

LEAD Action NEWS

Vol 8 No 3 The journal of The LEAD (Lead Education and Abatement Design) Group Inc. 2001

Incorporating *Lead Aware Times* (ISSN 1440-4966) and *Lead Advisory Service News* (ISSN 1440-0561)
Address correspondence to the Editor, LEAD Action News, c/o The LEAD Group Inc, PO Box 161, Summer Hill NSW 2130
Australia. Ph: (02) 9716 0014, Fax: (02) 9716 9005, Email www.lead.org.au/cu.html Web: www.lead.org.au ISSN 1324-6011

Worst Case of Lead Poisoning

Table of Contents

<i>Blood Lead Levels Below "Acceptable" Value Linked With IQ Deficits, According To New Study</i>	2	<i>"Quotable Quotes"</i>	13
<i>Worst Case Lead Poisoning and Tasmanian Government Inaction</i>	3	<i>Taking The High Rhod</i>	13
<i>HEAVY METALS AND AMINOACIDS - The Chemical Background of Lead Poisoning</i>	10	<i>Product Recalls</i>	14
<i>Lead Poisoning Probable Cause Of Beethoven Illnesses</i>	12	<i>Australian Recall of the Lead Soldier Collection</i>	14
<i>Chemical Study of Hair Leads to Long-Sought Answers</i>	12	<i>Dollhouse Furniture Sets Recalled in the US</i>	14
		<i>America Under Attack - Email to the Pentagon</i> -.....	15
		<i>DONATION FORM for LEAF & SUBSCRIPTION FORM for LEAD Action News</i>	16

From the Editor

Elizabeth O'Brien

Tasmanian Government Inaction on Lead Poisoning - Case Study

This edition finally brings into the light of day, what is arguably the worst case of government inaction in response to a known case of childhood lead poisoning in Australia. This, hot on the heels of US research about staggeringly high IQ loss at low blood lead levels.

We also are printing a very interesting explanation of the chemical basis of lead poisoning from one of my favourite clients of the Lead Advisory Service Australia - Dr Neville Gibson.

Apologies for lateness! Literally all the energy of myself, The LEAD Group Committee and all our wonderful volunteers has been forced into fund-raising efforts to save the Lead Advisory Service Australia (LASA). There is no good news to date, just dead-ends from US AID and World Learning in relation to funding The LEAD Group to mentor the development of the Pollution

Information Centre Romania. Also, we've had no response from the Petre Foundation about our proposed Global Lead Advice and Support Service (GLASS).

We've had some very kind offers from individual LASA clients who generally are staggered to hear that the four staff here are entirely donating their time spent on handling the thousands of calls to LASA that we receive each year. I'd especially like to thank Pamela Reading, Gina Krohn, Tony Healy and Dharmachari Sadhaka for their kind thoughts and deeds.

I hope you all have an energetic **International Lead Poisoning Awareness Week - Saturday, 20th October to Friday 26th October, 2001**, and an especially productive **International Lead Poisoning Awareness Day - Saturday, 20th October, 2001**. WHAT CAN YOU DO TO HELP???

Disclaimer

The views expressed in *LEAD Action News* are not necessarily those of The LEAD Group Inc. *LEAD Action News* does not purport to express Federal, NSW or South Australian Government views or policy on lead.

Reprinting articles:

We encourage further publicity for our articles, but it is essential that you contact the editor before reprinting, especially since we may not own copyright. Phone Elizabeth O'Brien on (02) 9716 0014.

Acknowledgments:

Special thanks to David Ratcliffe for compilation, Carol Bodle for proofreading and to Paul Spencer for his editing.



Press
Release

2001 PAS Annual Meeting

Blood Lead Levels Below "Acceptable" Value Linked With IQ Deficits, According To New Study

Bruce Lanphear, MD, MPH
Children's Hospital Medical Center , Cincinnati

Contact: Jim Feuer, ph 0011 513-636-4420

Lead is toxic at concentrations in the blood that were previously thought to be harmless, according to a new study by a physician at Children's Hospital Medical Center of Cincinnati.

The study, to be presented at 1 p.m. April 30 at the Pediatric Academic Societies annual meeting, shows that IQ declines as blood lead rises in children who have a blood lead concentration lower than 10 micrograms per deciliter, the level currently considered acceptable. The lowest blood lead concentration associated with adverse effects has not yet been defined.

"This indicates that millions more children in the United States than previously thought endure the detrimental effects of lead exposure," says Bruce Lanphear, M.D., M.P.H., a physician in Cincinnati Children's division of General and Community Pediatrics and the study's main author.

Dr. Lanphear and his research colleagues studied 276 6-month-old children born in five hospitals in Rochester, NY. They measured blood lead at 6, 12, 18, 24, 26, 48 and 60 months of age. A standard IQ test (Stanford-Binet IV) was administered when the children reached 60 months. The researchers found an inverse relation of blood lead concentrations and IQ.

"Not only is there an adverse affect below currently acceptable levels, but the decline in IQ for each microgram per deciliter increase in

blood lead is greater at lower levels," says Dr. Lanphear. "Among all children studied, there was on average a 5.5 point reduction in IQ for every 10 micrograms per deciliter increase in blood lead. But for children who had blood lead less than 10 micrograms per deciliter, there was an 11.1 point reduction in IQ for the initial 10 microgram per deciliter increase in blood lead."

Before 1970, lead poisoning was defined by a blood lead greater than 60 micrograms per deciliter. Since then, levels considered acceptable declined several times, before reaching the current 10 micrograms per deciliter standard. Under this definition of lead toxicity, one in every 30 children in the United States is adversely affected by lead exposure, including lowered intelligence, behavioral problems and diminished school performance.

"Despite the dramatic decline over the last two decades in the prevalence of children who have blood lead concentrations above 10 micrograms per deciliter, these data underscore the increasing importance of prevention as the consequences of lower blood lead concentrations are recognized," says Dr. Lanphear. "The results of our study argue for a reduction in blood lead levels considered acceptable to half of what they are now, or even lower. They also argue for a policy shift toward primary prevention - the elimination of residential lead hazards before children are unduly exposed."

Worst Case Lead Poisoning and Tasmanian Government Inaction

By Elizabeth O'Brien, Manager, Lead Advisory Service Australia
Edited by Paul Spencer, activist and roving volunteer

The Background

The National Health and Medical Research Council (NHMRC) has set as a goal "for all Australians [to have] a blood lead level below ten micrograms per decilitre ($\mu\text{g}/\text{dL}$) [0.48 micromoles per litre ($\mu\text{mol}/\text{L}$)]" and stated: "there is particular urgency in reaching this level in children aged one to four years because of the adverse effects of lead exposure on intellectual development."

