water to the population who have been put at risks equivalent to those in Third World countries
- comply with national Drinking Water Guidelines
- comply with the deficient Tasmanian Drinking Water Guidelines as adequate risk assessments of raw drinking water sources and water testing was not complied with.
- provide sufficient and up-to-date information to the population of known and unknown risks from chronic and acute exposure to mixtures of heavy metals.
- take timely population sampling and immediate and ongoing protective health measures for those at risk especially to children exposed to metal levels that pose an 'imminent and substantial danger' (US Centers for Disease Control).

"Ben Lomond Water has to date still not ascertained where the lead in the water at Ringarooma is coming from. This is not good enough."

The World Health Organisation (WHO) and the US Centers for Disease Control (USCDC) have said that there is no safe level of lead, and that drinking water should never have more than 10ppb of Lead.

"We want to see full public disclosure by Tasmanian water authorities of all their data, their proposed future monitoring programs and what action they intend to take to provide reticulated safe drinking water."

“No mining town in Tasmania treats their drinking water supplies to remove metals. The Rosebery drinking water supply is taken from the Stitt River which is publicly signed on the Murchison Highway as being unfit for drinking.”

“MMG must act to improve this water problem for Rosebery workers and residents. Water supply intakes could easily be relocated to uncontaminated waterways or effective treatment plants installed.”

Prof Mark Edwards\*, a leading expert in Lead Contamination in Drinking Water in the US said that drinking water with Lead levels of 40 ppb are an ‘imminent and substantial danger to children’.

The Health system has failed in their duty of care to protect the health of Tasmanians especially those living in regional areas and needs to appoint people who really do understand their duty of care and will act accordingly.

“TPEHN want an independent inquiry established into the state of Tasmania’s unsafe drinking water supplies as a matter of urgency. Clean drinking water needs to be considered a fundamental human right. “. said Isla MacGregor.

**\*Pic:** The Stitt River - the intake for the Rosebery water supply is upstream of this sign. The intake for the town’s water supply is directly below the main drainage zone for the AMD (acid mine drainage) from the open cut at the mine and the same area that the poisoned Rosebery residents lived - only one person of those who were poisoned in Rosebery remains in the town. Groundwater from this drainage area flows directly into the Stitt River at the town’s water supply intake.

TPEHN Had put out a Media Release on Saturday 18<sup>th</sup> May

## **ROSEBERY WATER WARNING IGNORED**

### **WATER FILTER RESULTS SHOW LEAD FROM OTHER AREA**

The Tasmanian Public and Environmental Health Network are calling on the Premier Lara Giddings to urgently conduct a proper investigation into the raw drinking water supply in Rosebery.

Last year on 5th April 2012 the Toxics Heavy Metals Taskforce Tasmania sent results from Sydney Analytical Laboratory to the Department of Health & Human Service (DHHS) for tests on a kitchen bench top water filter system from a home in Rosebery. The Taskforce asked the Tasmanian Department of Health to immediately conduct the necessary investigations into the presence of metals in the Rosebery drinking water supply.

The water filter was taken from a home not in the Dalmeny and Primrose areas where the recent lead levels have been found in drinking water. The Portable Counter Top System water filter usually functional for one year became totally clogged after only eight months in use.

Isla MacGregor said that the DHHS took no action on the Taskforce’s request to do follow up investigations on these water filter results from Sydney Analytical Laboratories.

“The results from NATA accredited Sydney Analytical Laboratories showed some high levels of metals in the water filter including lead, copper, zinc and manganese.”

### **Cradle Mountain Water’s own website states:**

*Rosebery Water Treatment Plant Upgrade*

#### ***Background***

*Currently Rosebery water supply doesn’t meet Australian Drinking Water Guidelines. There is no treatment plant in Rosebery and is subject to high levels of tannin causing the water to appear*

*dirty. The water is pumped directly from the Stitt River or gravity fed from Mountain Creek subject to adequate flows. Two dosage stations provide disinfection to remove bacteria. Cradle Mountain Water is proceeding with a project to supply Rosebery residents with water that meets Australian Drinking Water Guidelines.*

“The Stitt River is known to be impacted by groundwater from Acid Mine Drainage (AMD) which is contaminated with toxic metals in addition to leachate from the water treatment ponds which were formerly tailings dams.”

“Last year the Toxic Heavy Metals Taskforce Tasmania also sent the laboratory results to Cradle Mountain Water and requested that they provide all households in Rosebery with a Domestic Reverse Osmosis water filtration system as these are the only filtration systems that can remove both soluble and insoluble metals from the drinking water in Rosebery.”

“Again no reply was received from Cradle Mountain Water. It is inexcusable that Cradle Mountain Water has taken so long to determine that lead is in the drinking water supplies in Rosebery.”

**Download:** Sydney Analytical Laboratory Rosebery Water filter heavy metals test results:

[Sydney An. Lab . Rosebery Water filter heavy metals test results .doc](#)



Acid Mine Drainage seepage on Murchison Street adjoining house that had over 4,590 mg/kg lead in front yard.





The Stitt River flows into the Pieman River on the southern edge of the Tarkine - another river fast becoming another Queen and King River as a result of acid mine drainage from the Mt Lyell mine.



Queen River Queenstown - the effects of Acid Mine Drainage from Mt Lyell mine will quite possibly last for thousands of years.



MMG's Avebury mine operations south west of Zeehan were suspended in 2011 because arsenic levels in the ore exceeded international shipping guidelines. MMG CEO Andrew Michelmore said "When we produce a 20-plus per cent nickel concentrate, we end up with over 2000 parts per million arsenic and the permit for shipping is 2000 parts per million," he said. The Avebury operations are closer than 100m to a waterway as this photo shows.



Behind Gormanston - lead in drinking water here also - other metals not mentioned.



For Sale at Gormanston - property overlooking the Linda Valley to Lake Burbury. Property formerly owned by the Oates family whose children were poisoned with lead. The DHHS relocated the family out of the west coast. West Coast Council have refused to provide Information Notes about reducing health risks from exposure to heavy metals with Cert 337 in conveyancing for contaminated properties on the west coast. This property has been for sale for several years. Many properties that West Coast Council have resumed ownership on for non payment of rates have been put up for sale.



Zeehan smelter waste - ongoing legacy for our wildlife

On 23 May TPEHN put out another media Release:

***Health status of West Coast residents needs answers***



**On 10th November 2000, Alberton Consulting in partnership with Di Hollister (former Greens member of Parliament) produced the report titled *Health Needs Assessment of the Communities of Rosebery, Zeehan and Tullah*.**

In this report they cited some very alarming statistics sourced from *The Social Health Atlas of Australia - Volume 7: Tasmania (1999)*:

'The Social Health Atlas presented a concerning picture of the health status of West Coast residents including:

\* The Standardised Death Rates (SDR) for Tasmanian males aged 15-64 years from all causes for 1992-95 was 110. The SDR for West Coast males was elevated by more than 30% at a SDR of 147;

- ❖ The SDR for deaths from cancer for non-metropolitan Tasmanian's aged 15-64 years from 1992-95 was 99. The West Coast SDR% was 154, that is, there were 54% more West Coast residents died from cancer compared to other non-metropolitan areas of the state;
- ❖ The SDR for deaths from circulatory system disease (heart disease and stroke mainly) for non-metropolitan Tasmanians from 1992-95 was 108. The West Coast SDR was 165, that is, 66% more deaths than would normally be expected;
- ❖ The SAR for admissions of Tasmanians to public acute hospitals for treatment of bronchitis, emphysema and asthma was 107. The SAR for West Coast residents was elevated by more than 35% at 160;

The Tasmanian cancer registry only records a persons death from cancer based on where they died at the time. It does not look into the previous residences of people for the purposes of investigating any potential environmental causes that may have contributed to the person getting cancer. Many people with cancer have to move from the West Coast to get treatment - mostly to towns along the north west coast. Their deaths will be recorded in these areas not on West Coast statistics. This is a major problem for cancer researchers in Tasmania.

The above statistics speak for themselves. There certainly is a need for a thorough public health investigation on the West Coast to help understand the causes of these health statistics and how these critical public health issues can be better addressed.

**\*Pic: The effects of heavy metal poisoning, skin cancers and peripheral neuropathy on four Rosebery residents' hands**

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Again on 22 May another TPEHN media release went out

### ***Secrecy over Rosebery dust data needs to end***

On the 18th February, 2010 the Toxic Heavy Metals Taskforce Tasmania issued a Media Release calling on MMG and GHD to release the results of their previous environmental sampling programs, especially those conducted in 2007/2008 (see copy below).

To date the DHHS, EPA and MMG Rosebery mine have failed to publicly release this data.

Yesterday Kay Seltitzas held a Media Conference in Hobart and called for a meeting with Premier Lara Giddings and Minister Nick McKim to discuss the establishment of an Inquiry into the DHHS/EPA Rosebery investigations that would review three key issues that remain outstanding.

The first of these issues was to conduct a Review of all information on all emissions from MMG Rosebery mine for the last ten years.

After the recent Cradle Mountain Water revelations about lead in the reticulated drinking water supply in Rosebery it is now never more urgent to address the outstanding issues surrounding the secrecy over emissions data from the Rosebery mine.

It is now imperative that the denial and secrecy over dust as a potential pathway for inhalation of toxic metal dust by Rosebery residents is ended.

Information on the Australian Government Geoscience website shows just how possible it is to collect data to establish data from atmospheric deposition of dust from Rosebery and other mines on the west coast. This is just one method that could be used to collect data but this research highlights the extent of wind borne dispersal and deposition of toxic heavy metal contaminants over Tasmania.

This research from core samples taken in Lake Dora, north east of Queenstown, shows heavy metal contaminants that correlate with emissions originating from mining activities in either Queenstown, Zeehan or Rosebery prior to and post European occupation.

From Australian Government Geoscience Australia, OzCoasts - Australian Online Coastal Information, here:

[http://www.ozcoasts.gov.au/indicators/metal\\_contaminants.jsp](http://www.ozcoasts.gov.au/indicators/metal_contaminants.jsp)

Profiles of trace metals in dated sediment cores can be used to show changes in trace metal influx pre- and post-European arrival.