In November 1993, the "NHMRC set target dates for the reduction of lead in all Australians to less than $15 \mu\text{g}/\text{dL}$ ($0.72 \mu\text{mol}/\text{L}$) by the end of 1998..." and listed recommended responses in relation to individual children (all ages) with a blood lead concentration of: $\geq 25 \mu\text{g}/\text{dL}$ ($1.20 \mu\text{mol}/\text{L}$)" as follows:-

- Obtain a detailed medical history and examination with particular focus on possible adverse effects based on exposure history and blood lead level;
- Undertake personal exposure evaluation including environmental sampling as indicated;
- Arrange remediation / abatement of exposure source;
- Provide personal education and counselling on exposure control for guardian(s) and child, as indicated. If exposure control not possible, **consider relocation.**
- Re-test in about 3 months to assess the effectiveness of actions taken.

The NHMRC also listed the following "recommended responses in relation to communities where representative surveys of blood lead concentrations in children aged 1-4 years show... $>5\%$ above $15 \mu\text{g}/\text{dL}$ ($0.72 \mu\text{mol}/\text{L}$):-

- Investigate lead sources in the affected community;
- Develop environmental management plans with effective strategies for community involvement in design and implementation;
- Plan to:

- particularly target sub-populations in the community showing blood lead levels above $15 \mu\text{g}/\text{dL}$;
- include specifically prepared community education programs;
- set a time-frame for on-going re-assessment of community blood levels."

In 1994, the Commonwealth Environment Protection Agency (CEPA) published *Lead Alert: A Guide for Health Professionals* by Dr Garth Alperstein [a member of The LEAD Group's Technical Advisory Board], Dr Roscoe Taylor and Professor Graham Vimpani [also a member of The LEAD Group's Technical Advisory Board] and a copy was distributed to every doctor in Australia.

In addition to publishing all of the above information about NHMRC goals, recommendations and targets, under the heading "Clinical Assessment" the following was stated:-

"Clinical assessment by a pediatrician should be carried out for any child with a level greater than $1.20 \mu\text{mol}/\text{L}$ ($25 \mu\text{g}/\text{dL}$), to check particularly for developmental delay, hearing deficits, speech problems or neurological abnormalities.

"Treatment of iron deficiency, and other nutritional measures to combat deficiencies in calcium, zinc or ascorbate will help to reduce uptake of lead...."

Under the heading "Environmental Assessment", the following was stated:-

*"...preventing exposure is of paramount importance. In most cases, management of the child with an elevated blood lead level will involve discussing possible sources of lead in the child's environment with the parents. **Removal of the source of exposure is the most important aspect of treatment.**"*

The "Protocol for managing children found to have elevated blood lead levels" includes:-

"Lead levels 1.20 - 2.61 ($\mu\text{mol/L}$) (25 - 54 $\mu\text{g/dL}$) - Retest in 0.5 - 3months."

In 1995, the Tasmanian health department issued *Schedule 3 - Diseases to be Notified Under Regulation 4(3)(A) by a Person Superintending or in Charge of a Laboratory* which listed "lead poisoning (whole blood lead level greater than 15 $\mu\text{g/dL}$ or 0.72 $\mu\text{mol/L}$)" as a notifiable disease.

In 1997, the Tasmanian Public Health Act 1997 - Section 49 states "The Director [of Public Health] is to ... provide a council with a report on the occurrence of ... any notifiable disease within

its municipal area." Section 54 states that "The Director, by public notice, may declare - ... that there is an outbreak of a notifiable disease in an area."

The undated "*Manual for Local Government*" published by Tasmania's Public and Environmental Health Service states that "An outbreak may be defined as two or more cases of the same illness (including human pathogens or contaminants...) clustered in time and/or place."

The Oates' Story

While 6% of children in Queenstown between the ages of 1-4 had blood lead levels above the individual intervention level of 15 $\mu\text{g/dL}$, one child was more than double.

In November 1996, the Oates family moved from a mining lease to the large 4 bedroom house in Montgomery St, Gormanston. According to Denise Oates, the previous residents had had a child who died at the age of 18 months, of cot death, while living at the house and their daughter, born in 1986, had slow learning problems.

At the time of moving to Gormanston, Denise and Nigel Oates had three young children: Raymond aged 10, Adrian aged 2 years 8 months and Makayla aged 1 year 6 months. Tyler Oates was born on the 7th February 1997.

Around November 1996, it was determined that Makayla Oates had only one kidney working (as the other had not developed when Makayla was born premature) and she was anaemic. She was treated with Fergon (iron supplement).

Information Gathered and Ignored

Adrian Oates' 1st blood lead test result was 31.7 $\mu\text{g/dL}$. The repeat result was 33.3 $\mu\text{g/dL}$. Lead concentrations equal to or greater than 15 $\mu\text{g/dL}$ are a notifiable disease. **In opposition to the NHMRC guidelines listed above, Adrian was not referred to a paediatrician on the basis of this blood lead result and no environmental assessment was carried out.**

According to John Devlin, Environmental Health Officer at West Coast Council, **the Director of Public Health did not notify the West Coast council of this blood lead result** (*pers comm. with E O'Brien 28 Sep 2000*). The lower of the two results was later reported in the Menzies Centre

The family always used to eat the eggs from their chooks, but by the middle of 1997 all the chooks that they had brought to the house when they moved in, had died, one at a time, of unknown causes. The chooks had contact with the soil, as did a number of rabbits and 4 guinea pigs that all died of unknown causes within 6 months of moving to Gormanston.

Over the coming three years, the family lost a huge number of pets to unexplained deaths, including geese, guinea pigs, nearly all of 100 pigeons and a galah. The animals all had contact with the soil, the aviary birds through being given grass pulled out by the roots.

According to Denise Oates, Adrian and Makayla and her grandson Alex were blood lead tested in December 1997 for a survey carried out by the Menzies Centre for Population Health Research. She says that her son Tyler was said to be too young to be included in the survey - he was 10 months old.

study but the summary of the study presented to the West Coast Council on 21 June 2000, did not specifically mention this result or give the number of children with a notifiable blood lead level.

Makayla Oates' 1st blood lead test result was 9.5 $\mu\text{g/dL}$. Denise's grandson (her daughter's son) Alex had a blood lead level of 18 $\mu\text{g/dL}$ according to Denise but Denise's daughter was not notified or given any information on lowering the blood lead level. Alex was required to have another blood lead test in three months time.