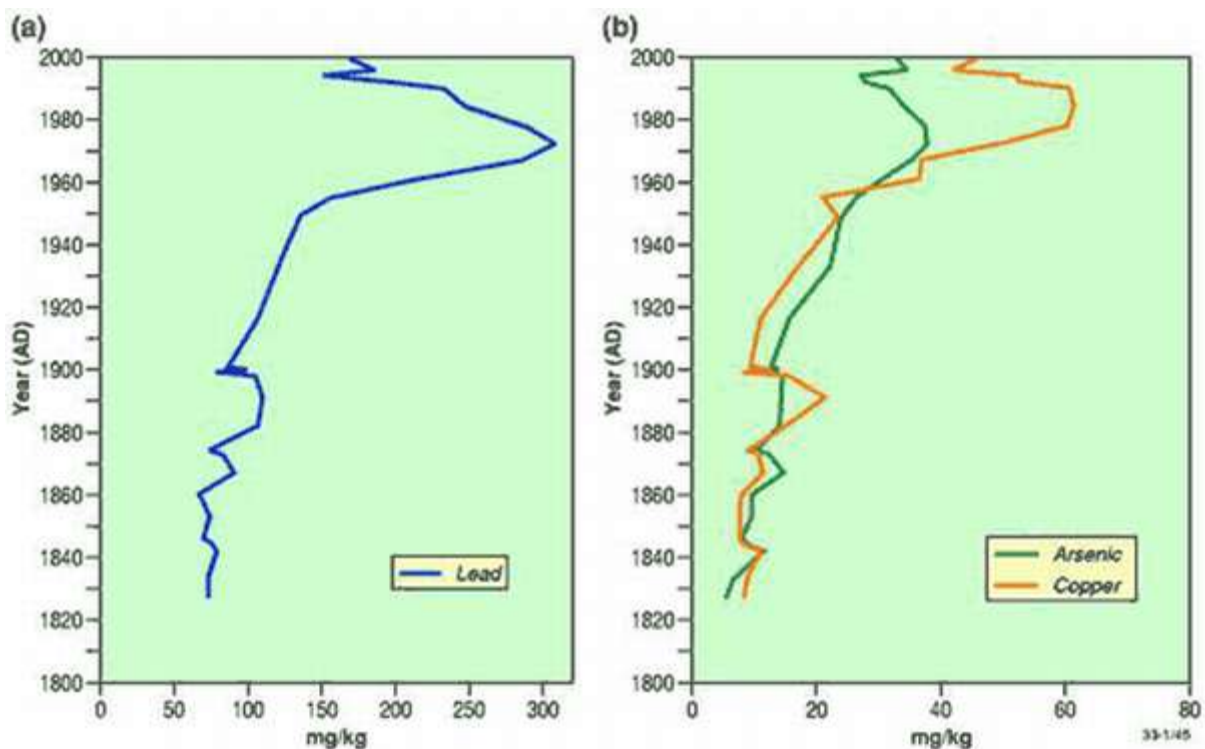


Figure 2. Lead, arsenic and copper concentrations measured in a 9 cm sediment core extracted from Lake Dora, a subalpine tarn located 15 km NE of Queenstown in western Tasmania. The chronology was determined on the basis of high resolution  $^{210}\text{Pb}$  analysis of the top 6 cm of the

core. Increased trace metal values between 1880 and 1900 correspond with the introduction of smelters in the region. The significant increase in concentrations from 1960 correlates well with the international boom in copper prices and consequent increased production at Queenstown. The metals are thought to have been derived from open cut mining spoils and deposited in Lake Dora through wind transport (see Harle et al., 2002 [17]). Analyses were carried out at the Australian Nuclear Science and Technology Organisation as part of its Human Activity and Climate Variability Project. Contact Dr Kate Harle ([Kate.Harle@csiro.au](mailto:Kate.Harle@csiro.au)) for more information.

Why is it that the DHHS/EPA 2008-2010 investigations were unable to conduct any tests on atmospheric deposition in Rosebery, including isotopic testing, or publicly release any of the data provided to them by MMG on their own dust monitoring data required under their licensing agreement? How simple would that be?



**\*Pic: Marsha Stejskal's house with MMG mines ventilation shaft emission plume behind - vent shaft location above Murchison Highway and west of Mountain Creek. How much dust deposition from here over the years in a valley prone to windy conditions and frequent inversions, asks Isla MacGregor.**

## **In 2010 the Toxic Heavy Metals Taskforce released the following Media Release:**

*Media Release 1pm Thursday 18th February 2010*

### ***MMG and GHD Must Release Results from 2007/2008 Investigations Into Health Risks Of Lead In Rosebery and Use Correct Dust Sampling Methods***

#### *Past Investigations:*

*The Toxic Heavy Metals Taskforce Tasmania has called on MMG and GHD to release the results of their previous environmental sampling programs, especially those conducted in 2007/2008.*

*Spokesperson for the Taskforce today said, "The company that is now called MMG released information in the Oz Minerals Environmental Management Plan Review September 2008 on research being conducted in late 2007/2008 by GHD consultants on the health risks of lead in the Rosebery environment. In the Environmental Management Plan Review, it stated on Page 84 Section 1.1.27.2 under the heading Background Community Blood Levels.....that GHD have "been engaged to assist in the evaluation of lead as a health risk to the community....potential lead sources....including dust, surface water groundwater impact, rainwater, soil contamination and potential ingestion sources (i.e. fruit and vegetables)."*

*Whilst clearly deficient in that it was limited only to lead, no such evaluation has ever been released to the public. Does the Government have it?*

*MMG must release the previous data and results of its, and GHD's, investigations so that the Rosebery community can understand any new data released from the new environmental sampling program in its proper context.*

*If the Rosebery community is to have any confidence in the credibility of the current GHD sampling program, then it needs to be compared with earlier sampling programs. The community needs to know if things are getting better or worse.*

#### *Sampling Methods:*

*We have received information from residents about the current dust sampling methods being used by GHD inside homes in Rosebery and we believe that method is not to the Australian Standard dust wipe methodology and is therefore flawed.*

*Elizabeth O'Brien, President of The LEAD Group Inc. in Sydney has provided us with the following advice on correct dust sampling methodology:*

*"There are two dust sampling techniques that are far more commonly used to determine heavy metal contamination levels in dust fall in living spaces emanating from a point source such as mining activity, and thus there are studies which can be used to assist in interpreting the results obtained by these two methods.*

*Since the publication of AS 4361.2 - 1998 Guide To Lead Paint Management - Part 2: Residential And Commercial Buildings, in 1998, lead levels found in dust wipe sampling of floors and window sills has been able to be responded to according to the "action levels" set in the Australian Standard, or, because the sampling methodology is the same, optimally, the response levels used*



by the US Department of Housing and Urban Development (HUD) (which are about twice as stringent as the Australian levels) can be acted on.

*If the hypothesis is that dust from the ceiling void is getting into the home and causing heavy metal contamination inside the living space, then it is still recommended that dust wipe sampling by the AS 4361.2 methodology be used, on the floor underneath any visible signs of ceiling dust entering the living space eg on the floor*

*The second type of dust sampling, specifically used to determine contamination levels in dust fall from a point source over time, includes the dust tray method used by Mike van Alphen famously in the research paper "Atmospheric Heavy Metal Deposition Plumes Adjacent To A Primary Lead-Zinc Smelter. Sci Total Environ. 1999 Sep 15;236(1-3):119-34." - this is the paper that put paid to the notion that all the heavy metal dust contamination in Port Pirie was from the historical lead smelting process, rather than current smelter emissions.*

<http://www.ncbi.nlm.nih.gov/pubmed/10535148?dopt=Abstract>

*The van Alphen tray method was no doubt inspired by the inside-the-house version of the dust tray method famously used by Professor Brian Gulson et al in Broken Hill in research published in a 1995 paper, i.e. the petri dish method for collecting dust fall over time. Along with the isotopic fingerprinting method, Gulson et al were able to conclude from their research that: "For Broken Hill, a strong correlation ( $r = 0.95$ ) was obtained between the isotopic composition of lead in blood and dust-fall accumulation." Science of The Total Environment Volume 166, Issues 1-3, 21 April 1995, Pages 245-262 <http://www.sciencedirect.com/science/article/pii/004896979504505U> Abstract.*

*Our Taskforce has been very concerned that MMG has refused to openly release the scope and methodology of their sampling program in Rosebery. It is very disappointing that, just prior to the first Reference Group meeting being held in Rosebery, the community discovers that MMG/GHD's sampling program is already under a cloud.*

*According to John Lamb, General Manager at the Rosebery Mine, the EPA had considerable discussion with GHD on the scope and methodology of their new investigation in Rosebery. The previous EPA investigation failed in Rosebery and now, on its heels, the GHD investigation appears to be following suit.*

*Government Failure:*

*Our Government has failed again to do the right thing. It should conduct a truly independent population based public health and environmental survey in Rosebery. Australians have just seen on ABC's Australian Story the fantastic efforts of Dr Alison Bleaney over contamination of the St Helens water supply despite government malaise and ridicule. It would be a terrible tragedy if Dr Andreas Ernst has to go through the same obstacles from the same Departments to have a truly independent population based health survey conducted in Rosebery," said Kay Seltitzas.*

After speaking by phone with Andrew Kneebone from Cradle Mountain Water and as more information became available about the contamination of the drinking water supply in Rosebery TPEHN put out one more media release:

***A critical issue about conflict of interest and the independence of CMW***



Cradle Mountain Water compiled a comprehensive drinking water risk management plan when they took over water in 2008/09 and they failed to identify any risk from uncapped reservoirs that are used for drinking water supplies in Rosebery.

CMW have not accessed any data from MMG for their risk assessment on the exposed reservoirs for emissions from the mine especially from dust. These reservoirs that CMW use to supply reticulated water are part of mine infrastructure.

What we have here is a critical issue about conflict of interest and the independence of CMW as a public water authority needs to be publicly scrutinized. The CMW risk assessment needs to be released to the media to see exactly how thorough CMW's plan was, as it has taken until now for these lead results to be found in drinking water supplies and for the issue of these exposed reservoirs to be revealed.

In addition, the No 2 Dam which receives treated sewage, and was formerly a tailings dam, is not the responsibility of CMW but remains under MMG control. According to Andrew Kneebone the waters from the No 2 Dam are pumped through the waste system at the mine then up to Bobadil tailings dam and finally released into the Pieman River. The new proposal is for the waste sewage water to go directly into the Stitt River.

CMW are not conducting any research into metal leachates from the No 2 Dam into the Stitt River although they are doing ambient water monitoring.

There continues to be a conflicted relationship between CMW and the MMG mine in terms of shared infrastructure and therefore transparency is critical in the current controversy over the lead in drinking water in Rosebery.

TPEHN and THMTT want to see action from Workplace Standards and the EPA to investigate all MMG mine's infrastructure, plant operations and emissions monitoring data that could have

contributed to a spike in the lead found in drinking water in Rosebery or as a result of legacy mine pollution.

On the same day Kay Seltitzas from THMTT put out their media release:

### **Rosebery reservoirs must be sealed and more water monitoring needed**

The Toxic Heavy Metals Taskforce Tasmania have today contacted Cradle Mountain Water and asked them when they are going to take action to seal the drinking water supply reservoirs in Rosebery.

“Clearly Cradle Mountain Water and the DHHS have failed in their duty of care to provide safe drinking water to the Rosebery community by failing to conduct adequate water quality risk management practices” said Kay Seltitzas

“The Rosebery community need to be reminded that in July 2010 Deputy Director of Health Dr Chrissie Pickin advised Rosebery residents not to drink rainwater from tanks, use it in cooking or for making up baby formula because of contamination from heavy metal dust.” (see attached DHHS Media Release from 29 July 2010.)

“Yet astonishingly, Andrew Kneebone, from Cradle Mountain Water, during an interview with ABC’s Leon Compton, made a public admission that a couple of reservoirs are not sealed.”

“These reservoirs are sited very close to mine operations which are classified as a Major Hazard Facility. These unsealed reservoirs will receive dust emissions from: vent shafts, movement of materials on site, open stockpiles, dried process liquids and solids and unsealed areas.”

“CMW should be conducting twice weekly water monitoring on a routine basis as drinking water is being drawn from two sources in Rosebery within an area that a High Hazard Facility operates.”

“We have received information that we consider Workplace Standards and the EPA need to act on. An investigation needs to be conducted into No 2 Dam which is the sewage treatment pond and former tailings dam. It needs to be inspected for any infrastructure failures as this dam leaches heavy metal contaminants into the Stitt River. No 2 Dam also has treated sewage water discharged into the Stitt River.”

“This is a totally appalling failure of duty of care by the DHHS and CMW towards Rosebery residents who live within an operational mining area that is classified as a Major Hazard Facility. All authorities concerned must take urgent steps to address these public health issues in Rosebery.” said Kay Seltitzas.

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### [Planned tailings dam release to contaminate Ringarooma RAMSAR wetland](#)

Media Release Tasmanian Public and Environmental Health Network 3 April 2013

The Tasmanian Public and Environmental Health Network have today written to the EPA Director Alex Schaap asking him to release information about a planned apparently uncontrolled release of 1,000 million litres of water from an old tailings dam near Gladstone in the north east of Tasmania.

Isla MacGregor said “TPEHN has received information that the tailings dam at the former Scotia Mine near Gladstone is soon to be released into the Ringarooma River the lower sections of which are a Ramsar Wetland.”

The mine was previously operated by Van Dieman Mines Pty Ltd which went into administration in 2009. The state government is now responsible for the rehabilitation of this mine site.

TPEHN have requested Mr Schaap respond to a number of critical public and environmental health and safety issues:

- What date the release from the tailings dam is planned to occur?
- Who is the public official responsible for fully supervising the release for its duration?
- Will there be any public notices or notification to property owners to warn of the release in order to protect public and environmental health and safety?
- Why is the release necessary at this time?
- What is the quality of the water being released?
- What ongoing monitoring will the EPA be doing on the impacts of this substantial release on the Ringarooma River, the Ramsar Wetland and for users of this waterway?

“1,000 million litres is an enormous amount of water - one Olympic-size swimming pool holds one million litres of water.”

“The EPA need to keep the public informed of these type of activities to protect public safety and promote greater confidence in the workings of the EPA.” said Isla MacGregor.

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## FURTHER READING

ABC News Tasmania (2013), Lead poisoning fears from rainwater tanks: Video as shown on 7PM ABC News Tasmania with transcript, Aired on ABC 7PM News Tas, 15/3/13,  
<http://www.abc.net.au/news/2013-03-15/lead-poisoning-fears-from-rainwater-tanks/4576204>

Ian Townsend (2013), Don't Drink The Water. ABC Radio National Sunday Extra Presented by Jonothan Green, recording and transcript at  
<http://www.abc.net.au/radionational/programs/backgroundbriefing/2013-03-31/4594752#transcript>

The Tasmanian Public and Environmental Health Network have found that there are over 60 waterways in Tasmania contaminated with toxic heavy metals. You can find this information on the Pollution Information Tasmania website page Contaminated Waterways, Areas and Sites In Tasmania A-Z here:

[http://www.sourcewatch.org/index.php/Contaminated\\_Waterways,\\_Areas\\_and\\_Sites\\_in\\_Tasmania\\_-\\_A\\_to\\_Z](http://www.sourcewatch.org/index.php/Contaminated_Waterways,_Areas_and_Sites_in_Tasmania_-_A_to_Z) This site is a work in progress.

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# Lead in Drinking Rainwater and What to Do with It

*-By Jessica Onie, Chemistry Student (University of New South Wales) and Intern, The LEAD Group Inc. Edited by Ian Smith, BSc BE MBA, volunteer Editor, The LEAD Group Inc. Australia*

## The Lead Problem in Drinking Water from Rainwater Tanks in Australia:

### Lead - An Overview

Lead has been used in a vast range of products since as early as 3000 BC. These days, lead is primarily used in roofing, gutters, flashing, paint, batteries and fuel. Lead's harmful effects towards the biological system are not a recent discovery, notorious for being a neurotoxin lead also affects the bones, development, and fertility, raises blood pressure and causes premature aging. Lead is too often overlooked at the household level leading to cases of avoidable lead poisoning. If you don't want your children with learning disabilities or a

lowered IQ, or if you do not intend to risk forthcoming strokes or heart attacks, ensure that your family is not ingesting or inhaling excessive amounts of lead at home.

- Our concern is that lead still has its continuing, unnoticed presence in rainwater tanks

### **The Alarming Studies**

- o A Monash University study (Magyar et al, 2008) revealed excessive amounts of lead in 33% of rainwater tanks in metropolitan Melbourne
- o A Griffith University study (Huston, 2009) revealed that 10-20% of rainwater tanks across Brisbane contained lead levels higher than 0.01 mg/L, the recommended maximum safe level of lead in water by the Australian Drinking Water Guidelines (ADWG) The study goes on to suggest that unless you live in a town that has a lot of heavy industry, the main sources of this lead are likely to be your roof top. (Anna Salleh 2009)
- o A University of Technology, Sydney study (Kus, 2010 LID: 16803 – revealed that five out of eleven rainwater tanks in metropolitan Sydney contained lead levels higher than the recommended ADWG levels

### **What are the implications of these studies??**

Taking the figures on rainwater used as drinking water in capital cities from the 2010 census (ABS 2010a), the above studies would suggest that in Metropolitan NSW, Vic and Qld alone there are a total of 18, 692 households where rainwater with excessive amounts of lead is used as drinking water. If we are to draw on the national average of 2.6 people per household (ABS 2010b), this would mean that there are 37, 384 people who are likely to have elevated blood levels.

The study highlights the fact that it is critical that people who are currently sourcing their drinking water from rainwater tanks (or are planning to) should be more aware of how to avoid the harmful effects of lead to our organs, bones, nervous system, and reproductive system. The issue with rainwater tanks is that as an owner you are entirely responsible to monitor and maintain water quality within the tanks – water that you may be drinking. The Australian Government has no duty to instruct or advice your employment or maintenance of rainwater tanks, so it's all entirely up to you.

If you use your rainwater tanks for drinking, it is advisable to monitor its quality and lead content to avoid its harmful effects. If there is presence of lead in your rainwater tanks, this then it will build up in the bloodstream until dangerous levels. Children and unborn babies who more readily absorb the lead into the bloodstream are the most vulnerable to and most detrimentally affected by lead poisoning. In the long term, lead poisoning can result in learning difficulties, mental and physical disabilities, crime, and ultimately a lower standard of living, both by lowered income and increased crime rates.

### **What Do I Need to Do?**

Reading this fact sheet, you are presumably looking for precautions and advice regarding rainwater tanks – *what can I do?* Rainwater tanks can be perfectly safe but how *do* you and how *will* you know if your household is or will be one of the four households with excess lead its tanks? There are three stages of prevention, depending on your circumstances:

- Primary Prevention – I plan to source my drinking water from a rainwater tank, what should I be concerned of?
- Secondary Prevention – I am using a rainwater tank for drinking at home, what should I do?
- Tertiary Prevention – I have discovered that my rainwater tank is lead contaminated, how do I go by this?

According to a 2007 government fact sheet on rainwater tanks and water maintenance ([here](#)), quality of water is dependent on how you maintain your tank and catchment.

### **Primary Prevention – Prior to Purchase**

Before purchasing your tank, ensure that the tank is made specifically for rainwater collection for drinking. Make sure you use high quality plastic pipes and fittings. It is ideal to avoid metal roofs, or roofs with lead flashing as corrosion and leaching can lead to poisoning. Do not install a rainwater tank if your catchment area, generally your roof, contains lead-based paints or lead flashing. Replace any lead-flashing with non-lead flashing, or contact a paint company for a paint product that will protect the water from lead leaching from your roof or from any other sources of contamination.

Contaminants tend to settle at the base of the tank. Ensure that you have a diverter to discard the first 30mm of catchment. The new tank should also be washed before use.

Note that Australia does not have a regulation for domestic rainwater treatment or distribution.

### **Secondary Prevention – Determine Presence of Contamination**

The Australian Building Code (2004) instructs that buildings with a rainwater tank added at the same time as the house is built must not be constructed with lead flashing. However there are no requirements regarding lead-flashing in buildings built pre-2004 and in houses with rainwater tanks installed after its construction.

If you are drinking from a rainwater tank, it is advisable to test your tank for lead contamination. The Australian Drinking Water Guidelines (established by National Health and Medical Research Council) suggests a maximum allowed limit of 10 µg/L.

The LEAD Group provides a [lead-testing kit and service](#) (physical kit, lab analysis, and results interpretation). Visit [here](#) for more information.

Check your house for presence of lead flashing; remove it as soon as possible to allow minimal lead content in rainwater tanks. Test your rainwater tank for lead contamination, and do not drink water with unsafe levels of lead.

### **Tertiary Prevention – Post-Contamination Action, and Source Identification**

If you find that your rainwater tank has unsafe levels of lead, stop drinking from the tank. Contact your doctor to get a **lead blood test** and find all the possible sources for the contamination - contact the Global Lead Advice and Support Service (GLASS) at 1800 626 086 for advice

### **Detailed Information on Hazards, Tank Materials, and Preventative Measures:**

[http://www.nphp.gov.au/enhealth/council/pubs/documents/rainwater\\_tanks.pdf](http://www.nphp.gov.au/enhealth/council/pubs/documents/rainwater_tanks.pdf)

[www.lead.org.au/fs/tankwater.pdf](http://www.lead.org.au/fs/tankwater.pdf).

### Conclusions:

It is your responsibility to ensure that your rainwater tanks are lead-safe. [Test your water](#), find your sources of lead, and [what kind of tanks to avoid](#).

Find the organisations responsible for your contaminated tank, and inform them of the issue. Stop purchasing items – directly and indirectly - from companies that allow lead to get in to drinking water.

Find organisations that can aid in any of the three prevention types. Information and relevant services can be found on [www.lead.org.au](http://www.lead.org.au) or by contacting The LEAD Group directly at 1800 626 086 (freecall)

**Make sure your water is healthy. It's easily controllable - and not too late, [we](#) can help.**

### Further Reading:

Anna Salleh (2009) *Roofs can boost rainwater lead levels* in ABC Science, Tuesday, 3 March 2009  
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Australian Bureau of Statistics (ABS) (2010a) *Environmental issues: water*

*Use and conservation Australia*

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<http://www.abs.gov.au/ausstats/abs@.nsf/mediareleasesbyReleaseDate/629A13C5A1CFAC3CCA2577DF00155272?OpenDocument>

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Gibson, N. (2008), *What to Do if You Have Too Much Lead in Your Tankwater*, The LEAD Group Inc, National Public Health Partnership, 20 Jan 2012, <http://www.lead.org.au/fs/tankwater.pdf>

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- Tufvesson, A. (2009), *Rainwater tank pollution: As rainwater tanks become increasingly popular, it begs the question: do they harbour elevated lead levels that are dangerous to public health?* In *World Plumbing Info* 19<sup>th</sup> November 2009, <http://www.worldplumbinginfo.com/article/rainwater-tank-pollution>
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## Contamination of soils in historic apple and pear growing areas in Tasmania by lead arsenate spray

*By Chris Harries Tasmanian Times, 12th July 2010*

*Comment by Chris Harries on Article: International spotlight on arsenic and lead poisoning in Australian lead mining town* [re: [http://www.lead.org.au/lanv10n4/LEAD\\_Action\\_News\\_vol\\_10\\_no\\_4.pdf](http://www.lead.org.au/lanv10n4/LEAD_Action_News_vol_10_no_4.pdf) ]

[Source: Tasmanian Times, according to its own website: “**Tasmanian Times** is a forum of discussion and dissent - a cheeky, irreverent challenge to the mass media’s obsession with popularity, superficiality and celebrity”, 12<sup>th</sup> July 2010 <http://tasmaniantimes.com/index.php?/article/international-spotlight-on-arsenic-and-lead-poisoning-in-australian-lead-mi/> ]



This is a tangential issue but... what information is out there on contamination of soils in historic apple and pear growing areas in Tasmania?

As many of us remember, lead arsenate was liberally sprayed for decades throughout the Huon as a coddling moth poison and, as Rachel Carson noted in her seminal work *Silent Spring*, is one of the most persistent poisons used in agricultural practice.

More recent research shows that where lead arsenate has been widely used on Australian farm, soil analysis shows that those soils may have concentrations 30 times higher than normal. Nice to know, but what does that means in terms of on-going risk?

We do know that carrots, for instance, are good at absorbing heavy metals from soils, and have sometimes been grown as a throw away crop to try to rid a field of lead / arsenic contamination.