Denise Oates says that the 1st blood lead test on Adrian was so high that a second test was carried out. Adrian was re-tested (March 1998) but

she was apparently not notified of the result or telephoned with advice. Adrian Oates' 2nd blood lead test result was 32.1 µg/dL. **In opposition to the NHMRC guidelines listed above, Adrian was not referred to a paediatrician on the basis of this blood lead result and no environmental assessment was carried out.**

On the 2nd April 1998, Dr Mark Jacobs, Director of Public Health issued Public Health Act 1997 Guideline No. 1 "Notifiable Diseases, Human Pathogenic Organisms and Contaminants" which listed "Lead poisoning (whole blood lead level greater than 15 µg/dL or 0.72 µmol/L, not related to an occupational exposure)" as a disease to be notified by a laboratory within one working day.

Adrian was referred to a paediatrician because Adrian's mother was concerned about his difficult behaviour. The paediatrician was concerned about Adrian's delayed speech and ordered some blood tests. He included a lead test after Denise told him that Adrian had had high blood lead levels in 1997. Adrian's 3rd blood lead (PbB) test was on the 20th January 1999 and the result was 41.7 µg/dL. The paediatrician ordered repeat blood lead tests for Adrian every 3 months after this. The results of the family's subsequent

Environmental Assessment?

In March 1999, a Medical Officer from the Tasmanian Dept of Health and Human Services attended the Gormanston property to collect the first soil, earth, gravel and vacuum cleaner dust samples for lead analysis.

The bare soil results ranged from 440 to 840 parts per million (ppm). The pile of earth at the rear of the house outside the fence had 70 ppm. The gravel at the side of the road in front of the house adjacent to an abandoned car had 43 ppm lead and the vacuum cleaner dust had 610 ppm lead. A soil lead level of 300 ppm is set as the level for further investigation. A water sample collected from tap was reported as containing 0.005 milligrams per litre [mg/L] of lead (Drinking Water limits are 0.01 mg/L).

On 13th April 1999, the Medical Officer faxed the above soil and dust results to Denise Oates and advised her that he would "be visiting on Tuesday 18 April to do some more sampling because Adrian's blood leads have not been falling enough."

The Medical Officer wrote to the Oates family's paediatrician to report the analysis results for samples collected on 17 March 1999,

blood lead tests are summarised here and appear in the graph below.

<u>13 Apr 1999</u>	Adrian's 4 th PbB result = 35.6 µg/dL.
<u>15 Jun 1999</u>	Makayla's 2 nd PbB result = 38.6 µg/dL.
<u>5 Jul 1999</u>	Adrian's 5 th PbB result = 38.7 µg/dL.
<u>4 Aug 1999</u>	Raymond's 1 st PbB result = 18.3 µg/dL.
<u>4 Aug 1999</u>	Tyler's 1 st PbB result = 20.0 µg/dL.
<u>9 Sep 1999</u>	Adrian's 6 th PbB result = 28.8 µg/dL.
<u>12 Jan 2000</u>	Adrian's 7 th PbB result = 32.6 µg/dL.
<u>29 Feb 2000</u>	Makayla's 3 rd PbB result = 28.1 µg/dL.
<u>2 Jun 2000</u>	Adrian's 8 th PbB result = 40.0 µg/dL.
<u>2 Jun 2000</u>	Denise's 1 st PbB result = 3.0 µg/dL.
<u>24 Jul 2000</u>	Tyler's 2 nd PbB result = 22.6 µg/dL.
<u>2 Aug 2000</u>	Adrian's 9 th PbB result = 36.6 µg/dL.

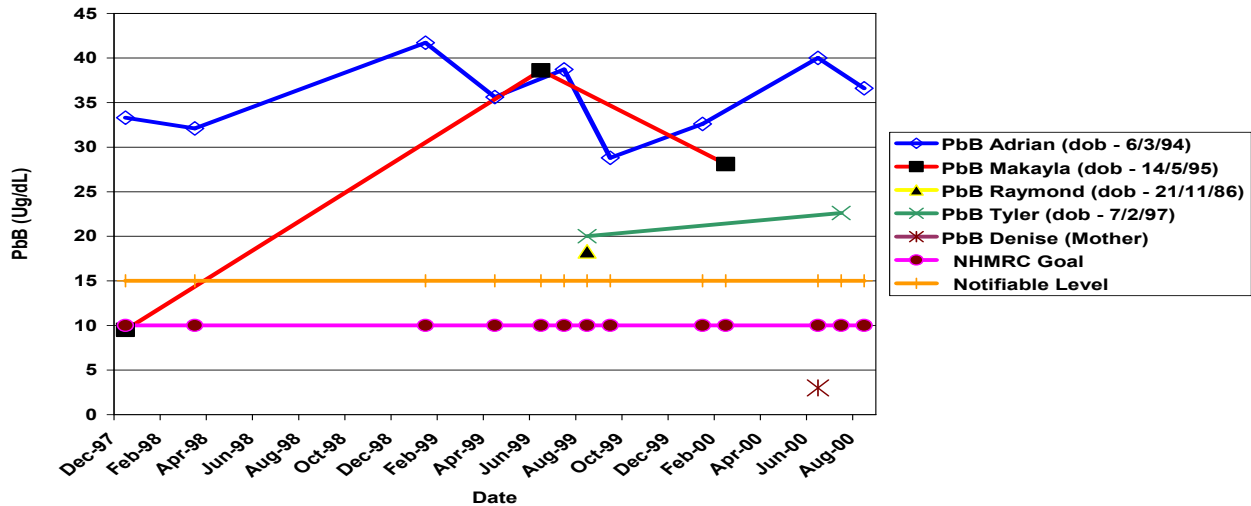
As required by regulation, a copy of the results of all the above tests (except for Denise's acceptably low result) were apparently sent to the Director of Public Health. According to John Devlin, Environmental Health Officer at West Coast Council, **the Director of Public Health did not notify the council of any of these blood lead results** (*personal comments 28 Sep 2000 and 16 Oct 2000*).

and commented "The results in the immediate backyard area are higher than "normal" background soil readings but not high enough on their own to account for a blood lead of 30-40 µg/dL. Mrs Oates will also be getting a copy of these results and some general information on measures to control lead exposure."

At around this time, according to Denise Oates, the paediatrician said that the house was too lead contaminated for a baby [Tyler was two years old]. The Medical Officer visited for the second time "to further examine possible lead sources and control measures"

In June 1999, the study called *Lead Levels in Children: A Survey of Blood Lead Concentrations in Children Living in West Coast Tasmanian Communities*, prepared by the Menzies Centre for Population Health Research was published and apparently a copy was provided to Public Health but not to West Coast Council.

Blood Lead Levels Oates Family December 1997 to August 2000



According to Denise Oates, soil was replaced in the yard of the Oates' home in the Spring of 1999. Nigel Oates (Denise's husband and the children's father) borrowed equipment to excavate the contaminated soil himself. Denise had to drive 200 kms to Burnie to buy some grass seed to put in the new soil.