Of particular concern, Tasmanian land owners who may wish to grow certified organic produce, is can organic produce be grown on lead arsenate contaminated soils?

There are many web references to standards set in US states where lead arsenate sprays were widely used, but I have failed to find much local data or regulation.

**Some questions:**

1. Is lead arsenate, where used as a pesticide, found in the soil at high enough levels to warrant concern?
2. What are the potential risks for families living in former apple growing orchard areas?
3. What are the potential risks for domestic animals, livestock, or wildlife?
4. What is the likely take-up in vegetables and fruit grown on those soils?
5. Can these chemical residues move off-site and pose a hazard elsewhere?
6. How do people who live on these lands deal with the issue?

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# Lead Poisoning as a Criminal Defense – an annotated bibliography

*By Samantha Dupuch, Legal Intern, and Robert Taylor, Researcher, The LEAD Group Inc.*

- **The Criminal Mind - Advances in genetics and neuroscience are revolutionizing our understanding of violent behavior as well as ideas about how to prevent and punish crime**, by Adrin Raine April 26, 2013, *The Saturday Essay*, Wall Street Journal (WSJ) 7:28 p.m. ET

[http://online.wsj.com/article/SB10001424127887323335404578444682892520530.html?mod=WSJ\\_hpp\\_LEFTTopStories](http://online.wsj.com/article/SB10001424127887323335404578444682892520530.html?mod=WSJ_hpp_LEFTTopStories)

Criminals can be identified based on their physical characteristics. Numerous studies have shown the link between genes and crime and aggression. As for environmental factors, lead is considered as one that affects aggression and violence. Other factors include smoking and drinking by the mother before birth, complications during birth and poor nutrition early in life. Increasing scientific understanding of violence behaviour would be a step forwards in preventing crime, for example more accurate risk assessment for reoffending by neurocriminology.

- **Brain Damage from Lead Poisoning as a Criminal Defense, from Lead Exposure in Philadelphia and Implications for Management of Deviance in a Fluid Culture**, by Jenna Rosania, Spring 2005, Biology Department, Bryn Mawr College

<http://serendip.brynmawr.edu/bb/neuro/neuro05/web3/jrosania.html>

Research Paper by student: Discussion on the use of lead poisoning as a criminal defense in the United States.

- **Considering Lead Poisoning as a Criminal Defense**, by Denno, Deborah W., Fordham Urban Law Journal, Vol. 20, pp. 377-400, 1993.

Available at SSRN: <http://ssrn.com/abstract=1140225>

Abstract: This essay reports the results of the 'Biosocial Study,' one of this country's largest longitudinal studies of biological, sociological, and environmental predictors of crime. This essay then considers whether it is viable to establish a lead poisoning criminal defense in light of the Biosocial Study's finding of a significant relationship between lead poisoning and three variables indicating behavioral problems at different ages: adult crime, juvenile crime, and disciplinary problems in school. It is suggested that it is philosophically inconsistent to provide for criminal defenses based upon what appear to be 'internal' factors, such as brain tumors, but then discount defenses based on what appear to be 'external' factors, such as lead poisoning or other types of environmental factors, given the fragile assumptions of causation that this 'internal-external' distinction is based on.

#### **Articles which have been or might one day be used to justify considering Lead Poisoning as a Criminal Defense**

- **How Lead Exposure Relates to Temporal Changes in IQ, Violent Crime and Unwed Pregnancy**” by Rick Nevin, (2000), Environmental Research, Section A , 83, 1-22

<http://pic.plover.com/Nevin/Nevin2000.pdf>

The study aims to demonstrate the relationship between lead exposure trends in American children and fluctuations in the IQ score distributions over the years, and the evolution of relationships between trends in lead exposure, in IQ distribution and trends in crime rate and the rate of unwed pregnancies.

- **Understanding international crime trends: the legacy of preschool lead exposure**, by Rick Nevin., Environ Res. 2007 Jul;104(3):315-36. Epub 2007 Apr 23.

[http://www.precaution.org/lib/crime\\_trends\\_and\\_preschool\\_lead\\_exposure.070501.pdf](http://www.precaution.org/lib/crime_trends_and_preschool_lead_exposure.070501.pdf)

Abstract:

This study shows a very strong association between preschool blood lead and subsequent crime rate trends over several decades in the USA, Britain, Canada, France, Australia, Finland, Italy, West Germany, and New Zealand. The relationship is characterized by best-fit lags (highest R2 and t-value for blood lead) consistent with neurobehavioral damage in the first year of life and the peak age of offending for index crime, burglary, and violent crime. The impact of blood lead is also evident in age-specific arrest and incarceration trends. Regression analysis of average 1985-1994 murder rates across USA cities suggests that murder could be especially associated with more severe cases of childhood lead poisoning.

- **Environmental Policy as Social Policy? The Impact of Childhood Lead Exposure on Crime**, by Reyes, Jessica Wolpaw (2007), The B.E. Journal of Economic Analysis & Policy: Vol. 7: Iss. 1 (Contributions), Article 51

<http://www3.amherst.edu/~jwreyes/papers/LeadCrimeNBERWP13097.pdf>

Abstract:

Childhood lead exposure can lead to psychological traits that are strongly associated with aggressive and criminal behavior. In the late 1970s in the United States, lead was removed from gasoline under the Clean Air Act. I use the state-specific reductions in lead exposure that resulted from this removal to identify the effect of childhood lead exposure on crime rates. The elasticity of violent crime with respect to childhood lead exposure is estimated to be 0.8, and this result is robust to numerous sensitivity tests. Mixed evidence supports an effect of lead exposure on murder rates, and little evidence indicates an effect of lead on property crime. Overall, I find that the reduction in childhood lead exposure in the late 1970s and early 1980s was responsible for significant declines in violent crime in the 1990s and may cause further declines in the future. Moreover, the social value of the reductions in violent crime far exceeds the cost of the removal of lead from gasoline.

- **Association of Prenatal and Childhood Blood Lead Concentrations with Criminal Arrests in Early Adulthood**, by Wright JP, Dietrich KN, Ris MD, Hornung RW, Wessel SD, et al. (2008). PLoS Med 5(5): e101.

THE PDF IS ACCESSIBLE FROM: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2689664/>

Childhood lead exposure is a purported risk factor for antisocial behavior, but prior studies either relied on indirect measures of exposure or did not follow participants into adulthood to examine the relationship between lead exposure and criminal activity in young adults. The objective of this study was to determine if prenatal and childhood blood lead concentrations are associated with arrests for criminal offenses.

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## Putting the Brain On Trial

*-By Claudia Pinto, May 5, 2003, Media General News Service, Charlottesville, VA*

He was a schoolteacher, a husband, a father. Then he became a pedophile preoccupied with sex.

Doctors who treated him at the University of Virginia hospital in 2000 believe that the man's powerful sex addiction was caused by an egg-sized tumor in his brain.

"It turned out he was a guy who had made it into his 40s without having any problem with this," said Dr. Russell Swerdlow, a UVa associate professor of neurology. "He had a brain tumor that was damaging the part of the brain that controls impulse."

Once the tumor was removed, the man's sexual obsession disappeared. Swerdlow believes this is the first known case to link damage of the frontal lobe with pedophilia.

Swerdlow and Dr. Jeffrey Burns, a former UVa physician, have written an article on the case. It was published in the March edition of Archives of Neurology.

"The most interesting part of this is getting into the hardwiring of morality and free will," Swerdlow said. "It raises the question, how free is free will?"

This philosophical question is being investigated by doctors across the country. And the answers they find through their research could have serious implications - not just for individual treatment but for the criminal justice system as well.

Brain scans conducted on murderers, for example, show that there is sometimes damage or poor function of the prefrontal cortex, a part of the brain that lies just behind the forehead and eyes.

Such scans and other scientific studies of the mind may one day be widely used in courts as evidence for the defense, as it was for Swerdlow's patient.

"This guy was going to go to prison and what he needed was an operation, not incarceration," Swerdlow said.

Dr. Burns first met the man after he showed up at UVa hospital complaining of headaches and saying he feared he would rape his landlady.

Burns described his behavior as impulsive and hypersexual.

"He was propositioning the nurses and the female residents," Burns recalled. "He had no concern that he urinated on himself or how he was perceived by other people. He would stop the conversation between the doctor and himself and ask women to get into bed with him."

Neurological exams showed the man was unable to write or copy drawings normally. An MRI was ordered.

"We found a very large brain tumor replacing the entire orbitofrontal lobe," Swerdlow said.

Swerdlow said the man was relieved that the tumor provided an explanation for his sociopathic behavior.

"He's grateful that he was properly diagnosed and properly treated," Swerdlow said. "He's relieved to know that he isn't the 'evil' person that he thought he was destined to be."

According to Swerdlow's paper on the case, the man secretly visited child pornography Web sites and solicited prostitutes during 2000. The patient said that he had never participated in these activities before.

"It started with a fascination of pornography, including child pornography, and as the tumor grew the symptoms worsened," Swerdlow said.

When the man's wife found out he had made subtle sexual advances toward a young girl, she kicked him out of the house. He was found guilty of child molestation and medicated with drugs intended to produce chemical castration.

A judge ruled that he had to pass a 12-step sexual addiction program or go to jail. But the man was thrown out of the class after he solicited sexual favors from staff and classmates.

Coincidentally, he showed up at UVa's emergency room the night before his sentencing.

"There was some concern he was malingering in an effort to avoid his court date," Burns recalled.

But then the tumor was found. It was located in the right lobe of his orbitofrontal cortex, which is known to be tied to judgment, impulse control and social behavior.

"The brain tumor was resected and the symptoms were resolved," Swerdlow said. "He was given a second chance at a program for sex offenders. He successfully completed the program."

But seven months after the tumor was removed, the headaches began anew. And the man again started viewing porn.

An MRI revealed tumor regrowth. In 2002, a tumor was removed for the second time. And for the second time, the behavior disappeared.

"He's doing great, but there is always the possibility that it could grow back," Swerdlow said. "It's a really bizarre, Kafkaesque situation."

Swerdlow argues that the case legitimizes the question of whether some sociopathic behavior is caused by brain disorders.

"Will we one day find that people perform criminal acts because they have some kind of damage or abnormality to this part of the brain?" Swerdlow asked. "I think that we are just beginning to scratch the surface of how personality is hardwired."

"Researchers are investigating whether there are certain groups of people born this way," he said. "Maybe that part of their brain has developed differently. Maybe that's just the way they came wired from the store."

George Thomas, a UVa professor emeritus of philosophy, said this idea goes back at least to the 1920s.

"A lawyer named Clarence Darrow argued that all criminal behavior was caused by mental or physical illness," Thomas said. "He said we should think of criminal behavior as a disease that could be treated mentally or physically."

Thomas said if the man truly was unable to control his actions, he should not be held morally responsible for them.

"If the conditions that produce the behavior are independent of that person's values, you shouldn't hold that person accountable," Thomas argued. "You should try to treat the condition."

An example of this would be someone with Tourette syndrome who shouts out obscenities.

The problem is that it's often difficult - if not impossible - to judge whether a person is unable to suppress their impulses.

"You certainly can't generalize from this one case to say that all pedophiles can't control their behavior," Thomas said.

And Thomas isn't convinced that Swerdlow's patient is entirely guilt-free.

"The tumor wasn't completely the cause of the behavior," Thomas said. "He had to have the impulse somewhere within him. The tumor simply made it difficult for him to act against that impulse."

"Sexual impulses are common to everyone, of course," he said, "but I don't believe the impulse to molest children is common in everyone."

Swerdlow emphasized that he is not suggesting that every pedophile has a brain tumor and should escape incarceration.

"The difference in this case was that the patient had a normal history until he developed the tumor," Swerdlow said. "Most pedophiles develop problems early in life."

It's known that deviant behavior can be caused by several kinds of brain damage, including tumors, trauma and infections such as encephalitis. Swerdlow hypothesized that abnormalities could be caused on biochemical levels that scientists aren't even aware of.

"Studies suggest that when damage is done to the frontal lobe before 18 months, people never learn right from wrong," Swerdlow said. "When damage is done after that time, people can learn right from wrong but they can't control their impulses. There is no longer regard for long-term consequences, only short-term gratification."

"Nothing puts the brakes on their behavior. They are always in trouble," he said. "If their brain wants something, they take it."

Swerdlow said this was the case with his patient. The man knew his actions were wrong "but the pleasure principle overrode his restraint."

There are many documented cases of behavioral changes caused by damage to the frontal lobe. The most famous probably is that of railroad worker Phineas Gage.

In 1848, an explosion sent a railroad spike through the front of Gage's skull. He survived, but after the accident the once passive man was prone to rage.

Some of the most compelling modern visual evidence for the link between brain damage and violence is the work of Dr. Monte Buchsbaum, a professor of psychiatry and director of the neuroscience PET laboratory at Mount Sinai School of Medicine in New York. In 1997, Buchsbaum conducted the largest brain-imaging study of murderers ever.

Buchsbaum performed PET scans on 22 people on trial for murder and 22 other people of similar age who had no history of violence. The accused murderers, as a group, had lower glucose metabolism in the prefrontal cortex, showing diminished activity in brain areas which normally function to inhibit aggressive impulses.

"I think that people can become murderers as a result of brain damage, but they are not predestined to become murderers," Buchsbaum said. "There is not a murder center in the frontal lobe. These areas in the frontal lobe are involved in motivation, mood regulation and impulse control. And these personality features are applied across a wide range of behavioral scenarios."

Buchsbaum doubts that brain scans will ever be used as a technique to identify potential murderers or even less violent criminals.

"They will never find a brain center that makes people commit murder," he said. "The brain is just not wired that way."

Brain damage, Buchsbaum argues, can have a range of unpredictable effects. It could cause something as minor as antisocial behavior or something as severe as murder.

Scientists can provide information about the link between deviant behavior and brain damage. But ultimately, it will be up to the legal justice system and juries to make sense of new scientific discoveries and decide how accountable people are for their actions.

"The goal of the legal system is to cure criminal behavior. This is often done through incarceration," Swerdlow said. "Perhaps, in the future, there will be others ways to manage sociopathic behavior - maybe prescription drugs or operations."

He concluded: "We're dealing with the neurology of morality here."

Claudia Pinto, a staff writer for The (Charlottesville) Daily Progress, at (434) 978-7266 or [cpinto@dailyprogress.com](mailto:cpinto@dailyprogress.com).

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## **Inter-generational lead: Lead transfer to the foetus**

*- By Robert Taylor, Researcher for The LEAD Group*

One of the major problems with lead is its capacity to be transferred to the foetus. There is a strong correlation between a mother's blood lead level and that of her newborn, with blood lead levels of newborns equal to or slightly lower than that of their mother's. (Goyer 1990) while at some points in the pregnancy it may even exceed maternal blood lead levels (Lagerkwist 1996). In rare circumstances foetal lead levels can be two to three times higher than the mother's (Horowitz 2001, Tait 2002).

There is evidence that high blood pressure increases the transfer of lead to the foetus (Harville 2005) as does alcohol consumption (Rhiands1997, Ernhardt et al 2004, Harville 2005).

Much of the total foetal lead is sourced from the mother's bones. Indeed maternal bone lead may be a better measure of foetal lead exposure than the traditional birth cord measurements with trabecular bone being most predictive of reduction in MDI (mental development index) scores (Gomma 2002). The gradual depletion of bone lead, barring subsequent heavy exposure, in each pregnancy means higher lead exposure for babies born early in the family birth order (Rabinowitz & Needleman 1984, Korrik 2002, Tellez-Rojo et al 2002, Al- Jawadi et al 2011) though it is possible that the proportion of lead transferred to the child may increase with latter pregnancy (Rothenburg 1989).

Unfortunately chelation during pregnancy does not reduce the contamination levels of the foetus and indeed may increase them (Tait 2002). It is thought that chelation may lead to increased mobilisation of lead from body stores such as bone, so its short term impact could increase foetal lead exposure while having little long term effect on developmental outcomes (Dietrich et al 2004).

(Miranda 2010)

(Tait 2002)

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## Lead Research/News

*Articles collated by Prof Mark Taylor, Mark Laidlaw, Elizabeth O'Brien and Prof Brian Gulson, Summarised by Elias Chalouhi and Lan Nguyen, University of Technology Sydney (UTS) Interns at The LEAD Group, May 2013*



### **Childhood lead exposure linked to crime in adulthood.**

By Mark Taylor, Bruce Lanphear, Damian Gore, Miriam Forbes, Sammy Zahran, *The Conversation*, (10<sup>th</sup> April 2013)

<http://theconversation.com/childhood-lead-exposure-linked-to-crime-in-adulthood-13189>

New study suggests that Australians who were exposed to high levels of lead as children may be at greater risk of committing violent and impulsive crimes two decades later. Lead exposure from soils and dusts in Australian communities can lead to a decrease in academic achievements and other learning abilities. A study conducted in several sites showed that higher levels of airborne lead resulted in higher assault rates 20 to 21 years later. Areas with higher lead levels tended to show stronger relationships between lead in air emissions and crime rates.

### **Possible Link Between Lead and Violent Crime**

By John Stewart, *ABC Lateline*, (9<sup>th</sup> April 2013)

<http://www.abc.net.au/lateline/content/2013/s3733472.htm>

The preliminary findings of the first\* Australian study of potential links between lead exposure and violent crime shows that suburbs exposed to high lead pollution levels also experience high assault rates. Interview conducted with a Lead poisoning victim demonstrates how his temperament and behavior changed in light of his exposure to Lead, which eventually resulted in a jail sentence.

\* Professor Brian Gulson points out that in fact the first Australian research into this potential link between lead exposure and violent crime was done by Rick Nevin (as below).

### **Understanding international crime trends: The legacy of preschool lead exposure**

By Rick Nevin, published in *Environmental Research*, Editor-in-Chief: Ellen Silbergeld, (23<sup>rd</sup> April 2007) AVAILABLE FOR PURCHASE FROM

<http://www.sciencedirect.com/science/article/pii/S0013935107000503>

Study shows a very strong association between preschool blood lead and subsequent crime rate trends over several decades in the USA, Britain, Canada, France, Australia, Finland, Italy, West Germany, and New Zealand. The results add to mounting evidence that preschool lead exposure affects the risk of criminal behavior later in life. Murder could be especially associated with more severe cases of childhood lead poisoning. Reducing preschool lead exposure would therefore yield further reductions in crime.

### **Garden Safe Garden Well**

By the Indianapolis Foundation, (circa 2012)

<http://www.cicf.org/files/file/Garden%20Safe,%20Garden%20Well.pdf>

Urban soils often contain high amounts of lead and other heavy metals which are harmful to human development, especially for children. Your soil should be tested, as it acts like a sponge often soaking up decades of harmful lead in the surface layers. Your Garden can become a much safer environment if you take the time to test your soil and respond with proper action if necessary.

### **Lead paint still on sale in Africa**

By Anthony King, *RSC (Royal Society of Chemistry) Chemistry World NEWS*, (26<sup>th</sup> March 2013)

<http://www.rsc.org/chemistryworld/2013/03/lead-paint-sale-africa-cameroon>

Paint containing dangerous amounts of lead is on sale in Cameroon, a study has found. Moreover, the subsidiaries of large multinational companies were among those found to be selling this paint. This poses problems, which could cause birth defects, high blood pressure and brain damage. Mark Taylor, an environmental scientist at Macquarie University in Sydney, Australia says: 'The lead in paint limit in the US is 90ppm, so selling paint with up to 500,000ppm is just incredible. Why would anyone do that? There have been adequate alternatives for decades.'

### **Dangerous soil in your home.**

By Laura Sparkes interviewing Prof Mark Taylor, Katrina Cornford (mother of Rune with autism), Keilan George (mother), Warren Simmons (home owner, neighbour of Keilan), Kaye Oakes, Thomas Greig & Minister Tanya Plibersek, *Today Tonight Ch7*, (5<sup>th</sup> March 2013)

<http://au.news.yahoo.com/video/national/watch/585594d2-c9ab-376c-ba60-e71a7ee9a75f/dangerous-soil-in-your-home/>

The health of as many as 100,000 children under the age of five under threat from lead pollution, linked to intellectual and behavior problems. Professor Mark Taylor has stated that Lead by no means has disappeared since the phasing out of Leaded petrol in the past few decades. He has pointed out that homes near busy roads are most at risk.

### **City soils provide new lead**

By Mark Laidlaw and Mark Taylor, *The Australian Synchrotron*, (1<sup>st</sup> January 2013)

<http://www.synchrotron.org.au/index.php/aussyncbeamlines/x-ray-absorption-spectroscopy/highlights-xas>



The main source of high lead levels found in homes in western Sydney is not interior lead paint but lead from soils, according to a Macquarie University research investigation. The Sydney findings are consistent with earlier studies by US researchers, who found that soil accounts for around two-thirds of the lead in house dust with interior lead-based paint sources contributing the remainder. The researchers involved in the Sydney study concluded that soil and household dust remediation should be the primary strategy for cleaning urban areas where children were presenting with blood lead poisoning and soil lead concentrations were highly elevated.

**Nyrstar agrees to transform lead smelter**

By ABC Online News, (3<sup>rd</sup> December 2012)

<http://www.abc.net.au/news/2012-12-03/nyrstar-strikes-deal-for-smelter-future/4404892>

An in-principle deal has been struck between Nyrstar and the Federal and South Australian Governments for a \$350 million upgrade of the lead and zinc smelter at Port Pirie to a cleaner operation. It said the upgrade would substantially reduce lead emissions in the Port Pirie area by replacing the ageing 120-year-old smelter with a much cleaner metal processing operation. This is working to make the stigma of lead pollution a thing of the past for the region.

**Environmental lead exposure risks associated with children’s outdoor playgrounds**

By Mark Patrick Taylor, \*, Danielle Camenzuli, Louise Jane Kristensen, Miriam Forbes, Sammy Zahran, *Environmental Pollution*, Volume 178, July 2013, Pages 447–454 (26<sup>th</sup> March 2013)

ABSTRACT at <http://www.sciencedirect.com/science/article/pii/S0269749113001875>

High levels of Lead and other metals have been measured in children’s public playgrounds in Port Pirie, South Australia due to Lead smelter emissions. Contaminated dust from smelter emissions is determined as the source and cause of childhood lead poisoning at a rate of approximately one child every third day. The data gathered in the study suggests that Nyrstar Port Pirie Pty Ltd smelter license arrangements are not adequate and need to be reconstructed. Smelter emissions must be eliminated or significantly reduced and city-wide and domestic garden soils need to be evaluated and remediated where necessary.

**Revised California human health screening levels for Lead**

By Office of Environment Health Hazard Assessment, *California Environmental Protection Agency*, (1<sup>st</sup> September 2009) <http://oehha.ca.gov/risk/pdf/LeadCHHSL091709.pdf>

The California Office of Environmental Health Hazard Assessment (OEHHA) has recently developed a 1 µg/dL benchmark for source-specific incremental change in blood lead levels for protection of school children (Residential) and fetuses (Commercial/Industrial) (OEHHA, 2007). The essence of this task was to estimate a concentration in soil that would lead to an incremental increase in blood lead (PbB) of up to 1 µg/dL, in people exposed to that soil.