In May 2000, the Medical Officer obtained the following analysis results from the second lot of samples from the Oates' house and yard:-

- ◆ New soil laid in 1999, rear area, inside fence - 91 ppm.
- ◆ Soil, rear area, outside fence 409 ppm ("soil investigation level of 300")
- ◆ Vacuum cleaner dust - 626 ("this does not have any level set")
- ◆ Paint, cream, underside eaves of roof - 3,210 ppm and green corrugated iron fence - 3,170

On the 23rd of February 2000, Class Action papers were issued to Pasmenco by solicitors Coleman and Greig in Sydney.

On 16th May 2000, the Medical Officer wrote to West Coast Council's General Manager to suggest that rather than discuss the Menzies Centre survey at that day's council meeting, the Menzies Centre could supply a summary of the survey for Councillors to discuss at the June meeting. "Representatives of the Menzies Centre and the Public and Environmental Health Service will attend the [June] meeting to describe the survey as well as discuss follow-up action and answer questions."

That evening a motion moved by Cr Gerrity and seconded by Cr Stebbings, was passed at the West Coast Council meeting:-

ppm ("Paint lead levels for use on domestic housing have been decreasing, from 10,000 to 2,500 in 1993, to 1,000 ppm in 1998").

On the 14th May 2000, an article called "*Coast kids in health scare*" by Libby Lester in the Sunday Tasmanian section of the Mercury newspaper revealed that "The latest [Menzies Centre] study was due to be released earlier this year but was withdrawn when a class action against lead miner Pasmenco was launched interstate. It is understood the Menzies Centre was concerned the timing of the release could lead to its independence being questioned."

Libby Lester also wrote "according to Cr Gerrity, the practice of using mine tailings of crushed metal for roads and footpaths in mining towns may have led to contamination..."

Local Council

1. That Council instructs the General Manager to write to the Minister for Health, the Department of Health, the Mines Department and the Menzies Centre for Population Health Research, advising that there are concerns within the West Coast Community about the higher than average level of lead found in some children and requesting information on contaminated sites and on the testing for contamination of heavy metals throughout the West Coast area.

2. That an invitation be extended to representatives of the Health Department and the Menzies Centre for Population Health Research to attend the next Council Meeting to better inform Councillors and the community about this issue.

The following day, Paul West, General Manager of West Coast Council wrote to the Mines Department,

requesting information on lead contaminated sites located throughout the West Coast municipal area. **Unfortunately, Mr West did not request "information on the testing for contamination of heavy metals throughout the West Coast area"** as instructed by Council.

On the same day, Mr West also wrote to the Hon Judy Jackson, MHA, Minister for Health and Human Services, advising that there were concerns within the West Coast Community about the higher than average level of lead found in children. **Unfortunately, Mr West did not request "information on contaminated sites and on the testing for contamination of heavy metals throughout the West Coast area"** as instructed by Council.

Some four weeks later, Mr West wrote to Mr Jim Lockley, Senior Environment Officer, Environment and Planning Division, Department of Primary Industry, Water and Environment, requesting information on lead contaminated sites located throughout the West Coast municipal area. **Unfortunately, Mr West did not request "information on the testing for contamination of heavy metals throughout the West Coast area"** as instructed by Council.

Dr Tony Brown, Executive Director, Mineral Resources Tasmania, responded to the letter from Paul West to the Mines Department with the following:-

"Thank you for your letter of 17 May regarding lead contaminated sites on the West Coast.

"Under the present Government structure all such issues as you raised in your letter are dealt with by Mr Jim Lockley, Senior Environment Officer, Environment and Planning Division of the Department of Primary Industry, Water and Environment. Mr Lockley can be contacted on 1300 368 550."

Unfortunately, this letter was not filed by Paul West in the lead file at Council and he did not bring this response to the attention of the Council.

The 21st June 2000 West Coast Council meeting included discussion of a 2 page summary of the Menzies Centre Study and overheads entitled "Lead - Health Aspects; Sources in the Environment; What Can I Do?; Following on from the Menzies Study; and Further Information". At the meeting Denise received from Councillor Gerrity the orange pamphlet [this was the first time she had seen it] that the Menzies Centre claim to

have sent out to all parents of children blood lead tested for the study.

The orange Lead Alert pamphlet is a two page general introduction to lead published in 1995, and it also does not mention the advisability of using HEPA vacuums, although the Commonwealth Lead Alert booklet published in 1999 does recommend them. Once carpet is contaminated with lead however, no amount of vacuuming will de-contaminate it and removal of the carpet is recommended.

The Lead Alert booklet states: "USE THE RIGHT TOOLS AND EQUIPMENT FOR THE JOB: A High Efficiency Particulate Air (HEPA) filter fitted to a suitable commercial vacuum cleaner, while more effective than ordinary cleaners, is not particularly effective for removing lead dust from carpet. Only a HEPA filter can capture the small lead particles. Other filters and ordinary vacuum cleaners are dangerous because they allow lead dust out through their exhausts and spread it more widely." [page 11]

According to the Menzies study summary tabled at the Council meeting: *"The fact that the mean blood*

Denise borrowed an industrial steam cleaner from the High School and used it to clean all the carpets. She also followed advice given to vacuum frequently.

lead in a non-lead mining community [Queenstown] was as high as the lead mining communities [Rosebery and Zeehan] suggest that it is not exposure to lead mining that is responsible for the elevated lead levels in Rosebery. Rather, it may be something associated more generally with mining or the lifestyle of the mining communities on the West Coast."

Lead and other heavy metal contamination of soils and dusts is associated with mining of lead, zinc and copper and the Medical Officer had taken soil [and possibly dust and water] samples in nearly all the homes of the 9 children with notifiable blood lead levels, yet this lead contamination data was not presented at the Council meeting, nor presented to Council in response to the letters written as a result of the May council meeting lead motion seeking information on soil heavy metal contamination from the Mines Department and health and environment authorities.

Awaiting Relocation

In June 2000, the Burnie Service Centre, Housing Section, Tasmanian Dept of Health and Human Services told the Oates that the Dept would find the Oates family a new house. A three bedroom house was offered for the family of 7 but the family requested a 4 bedroom house close to special schooling for Adrian, and with sufficient space for pet birds, in a rural area with no neighbours. As of 28 October 2000, no other house had been found or offered to the family.

The Burnie Advocate published an article called *"Putt slams 'inaction' on lead"* which stated "Acting Health Minister, Fran Bladel said the [Oates] family was now being assisted out of their house. 'Arrangements have been made for the family to move into a Housing Tasmania house in Queenstown in the short term'."