Residential CHHSL* (mg/kg)		Commercial/Industrial CHHSL1 (mg/kg)	
2005	Revised	2005	Revised
150	80	3500	320

**Re-suspension of lead contaminated urban soil as a dominant source of atmospheric lead in Birmingham, Chicago, Detroit and Pittsburgh, USA**

By Mark A.S. Laidlaw, Sammy Zahran , Howard W. Mielke , Mark P. Taylor, Gabriel M. Filippelli, *Atmospheric Environment*, (1<sup>st</sup> March 2012) AVAILABLE FOR PURCHASE FROM

<http://www.sciencedirect.com/science/article/pii/S1352231011012131>

Soils are not passive repositories and periodic re-suspension of fine lead contaminated soil dust particulates may create seasonal variations of lead exposure for urban dwellers. In this study the temporal variations of atmospheric soil and lead aerosols in four US cities were examined to determine re-suspended lead contaminated urban soil was the dominant source of atmospheric lead. Lead aerosol concentrations must be decreased in order to defeat the legacy of lead, which continues to pose unnecessary and preventable health risks to urban dwellers.

### **Southern Cross GTS/BKN Broken Hill (Port Pirie)**

By Alexandra Bryant, *Southern Cross GTS/BKN Broken Hill (Port Pirie) Regional News*,

(2<sup>nd</sup> October 2012) The blood levels of Port Pirie children are back in the spotlight. The latest monitoring report shows levels have not improved locally, since this time last year. Some claim it's a sign children are continuing to be 'poisoned'. Around 20% of kids are still recording lead levels above the World Health Organisation Standard of ten microgram per decilitre of blood.

### **ABC Southern Queensland (Toowoomba)**

By Sam Burgess, *ABC Southern Queensland (Toowoomba) 12:30 News*, (2<sup>nd</sup> October 2012) An environmental scientist says a report on air quality in Mount Isa and due out next year is likely to provide greater cause for concern than last week's report on water quality commissioned by Xstrata. The water report found the area's water quality meets national livestock guidelines but levels of arsenic, cadmium and lead often exceed guidelines for human consumption. Taylor says air quality is the more pressing concern.

### **ABC Western Queensland (Longreach)**

By Helen Shield, *ABC Western Queensland (Longreach) Mornings*, (2<sup>nd</sup> October 2012), Shield says Xstrata have funded an independent water study, which has found cadmium, copper, arsenic and lead in the Leichhardt River. She says the Mayor has insisted he is not concerned by the levels, and the local water board says the drinking water is up to standard. Xstrata have a challenging problem, but that they no longer release into the river and are doing their best. He doesn't believe the main exposure risk in Mt Isa is from drinking water, but is rather from the plumes over the town.

### **“Lead Wars” – The politics of prevention and responsibility**

By Elizabeth Grossman, *Science Blogs*, (22<sup>nd</sup> May 2013)

<http://scienceblogs.com/thepumphandle/2013/05/22/lead-wars-the-politics-of-prevention-and-responsibility/>

*Lead Wars* shows that we have yet to resolve key questions regarding this toxic legacy. Despite numerous state and federal efforts to reduce the levels of new lead contamination, lead poisoning has been a result of contamination from lead paint in hundreds of thousands of homes. However, lead paint and pigment manufacturers are not required to contribute in removing lead paint, the costs of removing lead paint are thoroughly externalized with individual households. Also, there are ongoing impacts as lead poisoning has been affecting low-income and minority children and lead elimination has not been popular outside the US and Europe.

### **Brain diseases affecting more people and starting earlier than ever before**

By Bournemouth University, 10 May 2013,

<http://www.alphagalileo.org/ViewItem.aspx?ItemId=131020&CultureCode=en>

There is an alarming 'hidden epidemic' of rises in neurological deaths in 10 biggest Western countries over the period 1979-2010. It is claimed that this epidemic is influenced by environmental and societal changes. Statistics highlights a significant rise of neurological deaths in

people under 74 with an earlier onset of the dementias. These rises have considerable impacts upon patients, their families and health and social care services.

### **Changing patterns of neurological mortality in the 10 major developed countries – 1979–2010,**

By C Pritchard, A. Mayers, D. Baldwin, April 2013, Public Health, Volume 127, Issue 4 , Pages 357-368, April 2013 FULL PDF AVAILABLE FOR PURCHASE AT:

[http://www.publichealthjrn.com/article/S0033-3506\(12\)00467-2/abstract](http://www.publichealthjrn.com/article/S0033-3506(12)00467-2/abstract)

There were comparisons between baseline WHO 3-year average mortality for 1979–81 and changes in 2008–10, for Total Mortality and the neurological categories Nervous Disease, and Alzheimer & other Dementias deaths in rates per million. Data revealed that neurological deaths differentially increased considerably in every country compared to Total Mortality, posing a major public health problem.

### **Sydney Harbour Bridge's toxic makeover**

By Leigh Van Den Broeke and Laura Speranza, Daily Telegraph 30 May 2013

<http://www.dailytelegraph.com.au/news/nsw/sydney-harbour-bridges-toxic-makeover/story-fni0cx12-1226653348996?sv=13d0dd2f63883420d541d174dac7f196>

Sydney Harbour Bridge is set to undergo its biggest makeover in 81 years, to remove highly-toxic lead paint from its structures. The city side of the iconic bridge, which is used by bridge climbers and is closer to residential homes and offices in The Rocks, will be sanded back to bare steel and repainted with a non-lead-based paint - which will last 30 years.

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## **Health Risk Assessment of Villagers Who Live Near a Lead Mining Area: A Case Study of Klity Village, Kanchanaburi Province, Thailand**

Southeast Asian J Trop Med Public Health. 2007 Jan; 38(1):168-77.

- By Jitrapun Pusapukdepob<sup>1</sup>, Pichan Sawangwong<sup>2</sup>, Chompusakdi Pulket<sup>3</sup>, Duangduen Satraphat<sup>4</sup>, Sastri Saowakontha<sup>5</sup> and Suwanna Panutrakul<sup>6</sup>

1. Department of Industrial Hygiene and Safety, Faculty of Public Health, Burapha University, Chon Buri;
2. Department of Marine Science, Faculty of Science, Burapha University, Chon Buri;
3. Department of Occupational Health and Safety, Faculty of Public Health, Mahidol University, Bangkok;
4. Department of Psychology, Faculty of Humanity, Srinakarintharawiroj University, Bangkok;
5. Department of Public Health Fundamental, Burapha University, Chon Buri;
6. Department of Marine Science, Faculty of Science, Burapha University, Chon Buri, Thailand

**Abstract.** This was a cross-sectional study aimed at assessing environmental lead exposure and its association with blood lead levels, teeth lead levels and IQ of the inhabitants who live near lead mining in Kanchanaburi Province, Thailand. Two hundred fifteen villagers from 6 villages participated in this study. Exposed and non-exposed villagers were asked to perform IQ tests based on Raven's Standard Progressive Matrices. Environmental, blood and tooth samples were collected and analyzed to determine an association with the IQ level. The results showed that soil, vegetables (mint, bitter melon, Chinese watercress, basil and turmeric) and meat (fish and shellfish) had lead concentrations above the recommended standard. Each person in the exposed group had blood and tooth lead levels higher than 10 µg/dl and 10 µg/g, respectively. The mean IQ

of the exposed group was 82.70 ( $p < 0.05$ ). The blood and tooth levels in the non-exposed group were lower than 10  $\mu\text{g}/\text{dl}$  and 10  $\mu\text{g}/\text{g}$ , respectively. The mean IQ scores in the non-exposed group was 96.14 ( $p < 0.05$ ). The health risk in the low IQ score exposed group was 5.6 times more than the non-exposed group ( $p < 0.05$ ). The IQ scores of the exposed group were significantly inversely associated with the blood lead and tooth lead levels ( $r = 0.397$  and  $0.129$ , respectively,  $p < 0.05$ ). The children in this study who were exposed to environmental lead had an accumulation of lead in their bodies. This resulted in a great impact on intellectual development. The results reveal that blood lead levels are the best predictor of lead exposure, and the tooth lead levels may provide epidemiological evidence for chronic toxicity. Populations with blood lead or tooth lead levels higher than normal limit should be treated with chelation therapy and health education.

Abstract. <http://www.ncbi.nlm.nih.gov/pubmed/17539264>

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# A Case Study of Lead Contamination Cleanup Effectiveness at Bunker Hill

By Sean Sheldrake, Marc Stifelman, *The Science of the Total Environment* 303 (2003) 2002  
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USEPA Environmental Cleanup Office, 1200 Sixth Avenue Mailstop: ECL-113, Seattle, WA 98101-1128, USA

Received 28 March 2002; received in revised form 14 August 2002; accepted 19 August 2002

## Abstract

A review of cleanup effectiveness at Bunker Hill Superfund Site (BHSS) has shown that yard soil cleanup is an effective tool for reducing house dust lead concentrations, thereby reducing children's blood lead levels. This review has also shown that contiguous cleanup of residences has a three-fold greater reduction of children's blood lead levels compared with cleaning only those homes where children currently reside by reducing exposures attributable to neighboring properties. This review underscores the importance of a community-wide, preventative approach to controlling lead contamination in soil and house dust. This review has further characterized the need for careful design, implementation, and perpetual maintenance of a community-wide lead cleanup. Several key areas of importance to maintain large scale mining/smelting remedies in the Bunker Hill area were analyzed and noted for further action, including: infrastructure, institutional controls for homeowner projects (post cleanup), erosion control for undeveloped hillsides with potential to impact the developed valley floor, drainage improvements and flood control, waste piles, and increasing the rate at which cleanup proceeds. Focusing on these areas is crucial to minimizing recontamination at a large scale lead cleanup.

Keywords: Lead; Dust; Soil; Children; Cleanup effectiveness; Blood lead; Recontamination; Mining; Superfund

[http://yosemite.epa.gov/r10/cleanup.nsf/46453efc0be3985c88256d140050c1ac/dda00e459780d6c688256cdb00782500/\\$file/sheldrake-stifelman.pdf](http://yosemite.epa.gov/r10/cleanup.nsf/46453efc0be3985c88256d140050c1ac/dda00e459780d6c688256cdb00782500/$file/sheldrake-stifelman.pdf)

## Obituary: John F. Rosen, M.D., Leader in protecting children against lead poisoning dies at 77

*By Joel Pounds, Systems Toxicology, Laboratory Fellow, Pacific Northwest National Laboratory, Richland, Washington 99352 USA*

Dr. John F. Rosen, a pediatric metabolism expert who defined the fight against childhood lead poisoning in America, died on December 7, 2012 in Greenwich, Connecticut. He was 77.

After graduation from Harvard College, John completed medical school at the Columbia University College of Physicians and Surgeons. John began his research and medical career working on the hormonal regulation of bone minerals at the Rockefeller University. John moved professionally in 1969 to Montefiore Medical Center where he became Professor of Pediatrics and the Head of the Division of Environmental Sciences at The Children's Hospital, which came to have the nation's largest lead clinic, positions he held at his death.

John was raised in a household of social and medical activism. His parents, Dr. Samuel Rosen and Helen Rosen were substantially involved in the liberal and civil rights movements of the post-World War II period, from Henry Wallace's campaign in 1948 to sheltering Paul Robeson after the Peekskill Riots. His father – an ear surgeon who invented the "Rosen Stapes" operation for addressing deafness – made many trips to China to train Chinese surgeons in this technique. His parents met Chou En Lai before the country was opened to Americans in 1972. Dr. Rosen broadened the family activism into the war on poverty by focusing on children.