On 30th June 2000, Warren Jones, Director of Environmental Management, Environment, Planning and Scientific Services [EP&SS] Division of DPIWE, responded to the letter that Paul West had written to Jim Lockley on 13 Jun 2000 (see above), and stated, in part:-

"At present a formal Contaminated Sites Registry does not exist in Tasmania. When this register is created it will contain all properties where an environment protection notice (EPN) has been issued for the assessment or remediation of contamination under section 44 of the Environmental Management and Pollution Control Act [EMPCA] 1994. Currently there are no properties in the West Coast Council that have EPNs issued for lead contamination.

"It is understood that the West Coast Council is currently exhibiting a new planning scheme. In this respect, EP&SS recommend that the scheme include standards dealing with the conversion of potentially contaminated sites (e.g. tailings dumps, service station sites etc) to a sensitive use. A schedule for potentially contaminated land that is applicable for planning schemes based on the Model Framework for Planning Schemes has been created by this Division. A copy of this schedule is attached. For further information please contact Jason Miller.

Unfortunately, this letter was not filed by Paul West in the lead file at Council and he did not bring this response to the attention of the Council.

On 1st October 2000, The LEAD Group wrote to the Tasmanian Health Minister requesting copies of the Menzies Centre study and summary as well as the education package specifically tailored to the Queenstown community.

A series of recommendations from the Lead Advisory Service was included as an attachment, including:-

- ◆ redouble efforts to find the Oates family a lead safe house near to special schooling and speech therapy now needed by Adrian;

- ◆ buy the family a HEPA vac and organise (as a minimum) Elite Maintenance Service to clean their carpets,
- ◆ do follow-up blood testing of all the children with notifiable blood lead levels discovered through the Menzies Centre study and test their siblings as well, etc.

On 5th October 2000, Adrian Oates, 6 years old, was expelled from school for one week because he was throwing chairs and threatened to kill someone at school. According to Denise Oates, during the week-long expulsion, Adrian was chasing after his little brother one afternoon outside the school grounds and he had taken on a dozen high school students after he was taunted by them and kicked in the backside by one of the boys. Denise says that the school never tells her how problems start and they say she should go to the police to complain about bullying at school.

Adrian was again sent home from school for uncontrollable behaviour when he returned to school after his one week expulsion. On one occasion at around this time, Adrian slapped one of his teachers in the face. The school acknowledges that Adrian needs special schooling but the closest special school is 200 km away.

At home, Adrian slashed all the kitchen chairs with a knife and broke two windows. His speech is difficult for people to understand yet there is no speech pathologist in the area. The following day, Mike Plaister again told Denise Oates that no house had been found for the Oates family.

Peg Putt, Tasmanian Greens MHA, distributed a media release entitled "INACTION ON LEAD CONTAMINATION CONDEMNED - Urgent Need to Re-locate Affected Family [the Oates family]". The release states [in part]:-

"The protestations and careful use of statistics to gloss over the lead poisoning outbreak in Queenstown amount to a virtual cover-up by government."

The media release also called on the Tasmanian government to "investigate lead sources in the affected community [Queenstown]", or, in other words, to follow

the National Health and Medical Research Council's guidelines since Queenstown had 6% of 1-4 year old children above the individual intervention blood lead level.

On the 17th October 2000, Mrs Jackson, Tasmanian Health Minister, stated in Parliament that: "Mr and Mrs Oates say they are not eligible for public housing because of their high income level but I recall we have agreed that we will purchase their home because it is a property that will be difficult to sell... there was a large amount of lead in the carpets of that house. I am not an expert, so I am not sure why that was the case - " Ms Putt answered: "Because the whole site where the house is, was contaminated and they walk in and out the door." Mrs Jackson continued: "- but they were given some information about

how to clean those carpets; that was not followed and therefore that problem has persisted in that particular house." Ms Putt responded: "She vacuums three times a day - talk to her."

According to Denise, Mike Plaister of Housing Tasmania told her that they were not eligible for public housing, rather than the other way around. She also asks "how can Mrs Jackson say that I was given information on how to clean the carpets that was not followed? I can prove that I borrowed the steam cleaner but can Mrs Jackson prove that I was given the right advice and did Dr Bicevskis [of Public Health] come and test whether his predicted fall in carpet dust lead level has occurred? No - he did not."

Parliamentary Representation

Also that day, Liz Canning of the Department of Primary Industries, Water and Environment, together with Dr Bicevskis wrote a brief for Mrs Jackson (*pers comm with Liz Canning 16 Nov 2000*) which stated, among other things:

Approximately twenty samples [in total] of soil, dust and water were taken in the homes and yards of the families with elevated lead in blood levels [from the Menzies Centre West Coast study]. These results did not indicate a clear source of lead in the local environment, but a number of families were found to be living in homes with exposed lead-based paint, a known cause of elevated blood lead levels in children."

Without saying whether investigation of heavy metal contamination of soil was being carried out on the West Coast, the brief states that "A number of [environmental] studies are being carried out on the west coast as follows: National Pollutant Inventory, Savage River Mine, and Mount Lyell Mine". According to Liz Canning (*pers comm 16 Nov 2000*) there is no data on heavy metals in soils other than those included in the 20 samples mentioned above. Mark Dawson, Environmental Officer, Copper Mines of Tasmania [the operators of the copper mining at Queenstown] stated that his company does not have any soil monitoring

data at all and that for the current mining activities, they have an agreement with the Tasmanian government that their mining company is not responsible for any previous contamination from copper mines in the area. He also said that Wojciech Grun of Mineral Resources Tasmania [previously called the Mines Department] has done some soil samples for a map he is producing on acid mine drainage (*pers comm 16 Nov 2000*).

As an example of the inadequacy of the National Pollutant Inventory (NPI) data, the only heavy metal emission listed for Copper Mines of Tasmania on the NPI website (see www.environment.gov.au/epg/npi/) is that in June 1999 (the only month for which any data is reported), the mine emitted 0.0062 kg of cobalt and compounds to the air. There is no report for any heavy metals emitted to land or to water.

Yet the ministerial brief's RECOMMENDATION is that "The above studies indicate that investigation of heavy metals in the environment is occurring on the West Coast. The human health studies have not indicated the need for further community wide environmental assessment."

Media Attention

20 Oct 2000 The Editor of the Western Herald pleaded: one Queenstown child "has such high [blood lead] levels his life has been ruined and surely it is not asking for too much for the government to take every precaution to ensure our children are not left to play in a community that is making them sick."

27 Oct 2000 a Western Herald letter to the editor from GP and local Councillor Dr Gerry McGushin, says "None of the children [in the West Coast study] had a [blood lead] level greater than 50 [$\mu\text{g}/\text{dL}$] which is the medically recognised figure where lead poisoning can take effect."

Conclusion

It may take a court case to ensure that the Public Health Director notifies council when he receives notifiable blood lead results in the future. Adrian was continually lead poisoned for 3 years while the Tasmanian Health Department stood back and watched. At the same time, his younger sister and brother also became lead poisoned. The persistent

efforts of The LEAD Group over a period of 8 months finally resulted in February 2001 in the family being moved from the copper mining area where the children were poisoned, to a lead-safe house. Adrian is now undergoing chelation therapy and attends a special school to help deal with his learning behaviour problems.

HEAVY METALS AND AMINOACIDS - The Chemical Background of Lead Poisoning

By Dr Neville Gibson, MSc, PhD

The neurotransmitter serotonin is responsible for putting us to sleep at night and keeping us in a good mood during the day. It is produced in the brain from the essential aminoacid tryptophan and then partially decomposed by enzyme-catalysed reactions as follows:

Tryptophan \rightarrow (Tryptophan hydroxylase) \rightarrow 5-Hydroxytryptophan \rightarrow (Aromatic amine acid decarboxylase) \rightarrow Serotonin \rightarrow (Monoamine oxidase) \rightarrow 5-Hydroxyindoleacetic acid.
(Clearly the Specific Serotonin Re-uptake Inhibitor or SSRI antidepressants like Prozac depress the final step).

\rightarrow = Converts to

() brackets indicate the catalyst

The enzyme involved in at least the first (rate determining) reaction has been shown to be a metalloenzyme with magnesium at the active site (1, 2, 3, 4, 5). Aminoacids are all bidentate ligands, so a magnesium ion, which is six-covalent, will bind to two aminoacid residues of the enzyme to fold it to form an appropriate cleft, and then be able to weakly bind the tryptophan so it can undergo the catalysed

hydroxylation. Tables of stability constants give $\log K_1 = 3.5$ for magnesium to glycine (which can be taken as a representative aminoacid). In general, for a bidentate chelate $\log K_2 = \log K_1 - 1$ and $\log K_3 = \log K_1 - 2$ (very roughly) so the tryptophan will be held with a bond of strength $\log K_3 = 1.5$, weak enough to release the 5-hydroxytryptophan once formed. The magnesium appears to be present as the ATP adduct, and calcium ($\log K_1$ to glycine = 1.4) is also involved. The stability constant for lead to glycine is given by $\log K_1 = 5.5$, so the bond from lead to an aminoacid is approximately one hundred times stronger than that from magnesium. Thus lead ions can be expected to displace the magnesium ions from the enzyme. Unlike magnesium, lead is four-covalent, so after it has bound to two aminoacid residues of the enzyme it cannot bind to tryptophan at all, so the synthesis of serotonin is blocked, and if enough lead ions are present, depression would be expected to result. This has been shown to be the case (6, 7, 8, 9, 10). Cadmium, with a stability constant to glycine of $\log K_1 = 4.5$ and a covalency of four, would be expected to behave similarly to lead.

There are many enzyme-catalysed reactions in the body, of which the above is but one, albeit a topical one. Many have magnesium at the active site, and so would be blocked by lead in the same way.

Another aminoacid-containing molecule in our body which it would seem interesting to consider is phosphatidylserine (PS). This molecule consists of a head of a serine (hydroxyglycine) group joined to a body of a phosphate group and a glycerol residue, in turn joined to a tail of two fatty acid groups. The function of PS is to bridge the synapse between two neurons (of which there are very many) in the brain, thus enabling memory, concentration, and all cognitive processes. I have not seen any description of just how this bridging is effected at the molecular level, but it is known that PS controls the magnesium/calcium balance and that the serine head is the active part of the molecule (11), so it is reasonable to assume that the serine head is in dynamic equilibrium with magnesium and calcium ions. If, however, lead ions entered the system, it would appear from the first paragraph they would bind strongly and effectively irreversibly to the serine heads, displacing both magnesium and calcium ions and blocking the cognitive processes. This seems to agree with literature from the Lead Advisory Service which quotes research work which reports that children with a blood lead reading above 15 micrograms/dL can have an IQ reduced by up to 5 units.

It would be very interesting to investigate whether lead (and cadmium) are implicated in the condition ADHD in children, as it has been shown experimentally that ADHD children behave quite normally if given phosphatidylserine(11).

REFERENCES; BEAVY METALS AND AMINOACIDS.

- (1) Lovenberg, W., Kuhn, D. M. "Role of hydroxylase cofactor in serotonin biosynthesis. *Psychopharmacology Bull.* 1978 Oct. 14 No.4, pp.44-46.
- (2) Kuhn, D.M., O'Callaghan, J.P, Juskevich, J, Lovenberg, W. "Activation of brain tryptophan hydroxylase by ATP-Mg²⁺ dependence on calmodulin." *Proc. Nat. Acad. Sci.*, Aug. 1980,17-, No.8, pp. 4688-4691.
- (3) Kuhn, D.M., Vogel, Lovenberg, W. "Ca-dependent activation of tryptophan hydroxylase by ATP and Mg." *Biochemical and Biophys. Res. Comm.* 30 May 1978, No.2, pp. 759-766.
- (4) Hamon, M., Bourgoin, S., Hery, F., Siinmonet, G. "Activation of tryptophan hydroxylase by ATP, Mg and Ca." *Molecular Pharmacology*, Jan. 1978, 14 No. 1, pp. 99-110.
- (5) Yamaguchi, T., Fujisawa, H. "Regulation of rat brainstem tryptophan 5monooxygenase. Calcium-dependent reversible activation by ATP and Mg." *Archives of Biochemistry and Biophysics*, Nov. 1979,MNo. 1, pp. 219-226.
- (6) Silbergeld, E. K. (1992). "Neurological perspective on lead toxicity" in "Human Lead Exposure" ed. H. L. Needleman, CRC Press.
- (7) Matte, T. D., Landrigan, P. J. & Baker, E. L. (1992). "Occupational Lead Exposure" in "Human Lead Exposure" ed. H. L. Needleman, CRC Press.
- (8) Werbach, M.F. (1997). "Foundations of nutritional medicine." Third Line press, Tarzana, California.
- (9) Needleman, H. L., Riess, J. A., Tobin, M. J., Biesecker, G. E. & Greenhouse, J. B. "Bone Lead Levels and Delinquent Behavior". *JAMA*, Feb.7,1996,2U No.5, pp.363404.
- (10) Frumkin, H. & Gerr, F. "Dimercaptosuccinic acid in the treatment of depression following lead exposure". *Am. J. Ind. Med.* 1993 Dec. 24: 6 pp.701-706.
- (11) Parris M. Kidd, in lecture on video "Phosphatidylserine" made by Stephen Hunter Pty., Ltd., Ingleburn.