Dr. John Rosen began to see the harmful impact of metal toxicity in children. His research and clinical practice particularly began to focus on the effects of metal poisoning on underprivileged children living in New York City's substandard housing. In the 1970's, John's work focused increasingly on pediatric lead poisoning, and he became, as *The New York Times* recognized in 1992, a national authority on lead hazards for children. His research, and that of others, increasingly demonstrated that traditional measures of lead exposure in children were too lenient and must be lowered to mitigate the deleterious impact of lead poisoning on cognitive development.

In 1985 and in 1991, John chaired the U.S. Centers for Disease Control Committee on Preventing Childhood Lead Poisoning, which established new and lower national guidelines for the definition of lead poisoning, its treatment and prevention. Dr. Rosen also worked with numerous other National Advisory Committees, including The National Academy of Science and the National Research Council Committee in their report on Low Level Lead Exposure in Susceptible Populations. John spoke at innumerable national and international conferences and published over one hundred studies. The Society of Toxicology awarded John the Arnold J. Lehman prize in recognition of his major contribution to the regulation of environmental lead exposure to protect children.

John was funded continuously for twenty-two years by the U.S. National Institutes of Health (NIH) to investigate the cellular and molecular mechanisms of lead metabolism in bone cells and the metal binding protein osteocalcin. His basic research contributions were further recognized by the



NIH by a MERIT award. In addition, John was a pioneer of the use of x-ray fluorescence to measure bone lead levels as a measure of cumulative lead exposure.

John's passion for protecting and aiding children was legendary, and often led to contentious situations. When he was not serving as an expert for the US Environmental Protection Agency (EPA) in toxic waste lawsuits, he would take the EPA and other governmental agencies to task for not doing enough to protect children's health. For example, in 1992, when parents at Public School 3 in Manhattan were concerned about the school's peeling paint, they reached out to Dr. Rosen, who termed the school a "toxic dump." At a press conference, he pulled paint chips off the wall and his efforts led to the school's widely publicized – and controversial – closure and clean-up.

One of Dr. Rosen's proudest accomplishments was the establishment of Montefiore's Safe House for Lead Poisoning Prevention, the nation's first continuously operating house for victims of lead poisoning and their families. Families stay at the Safe House during the de-leading renovation of their own homes. At the Safe House, a comprehensive approach to addressing lead problems is provided for families who receive education through workshops in nutrition, family budgeting, and parenting skills. Including not just temporary shelter in a lead-free environment but also education and family support.

In addition to his work in the United States, Dr. Rosen was instrumental in setting up lead poisoning monitoring programs internationally. He travelled to Nicaragua to address the problem of leaded gasoline. He worked with the Shanghai Children's Medical Center and the Shanghai Second Medical School for 28 years, from 1982 to 2010, to develop lead poisoning treatment centers in China. Mere months before his death, John was in Shanghai, to push for more substantial regulations on the lead mining and battery recycling industries to protect Chinese children.



In recent years, John shifted focus to educating parents, pediatricians, obstetricians, community groups, Head Starts etc. on various aspects of excessive exposure to lead during pregnancy and during childhood. Part of John's legacy is a New York State funded Lead Poisoning Resource Center with responsibility for outreach to about 100 miles north of New York City. The Lead Team consists of Dr. Morri Markowitz (Prof. of Pediatrics), Dana Politis, Kate Henry, Mary Martinez, Fausto Ramos, Nancy Redkey and Mei Li. This Center performs about 50,000 blood lead analyses each month.

Dr. Rosen died in Greenwich after a four-year battle with cancer. He was the son of Helen Rosen and Dr. Samuel Rosen, a renowned ear surgeon. He is survived by his wife, Margaret Hiatt of Stamford, Connecticut, his three children, Carlo Rosen, M.D., Ellis Lesser, and Emily Reilley, and nine grandchildren, and many colleagues and friends across the world.

*Editor's note: Thanks so much to Joel Pounds for the above article for LEAD Action News. A shorter version of it was also published in Greenwich Time on December 18, 2012 at <http://www.legacy.com/obituaries/greenwichtime/obituary.aspx?pid=161793815#fbLoggedOut> . Readers may also want to read the obituary published on December 17, 2012, on page A21 of the New York edition with the headline: Dr. John Rosen, 77; Pushed to Prevent Lead Poisoning. <http://www.nytimes.com/2012/12/17/nyregion/john-rosen-doctor-who-pushed-to-prevent-lead-poisoning-dies-at-77.html?emc=eta1&r=1&>*

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# It's Thomas Midgley day

-By Seth Godin 18 May, 2013.

Today would be his 124th birthday. A fine occasion to think about the effects of industrialization, and what happens when short-term profit-taking meets marketing.

Midgley is responsible for millions of deaths. Not directly, of course, but by, "just doing his job," and then pushing hard to market ideas he knew weren't true—so he and his bosses could turn a profit.

His first mistake began when he figured out that adding lead to gasoline appeared to make cars perform better. At the time, two things were widely known by chemists: 1. Adding grain alcohol to gasoline dramatically increases octane and performance, and 2. Ingesting or sniffing lead can lead to serious injury, brain damage and death.

The problem for those that wanted to be in the gasoline business was that grain alcohol wasn't cheap, and the idea couldn't be patented. As a result, the search was on for a process that could be protected, that was cheaper and that could open the door for market dominance. If you own the patent on the cheap and easy way to make cars run quieter (and no one notices the brain damage and the deaths) then you can corner the market in a fast-growing profitable industry...

As soon as the lead started being used, people began dying. Factory workers would drop dead, right there in the plant. Even Thomas himself contracted lead poisoning. Later, at a press conference where he tried to demonstrate the safety of the gasoline, he washed his hands in it and sniffed it... even though he knew it was already killing people. That brief exposure was sufficient to require six months off the job for him to recover his health.

Does this sound familiar? An entrenched industry needs the public and its governments to ignore what they're doing so they can defend their status quo and extract the maximum value from their assets. They sow seeds of doubt, and remind themselves (and us) of the profits made and the money saved.

And we give them a pass. Because it's their job, or because it's our job, or because our culture has created a dividing line between individuals who create negative impacts and organizations that do. People who just might, in other circumstances, stand up and speak up, decide to quietly stand by, or worse, actively lie as they engage in PR campaigns aimed at belittling or undermining those that are brave enough to point out just how damaging the status quo is.

It took sixty years for leaded gas to be banned in my country, and worse, it's still used in many places that can ill afford to deal with its effects.

After leaded gasoline, Midgley did it again, this time with CFCs, responsible for a gaping hole in the ozone layer. He probably didn't know the effects in advance this time, but yes, the industry fought hard to maintain the status quo for years once the damage was widely known. It's going to take at least a millenium to clean that up.

We might consider erecting a statue of him in every lobbyist's office, a reminder to all of us that we're ultimately responsible for what we make, that spinning to defend the status quo hurts all of us, and most of all, that we have to balance the undeniable benefits of progress, innovation and industry with the costs to all concerned. Scaling has impact, so let's scale the things that work. No, nothing is perfect, but yes, some things are better than others.

I can't imagine a better person as the symbol for a day that's not about honoring or celebrating, but could be about vigilance, candor and outspokenness instead.

[Previously: No such thing as [business ethics](#).]

Posted at [http://sethgodin.typepad.com/seths\\_blog/2013/05/its-thomas-midgeley-day.html?utm\\_source=feedburner](http://sethgodin.typepad.com/seths_blog/2013/05/its-thomas-midgeley-day.html?utm_source=feedburner) ]

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# Letters: Can you help us reach Oprah?

From: Tamara Rubin

Sent: Wednesday, May 29, 2013 9:16 AM

To: The LEAD Group Inc

Subject: Can you help us reach Oprah?



Hello!

We've started a little "fun" petition to capture the attention of Oprah - who, given her incredible following and impact on the choices so many American families make - would be a terrific person to get involved with the cause of childhood lead-poisoning. The petition is just a simple request, asking her to watch the trailer to our film - and once she does, asking her to follow up with me to see the current rough-cut.

As I think most who have seen the film will agree, just watching the film (especially from the perspective of one outside of the lead-advocacy community) is a transformative experience, in terms of impacting one's understanding of the issue and changing how viewers see the world and the choices they make as consumers. It would be amazing to have this impact on Oprah.

Thanks for considering signing the petition (and thanks for signing it if you did already!) & please consider sharing it with friends (it's simple, not political at all and FREE:-) - right now we have 217 signatures and there are more than 50 comments at the bottom which I encourage you to read as many are inspiring stories from other parents and grandparents of lead-poisoned children.

Each "signature" sends an email to Oprah! Here's the petition link: <http://chn.ge/125stsF>

If you are in a position to make a contribution today, we are also trying to cover the costs of shipping free lead-test kits to families. Thanks to a recent donation from 3M/LeadCheck we now have enough test-kits to meet the huge demand (from families) and our only challenge is shipping costs! A \$10 tax-deductible donation makes it possible for us to send test kits and information to four families, \$100 helps us send kits to 40 families! Donations can be made via PayPal here: <http://www.lead-safe-america.org/lead-safe-america.org/Donate.html>

Thanks again!

Sincerely,

Tamara

P.S. - A little scene from the movie we uploaded recently... about lead in antiques:

[http://youtu.be/S84LuMGI\\_HI](http://youtu.be/S84LuMGI_HI)

Comment on the petition at <https://www.change.org/petitions/oprah-winfrey-watch-the-trailer-to-my-friend-s-film-help-her-protect-kids>

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**By Elizabeth O'Brien, Co-Founder, The LEAD Group Inc.**

My 3 sons were lead poisoned as babies in old housing in inner Sydney, Australia so, like Tamara, I founded an action group - The Lead Education and Abatement Design (LEAD) Group Incorporated, in 1991 and have since run a global information





and referral service which has at its core one of the world's most popular lead websites - [www.lead.org.au](http://www.lead.org.au)

Attention to lead poisoning prevention from Oprah would literally make the world of difference to billions of people - not just children.

The ageing population has grown up in the era of leaded gasoline and our lead exposure earlier in life is associated with early death from all causes, and with heart attacks, stroke and Alzheimers disease.

We really need research into whether the young people who do a lot of shooting (especially indoors) are damaging the executive functioning of their brains (which only complete their development at the age of 30) and becoming more violent, due to their lead exposure.

I applaud Tamara for her excellent lead education work and would love to see her in an Oprah special on lead poisoning prevention. Together, we can make the world lead-safe!

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## **Index of The LEAD Group's Info Packs for NSW Residents**

If you want to join the Summer Hill-born LEAD Group, you'll receive an email notice each time our quarterly newsletter is published and you will also be eligible for the members' discount if you want to purchase any of our kits.