Lead Poisoning Probable Cause Of Beethoven Illnesses

Chemical Study of Hair Leads to Long-Sought Answers

The Health Research Institute and Pfeiffer Treatment Center
1804 Centre Point Circle
Naperville, Illinois 60563

[Source: <http://www.sjsu.edu/depts/beethoven/hair/hairtestpr.html>]

For further information, contact:

Nettie Casarez, PCI, 312-558-1770

Emily Gray, Health Research Institute, 630-505-0300

Naperville, Ill.- Oct. 17, 2000. A four-year project to solve the mystery of what caused years of chronic illness of composer Ludwig van Beethoven has ended with an answer: lead poisoning. This toxin also may have contributed to his ultimate death.

A team of researchers expert in chemical analysis found unusually high levels of lead concentration in eight strands of Beethoven's hair, according to project director, William Walsh, Ph.D., who is also chief scientist of Health Research Institute, Naperville, Ill. Walsh, a nationally known expert in hair and chemical analysis, was recruited for the project by American Beethoven enthusiasts Ira Brilliant and Che Guevara, who with fellow American Beethoven Society members Tom Wendel and Caroline Crummey purchased the Beethoven hair in 1994 through Sotheby's in London. Brilliant and Guevara selected Walsh to determine if there were any scientific lessons to be learned from the hair. Walsh held a press conference today to announce the Beethoven findings.

"Beethoven saw physician after physician in search of a cure for his physical ailments," said Walsh. "He suffered from bad digestion, chronic abdominal pain, irritability and depression. It was such a concern to him that years before his death he wrote a letter to his brothers that said, "As soon as I am dead, if Dr. Schmidt is still alive, ask him in my name to discover my disease, and attach this written document to his account of my illness so at least as much as possible the world may be reconciled to me after my death."

Since he died in 1827 at age 57, there has been much speculation but no proof of the cause of his illnesses and death.

"Independent analyses of Beethoven's hair show that he had plumbism-or lead poisoning-which could explain his life-long illnesses. It would also have had an impact on his personality and could have contributed to his death," said Walsh. Walsh doubts that lead poisoning caused his deafness, but research continues in that area and it is hoped that there will be results to report within the year.

That Beethoven's hair survived into the 21st century is, in itself, a fascinating story that began with a young musician, Ferdinand Hiller, clipping it from his head the day after he died. It was then passed from generation to generation of Hillers, and wound up in the hands of a Danish physician, Kay Fremming was given the hair in gratitude for his work on behalf of the Jews. After Fremming's death, his daughter consigned it for sale with Sotheby's and it was purchased by the four Americans. Brilliant and Guevara then launched the research project. The journey of the hair is the subject of a book, *Beethoven's Hair*, published by Broadway Books and written by Russell Martin.

"Everything about this project has been fascinating," said Walsh, who worked with McCrone Research Institute, Chicago, and the U.S. Department of Energy's Argonne National Laboratory, Argonne, Ill., in the analysis. "You can learn a great deal about a person from hair analysis and the labs at McCrone and Argonne

used the most sophisticated technology available in the world today for this project."

In the course of the project, Walsh looked for distinctive trace-metal patterns associated with genius, irritability, glucose disorders and malabsorption and found they were not present in the Beethoven samples. He also looked for the presence of mercury, which would have suggested that Beethoven received medical treatment for syphilis, which was usually treated in that period with mercury compounds, and which some Beethoven scholars suspected he had contracted. No mercury was found.

A DNA analysis also was performed and has defined a significant portion of Beethoven's

genetic make-up. This information will be used in future research studying musical genius. Another analysis indicated that Beethoven avoided opiate painkillers during his long and painful death, keeping his mind clear for his music, which he continued working on until the day he died.

Health Research Institute is a public charity based in Naperville, Ill., and operates the not-for-profit Pfeiffer Treatment Center. The Center is a collaboration between medical doctors and scientists who specialize in body chemistry. The Center treats children and adults with behavior disorders and mental illness.

"Quotable Quotes"

QUOTE 1: A caller to the Lead Advisory Service Australia (LASA) rang to ask the questions: "Why is lead permitted in auto paint if it's so dangerous? Making lead sinkers on the barbecue at home won't hurt will it?" He also made the comment: "You [LASA] get a gold star for phone advice compared to NSW Poisons Info and WorkCover - they had a bad attitude to my question on making sinkers at home."

QUOTE 2: "Australia is relaxed and comfortable about the use of lead while other countries legislate. The key performance indicator for lead awareness is lead bans" says LEAD Group Committee member Roger Kilburn. In August 2001, a number of recalls of leaded consumer products have taken place [if only they were bans!] and one of them was actually in Australia!

Taking The High Rhode

The following item was forwarded by Michael Linke, Editor, Renew Magazine, Alternative Technology Association.

Rhode Island became the first state in 1999 to sue the makers of lead paint, seeking hundreds of millions of dollars to pay for treating lead-poisoned children and removing lead paint from buildings.

At least a dozen other states, counties, and cities are considering filing similar lawsuits, inspired by suits filed against the tobacco industry. Lawyers for Rhode Island are accusing the paint makers of knowing that lead paint was dangerous before it was banned in the U.S. in 1978 and covering up the risk. Nearly

20 percent of Rhode Island kindergarten children have elevated lead levels in their blood, according to a new state report.

Studies conducted this decade have found that two-thirds of the nation's housing still contains lead paint and that 890,000 children ages 1 to 5 have elevated blood-lead levels.

[Source: Providence Journal-Bulletin, Peter B. Lord, 10.14.99]

http://www.projo.com/cgi-bin/frame_it.cgi?URL=/report/pjb/stories/02674001.htm

Product Recalls

Australian Recall of the Lead Soldier Collection

Product: The Lead Soldier Collection: Men at War 1914-1945

Date: 08/08/2001

Supplier: Gordon and Gotch Pty Ltd

Defect details: Due to the high lead content of the soldiers this product could be a health hazard particularly to children.

Consumer action: Remove the soldiers from children's reach and return the soldiers to the place of purchase for a full refund.

Alternatively you can return the soldiers and place an order with your newsagent for an identical replacement soldier made of Fine Pewter, available on 20 August 2001. This series will then continue with pewter soldiers from issue 8. For further information telephone 1800 650 666 for Newsagent Customers, or (02) 9979 0222 for Subscription Customers.

Market Coverage: National [Australia]

Recall Coverage: National [Australia]

<http://www.recalls.gov.au/>

Dollhouse Furniture Sets Recalled in the US

August 22, 2001

CPSC, XL Machine Ltd. Announce Recall of Dollhouse Furniture Sets Sold at Target Stores in the US

WASHINGTON, D.C.- In cooperation with the U.S. Consumer Product Safety Commission (CPSC), XL Machine Ltd., of Eden Prairie, Minn., is voluntarily recalling about 10,000 sets of dollhouse bathroom furniture. The yellow paint on the furniture contains lead, which can present a risk of lead poisoning to young children.

CPSC and XL Machine Ltd. have not received reports of any injuries relating to these dollhouse furniture sets. This recall is being conducted to prevent the possibility of injury.

The Little Tree natural wood dollhouse bathroom furniture sets contain a tub, sink with mirror, toilet, shower, bench, towel rack and a wooden doll. The

doll has hair made of yarn and bendable wire legs and arms. The fixtures on the bathroom furniture are painted yellow. The packaging for the set reads "Little Tree," "Distributed by Target Corporation," and "MADE IN CHINA." Target stores nationwide sold these furniture sets from August 2000 through June 2001 for about \$15.

Consumers should immediately take these dollhouse furniture sets away from children, and return the sets to the Target store where purchased for a refund. For more information, call XL Machine Ltd. at (866) 746-8097 between 9

a.m. and 5 p.m. CT Monday through Friday, or visit Target's web site at www.target.com.

To see a picture of the product(s) and/or to establish a link from your web site to this press release on CPSC's web site, link to the following address:

<http://www.cpsc.gov/cpscpub/prerel/prhtml01/01219.html>



America Under Attack

- Email to the Pentagon -

On 20th September 2001, nine days after the terrorist attacks on the Pentagon and World Trade Center, the Lead Advisory Service Australia received an email from a woman from a military medical center asking about the lead risk for women expressing breastmilk at the Pentagon. Elizabeth O'Brien sent the following response.

Dear Madam,

Thanks for your enquiry - I have been expecting such questions to arise. Is anyone measuring air lead levels either at the Pentagon or at the World Trade Center? All we have heard about out here in Australia is a concern about asbestos fibre in the air at the World Trade Center, but it is logical to assume a wide range of contaminants in the air, not just asbestos or lead, mainly due to the temperature of the fires. People out here have started to wonder whether the real death toll will ever be known, when so many people will have such varying exposures (dependent on their proximity, breathing rate / physical activity level, how assiduously they wear respiratory protection, practice hygiene to limit dust ingestion, etc) to toxic dust and fumes including carcinogens created by the fires.

Your question contains an underlying assumption that breastmilk is best milk and I thoroughly applaud that belief. I am relieved that you have not asked whether mothers should consider switching to bottle-feeding. You seem to already know that a mother would have to have an enormous level of lead in her bloodstream before even considering stopping breastfeeding. Unlike the placenta, breasts filter lead and perhaps as low as 1% of the mother's blood lead, ends up in the breastmilk (I presume you have already read the fact sheets at <http://www.lead.org.au/lanv6n2/update002.html> and <http://www.lead.org.au/lanv6n2/update014.html>).

So to be absolutely clear, your question is simply about breastmilk becoming lead contaminated through handling. The simple answer is that strict precautions on washing hands / equipment / storage ARE adequate to minimize possible contamination.

The real question though is "are breastfeeding mothers being exposed to lead just by being there?" And as you pre-empted with your question "Are blood levels of Mom helpful??" I would answer

that blood lead levels of Mom would be an essential thing to know, in order to determine whether Mom should continue to work in the disaster area.

The huge advantage of lead over many other potential occupational exposures in this situation, is that lead has a set of guidelines developed for it - we know how much lead in air is too much in an occupational setting, and at what level of lead in the blood a breastfeeding Mom should be moved out. At the disaster sites, lead could be used therefore, as a marker contaminant - which gives some guide as to other toxic exposures. The reason for this is that lead is likely to be in the air both due to lead paint, lead componentry (like old rubber, lead contacts in lightbulbs, leadlighting, lead flashings), leaded PVC, wood and people's bones and teeth having been burned, and, due to lead being a likely contaminant of building cavity dust released, and building material released (like paint, plaster, lead componentry) along with fibres like asbestos, during the building destruction.

Sometimes it is useful that lead is the most common contaminant - it is in all the places and involved in all the processes by which other potential contaminants are released. I would venture that lead in air and blood measurements would be a reasonable surrogate for a range of other measurements for contaminants that don't always have guideline levels, eg PCBs released from capacitors (eg in lighting), polycyclic aromatic hydrocarbons (PAHs), toluene, xylene, formaldehyde and benzene released during wood and fuel combustion, toluene and xylene additionally released from paint, varnish or lacquer combustion, (PAHs) additionally released from roofing tar, dioxins released during combustion of plastics and metals, mercury released from amalgam fillings being incinerated, etc.

I hope it is useful that I have answered more than you asked. I would also like to pass on my deepest sympathy for those left to deal with the loss of your fallen comrades and other countrymen.

Kind regards
Elizabeth O'Brien
Manager, Lead Advisory Service Australia

SUBSCRIBE
or re-subscribe

Lead Action News
depends on you.

NOW!

From: The Lead Group Inc.
PO Box 161 Summer Hill
NSW Australia 2130

THE LEAD GROUP

INCORPORATED

The Lead Education and Abatement Design Group
Aiming to eliminate childhood lead poisoning in Australia by
the year 2002 and to protect the environment from lead.

DONATION FORM for LEAF & SUBSCRIPTION FORM for LEAD Action News

All donations over \$2.00 are tax deductible. All subscription rates include GST

- Please send me: \$33 1st time annual subscription (non-corporate rate)
 \$27.50 annual subscription renewal (non-corporate rate)
 \$16.50 annual subscription (concession rate)
 \$132 annual subscription (corporate rate)
 \$49.50 annual subscription + 4 back issues (non-corporate rate)
 \$5.50 each for circled back issues of LEAD Action News

[Circle required back copies]: **LEAD Action News:** Vol 1- No 1, 2, 3, or 4.
 Vol 2 – No 1, 2, 3, or 4. Vol 3 – No 1, 2, 3, or 4. Vol 4 – No 1, 2, 3, or 4.
 Vol 5 – No 1, 2, 3, or 4. Vol 6 – No 1,2 or 3 (Vol 6 3 Issues only)
 Vol 7 – No 1,2,3,4. Vol 8 - No 1,2, 3

PAYMENT DETAILS:

- Please find enclosed my cheque / money order for \$ _____ payable to "The LEAD Group" for subscriptions
- Please find enclosed my cheque / money order for \$ _____ payable to "LEAF" [Lead Education and Abatement Fund] for donations
- Please charge the amount of \$ _____ to my
 Bankcard Visa Card Master Card (tick one)

PAYMENT OPTIONS:

Post form & payment to:
PO Box 161
Summer Hill
NSW 2130

OR fax the form to: (02)
9716 9005

OR phone us with your
credit card details on (02)
9716 0966 or Freecall
1800 626 086

Name on Card: _____ Signature _____

CARD NO.

Expiry date: ____ / ____

CONTACT DETAILS:

Name or Company Name (for corporate subscriptions): _____

Address: _____