See [http://www.lead.org.au/clp/products/Do\\_It\\_Yourself\\_Lead\\_Safe\\_Test\\_Kits\\_Ad.html](http://www.lead.org.au/clp/products/Do_It_Yourself_Lead_Safe_Test_Kits_Ad.html)

Due to having a multitude of info packs on various topics, when NSW residents ask for lead information, it's probably best, so you are not overwhelmed with info, if you let us know which of the following info packs you'd be interested in reading:

Info Pack 3 - NSW Lead paint & ceiling dust management

Info Pack 4 - Online blood lead results in Queensland; comparison with USA surveys

Info Pack 4 - USA Case Definition of Adult (including Occupational) & Child elevated BLL [blood lead levels]

Info Pack 5 - Interpretation of a Child's Tooth Lead Test Result

Info Pack 6 - Reproductive Health and Lead

Info Pack 10 - NSW lead hazards of oxy-cutting lead-painted metal

Info Pack 10 - NSW Occupational Health & Safety in Relation to Lead

Info Pack 10 - The best fact sheets for lead workers re: lead health effects

Info Pack 14 - Australia's legislation banning lead compounds in ALL paints and inks

Info Pack 18 - Ecotoxicological effects of lead and wildlife lead poisoning

Info Pack 19 - NSW Renting & Lead

Info Pack 22 - Alternative Treatments for Lead Poisoning, including Chelation

Info Pack 23 - Nutrition to fight lead poisoning

Info Pack 24 - lead-safety in hobbies involving lead

Info Pack 25 - Shooting ranges

Info Pack 25 - Lead poisoning prevention in a shooting range

Info Pack 29 - NSW Leaded Waste - State Government Guidelines  
Info Pack 29 - Lead-Safe Demolition  
Info Pack 30 - NSW Training courses in Lead Paint Management  
Info Pack 32 - Public health reasons for banning lead in jewellery / jewelry & fishing sinkers  
Info Pack 45 - NSW Case management after earlier lead poisoning  
Info Pack 46 - Vegetable Gardening on Lead-Contaminated Soil  
Info Pack 48 - Chinese information from The LEAD Group  
Info Pack 48 - Indonesian information from The LEAD Group  
Info Pack 48 - Arabic information from The LEAD Group  
Info Pack 48 - Spanish information from The LEAD Group  
Info Pack 48 - Korean information from The LEAD Group  
Info Pack 48 - Macedonian information from The LEAD Group  
Info Pack 48 - Turkish information from The LEAD Group  
Info Pack 48 - Vietnamese information from The LEAD Group  
Info Pack 51 - Cavity Dust: Ceiling, Wall, Under Floor  
Info Pack 53 - Lodged Lead Shot or Bullets  
Info Pack 55 - Lead poisoning and ageing  
Info Pack 56 - the dangers of a blood lead level above 2 µg/dL and below 10 µg/dL  
Info Pack 58 - References on skin absorption of lead  
Info Pack 66 - Soil & dust-related extracts from the NSW Lead Management Action Plan (LMAP) 1994

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## **Info Pack - "Lead Safe" series of publications by NSW Lead Reference Centre, EPA**

You'll find the complete set of "Lead Safe" publications now on The LEAD Group's website in the factsheets section at:

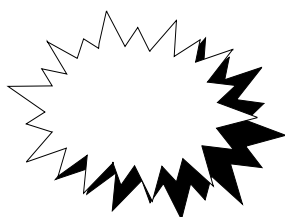
<http://www.lead.org.au/fs-index.html>

1. 37. [Lead in ceiling dust](#)
2. 76. Lead, Your Health & the Environment. Available in [Arabic](#), [Chinese](#), [English](#), [Korean](#), [Macedonian](#), [Spanish](#), [Turkish](#) and [Vietnamese](#) PDF
3. 77. [Lead Safe Housekeeping](#) PDF
4. 78. [Old Lead Paint](#) PDF
5. 79. [Working safely with lead](#) PDF
6. 80. [A Renovator's Guide To The Dangers Of Lead](#) (Brochure 30 pages) PDF
7. 81. [A Guide For Health Care Professionals](#) (Brochure 34 pages) PDF
8. 82. [A Guide To Keeping Your Family Safe From Lead](#) (Brochure 20 pages) PDF
9. 83. [Lead Hazard Management In Children's Services](#) (Brochure 15 pages) PDF
10. 84. [A Guide To Dealing With Soil That Might Be Lead-Contaminated](#)

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# Are speech difficulties more likely to develop in non-breastfed babies?

Result of search of Lactation Resource Centre (LRC) DATABASE



Lactation Resource Centre (LRC)  
1818-1822 Malvern Road, East Malvern Vic 3145  
P O Box 4000, Glen Iris Vic 3146  
Tel: (03) 9885-0855 Fax: (03) 9885-0866

## REQUEST STATEMENT:

Are speech difficulties more likely to develop in non-breastfed babies? Put another way, Is speech development assisted by breastfeeding? Do you have the first research articles on this topic? That is, the oldest?

**PURPOSE OF SEARCH:** We're writing an e-newsletter article on the topic: "Lead exposure, breastfeeding and speech development" because we want to let our web-users know if there are any links between these three things, and specifically whether lead exposure is generally higher for bottle-fed babies and whether there are correlations between high lead exposure and poor speech development; and between artificial feeding and poor speech development or between the combination of lead exposure and artificial feeding and poor speech development. *Editorial Team, LEAD Action News.*

From: Lactation Resource Centre  
Sent: Tuesday, March 29, 2011 11:36 AM  
To: The LEAD Group Inc  
Subject: Breastfeeding and speech development

Hi Elizabeth

This search may be a little broader than you really wanted, but at least it shouldn't leave out what you wanted. I've included some articles on infant neurological or intellectual development more generally. There are early (1970s) reports from New Zealand on speech development, and there are much more recent works too.

And if you want copies of any of the articles, go to [www.lrc.asn.au/copyform.html](http://www.lrc.asn.au/copyform.html) to find the form for that.

Regards,

Liz McGuire BSc IBCLC, Information Officer, Lactation Resource Centre [www.lrc.asn.au](http://www.lrc.asn.au), Australian Breastfeeding Association [www.breastfeeding.asn.au](http://www.breastfeeding.asn.au)

LACTATION RESOURCE CENTRE

Booklets and leaflets may be included in this listing for your information.

Copyright regulations prevent these from being copied in their entirety.

INF05.03 Broad FE 1972, The effects of infant feeding on speech quality. NZ 72BRO Med J 76(482): 28-31. Keywords:

INF05.03 Broad F 1975, Further studies on the effects of infant feeding on 75BRO speech quality. NZ Med J 82(553): 373-376. Keywords:

INF05.03 Broad F, Duganzich D 1983, The effects of infant feeding, birth 83BRO order, occupation and socio-economic status on speech in six year old children. NZ Med J 22 Jun: 483-486. Keywords:

INF05.02 Lucas A, Morley R, Cole TJ, Gore SM, Davis JA, Bamford MFM, 89LUC Dossetor JFB 1989, Early diet in preterm babies and developmental status in infancy. Arch Dis Child 64(11): 1570-1578. Keywords: premature, premature formula, birthweight low, development general, development neurological, feeding choice, comparison, IQ.

INF05.03 Smith VL, Gerber SE 1993, Infant feeding and phonologic 93SMI development. Int J Pediatr Otorhinolaryngol 28(1): 41-49. Keywords: development general, development oral, duration, measurement, exclusive breastfeeding.

INF05.02 Lanting CI, Fidler V, Huisman M, Touwen BCL, Boersma ER 1994, 94LAN Neurological differences between 9-year-old children fed breast- milk or formula-milk as babies. Lancet 344(12 Nov): 1319-1322. Keywords: comparison, development neurological, artificial feeding, questionnaire, advantage, fatty acid.

INF05 Pollock JI 1994, Long-term associations with infant feeding in a 94POL clinically advantaged population of babies. Dev Med Child Neurol 36(5): 429-440. Keywords: practices feeding, comparison, definition, research, epidemiology, methodology, methodology, health public, feeding choice, artificial feeding, exclusive breastfeeding, advantage, IQ, milk composition, protective effect, development oral.

INF05.01 Vestergaard M, Obel C, Henrikson TB, Sorensen HT, Skajaa E, 99VES Ostergaard J 1999, Duration of breastfeeding and developmental milestones during the latter half of infancy. Acta Paediatr 88(12): 1327-1332. Keywords: feeding choice, duration, development neurological, development psychomotor, behaviour, behaviour infant, study cohort.

INF05.02 Innis SM, Gilley J, Werker J 2001, Are human milk long-chain 2001INN polyunsaturated fatty acids related to visual and neural development in breast-fed term infants? J Pediatr 139(4): 532-538. Keywords: development neurological, development visual, fatty acid.

INF08 Blaymore JA, Oliver T, Ferguson AE, Vohr BR 2002, Human milk 2002BLA improves cognitive and motor development of premature infants during infancy. J Hum Lact 18(4): 361-367. Keywords: development psychomotor, development neurological, premature, advantage. Journal

INF05.02 Bouwstra H, Boersma ER, Boehm G, Dijck-Brouwer DA, Muskiet FAJ, 2003BOU Hadders-Algra M 2003, Exclusive breastfeeding of healthy term infants for at least 6 weeks improves neurological condition. J Nutr 133: 4243-4245. Keywords: development psychomotor, development neurological, exclusive breastfeeding, duration, advantage.

NTI01.08 Helland Ib, Smith L, Saarem K, Saugstad OD, Drevon CA 2003, 2003HEL Maternal supplementation with very-long-chain n-3 fatty acids during pregnancy and lactation augments children's IQ at 4 years of age. Pediatrics 111(1): e39-e44. Keywords: lipid, fatty acid, diet mother, supplement to mother, IQ, development intellectual, development neurological, long term effect.

NTI06.02 Vohr BR, Poindexter BB, Dusick AM, McKinley LT, Wright LL, Langer

2006VOH JC, Poole WK, for the NICHD Neonatal Research Network 2006, Beneficial effects of breast milk in the neonatal intensive care unit on the developmental outcome of extremely low birth weight infants at 18 months of age. Pediatrics 118(1): e115-e123. Keywords: birthweight very low, development intellectual, development neurological, premature, advantage, IQ.

INF05.02 Petryk A, Harris SR, Jongbloed L 2007, Breastfeeding and 2007PET neurodevelopment - a literature review. *Infants Young Child* 20(2): 120-134. Keywords: development neurological, development visual, development psychomotor, development intellectual, review.

INF05.03 Prathanee B, Thinkhamrop B, Dechongkit S 2007, Factors associated 2007PRA with specific language impairment and later language development during early life: A literature review. *Clin Pediatr* 46(1): 22-29. Keywords: development oral, risk factor, protective effect, genetic factors, review.

INF08 Vohr BR, Poindexter BB, Dusick AM, McKinley LT, Higgins RD, Langer 2007VOH JC, Poole WK, National Institute of Child Health and Development National Research Network 2007, Persistent beneficial effects of breast milk ingested in the neonatal intensive care unit on outcomes of extremely low birth weight infants at 30 months of age. *Pediatrics* 120(4): e953-e959. Keywords: birthweight very low, development neurological, dose response, advantage, development general.

INF05.02 Heinonen K, Raikkonen K, Pesonen A-K, Kajantie E, Andersson S, 2008HEI Eriksson JG, Niemela A, Vartia T, Peltola J, Lano A 2008, Prenatal and postnatal growth and cognitive abilities at 56 months of age: A longitudinal study of infants born at term. *Pediatrics* 121(5): e1325-e1333. Keywords: growth, development, development physical, development intellectual, term.

INF05.02 Isaacs EB, Gadian DG, Sabatini S, Chong WK, Quinn BT, Fischl BR, 2008ISA Lucas A 2008, The effect of early human diet on caudate volumes and IQ. *Pediatr Res* 63(3): 308-314. Keywords: nutrition infant, premature, long term effect, IQ, development neurological, development intellectual.

INF05.03 Barbosa C, Vasquez S, Parada MA, Gonzalez JCV, Jackson C, Yanez 2009BAR ND, Gelaye B, Fitzpatrick AL 2009, The relationship of bottle feeding and other sucking behaviors with speech disorder in Patagonian preschoolers. *BMC Pediatrics* 9(66): 1-8 freely available from [www.biomedcentral.com](http://www.biomedcentral.com). Keywords: artificial feeding, development oral, dummy, sucking dummy, sucking thumb, sucking non nutritive, sucking nutritive, questionnaire.

INF05.02 Holme A, MacArthur C, Lancashire R 2010, The effects of 2010HOL breastfeeding on cognitive and neurological development of children at 9 years. *Child: care, health and development* 36(4): 583-590. Keywords: development intellectual, IQ, UK, development neurological.

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