

LEAD Action NEWS

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Leaded Consumer Products

Bans & Recalls

Contents

4 Oz Lead Product Recalls	1	Q & A: Why use Lead?.....	14
Editorial.....	2	Fluoridation Increases Lead Absorption in Children	15
Banned: Leaded Wick Candles	3	Association of Dental Caries and Blood Lead Levels.....	15
Candle Soot Damage Case	5	Home Education Visits Reduce Childhood Lead Levels	17
US Candle Makers Ban Fails	7	Relationship of Ascorbic Acid to Blood Lead Levels.....	17
Web-Links about Candles	7	Indoor & Outdoor Dust & Soil Lead Levels	18
NZ Warning.....	8	Letters	19
ILMC Help with Global Ban?	10	Review of Govt Plans re: Leaded Consumer Products....	20
US Scented Candles Study	10	Review of NSW Lead Issues Paper	21
What the Lead Industry says on the Web	13	Review of NHMRC Strategy	21
International Lead Zinc Research Organization, Inc.	13	Review of Ros Kelly's Lead Roundtable	23
International Lead and Zinc Study Group	13	Review of NSW Lead Management Action Plan.....	25
Lead Development Association International.....	13	Review of NSW Parliamentary Select Committee.....	27
Lead Industries Association, Inc.	14	Review of OECD Declaration.....	29

Four Australian Leaded Consumer Product Recalls

Information compiled by Kate Hayter, President, Hunter LEAD Group from the federal Consumer Affairs website.

WEEDA TANKARD – Copper Plated Souvenir was recalled from 30 June 1988 because "acidic liquids can cause lead to leach in certain circumstances. One known lead poisoning in Alice Springs." Sold nationally and supplied by Weeda Tasmania. File closed 20 Jan 1993. Success rate on recall - **NOT STATED**.

PLAYGYM – model PGY0110 was recalled from 22 Feb 1989 because "Red paint on the playgym contains more than 11 times the accepted level of lead." Sold nationally, supplied by Action Trampolines and Gymnastic Equipment. File closed on 28 November 1989 with **20% recall SUCCESS RATE**.

BLINDS – Spotlight PVC Mini Venetian were recalled from 10 July 1996 because these blinds may contain unhealthy levels of lead." Sold nationally, supplied by Spotlight Store Pty. Ltd. [Spotlight provided an exchange - a leaded blind for a non-leaded blind - even for PVC miniblinds not purchased from Spotlight. It is curious

why this recall only applied to Spotlight when leaded PVC miniblinds were widely available from a range of homeware, hardware and department stores.] File closed 29 Jan 1997. Success rate on recall - **NOT STATED**.

BRITDIS TEAPOT was recalled nationally from 2 Feb 1999 because it was "produced with lead solder. Does not comply with Clause 24 of the Food (General) Regulation 1997 with respect to leachable lead." This product poses a medium risk of lead poisoning. Britdis teapots were sold nationally and supplied by Zyliss Aust. Pty. Ltd. File closed 24 June 1999. Success rate on recall - **NOT STATED**.

For information on Australian leaded product recalls, go to the website recalls.consumer.gov.au For comprehensive information on US leaded product recalls go to www.cpsc.gov and to comment on the petition to ban leaded candle wicks in the USA, go to www.cpsc.gov/businfo/frnotices/fr00/wicks.html ■

Editorial

By Elizabeth O'Brien, National Coordinator, The LEAD Group Inc.

Every use of lead hurts someone, somewhere, sometime

Let's face it – consumer products are to blame for practically every lead poisoning case in the world – at some stage or another in the life of the product, lead poisons people and the environment.

The biggest culprit for lead poisoning the whole population is leaded petrol. And whatever lead is available to the whole population does more damage in children. According to the NHANES research in JAMA (Pirkle *et al* 1994), the **percentage** of US children aged 1-5 years with a blood lead level above 10 µg/dL [the “acceptable level”], dropped from **85.0%** (in 1976) to **5.5%** (in 1991) and the researchers attributed this massive decline mostly to the reduction (by 99.8%) of lead in petrol in the same period. The minor contributor was a change in another leaded consumer product – lead-soldered food cans – which were replaced to a large extent by welded cans over the same period. The remaining major cause of lead poisoning of US children is regarded to be a third consumer product - leaded paint. Simply reducing the amount of lead in paint to a “safe level” has the unfortunate result that while people think the problem has been solved, in reality, the paint our governments have allowed in the past will plague us for about another hundred years.

The classic argument put by manufacturers of leaded products is that the contribution their leaded product makes to lead poisoning and lead contamination, is less than some other product. This argument can be used by the manufacturers of every product right up to the most hazardous or most contaminating. And as long as each of the top two says They're not as bad as the other (ie paint and petrol manufacturers), then everyone feels justified in using as much lead as they need to keep their profits up.

Manufacturers that use smaller amounts of lead hope that no-one will notice, eg candle manufacturers, while makers of showy products get away with it because they're so popular eg fireworks, bullets, lead shot, sinkers and lead acid batteries in vehicles. Encouraged by our success with banning lead core wick candles in Australia in 1999, The LEAD Group is aiming for three very popular products in 2000 – we seek: -

- a phase-out of leaded petrol in Australia by the end of 2000, and
- a ban on lead, cadmium, mercury & arsenic (at least) in fireworks used in the centenary of federation / new year celebrations on 31/12/2000, and
- a worldwide ban on lead in the wicks of candles by the end of 2000

You will have to wait until the next issue of *LEAD Action News* to hear about the good things happening in the world to phase out leaded petrol, as well as the beginning of what feels like it will be a torrent of information on fireworks pollution. You have seen the sum total of Australia's four recalls of leaded consumer products on the front page. Apparently, although the federal minister has recall powers, Australian manufacturers usually undertake a voluntary recall. Then, most importantly, we have in this edition of *LEAD Action News*, the good news about Australia being the first country in the world to ban lead in the core of the wicks of candles; followed by the US candle fiasco that should put an end to anyone's trust in industry voluntary bans. Lastly there's a huge section with the first instalments of my reviews of what's happened in each of 6 government plans that have been written. In the middle there's a general flurry of studies, articles and letters about leaded and other toxic consumer products and who makes them, which help to remind us that: -

What you buy today is waste tomorrow – buy wisely or better still, don't buy at all ■

Disclaimer: Our policy is to give you all the information available to us, which you might need, in order to make informed decisions about lead hazards. The LEAD Group runs the government funded Lead Advisory Service Australia. The information and advice given by the Lead Advisory Service Australia (LASA) is given in good faith but with no responsibility taken. LEAD Action News is no longer approved of as part of the LASA funding, but is paid for by donations and subscriptions and created by volunteers. The views expressed in LEAD Action News are not necessarily those of The LEAD Group Inc. LEAD Action News does not purport to express 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: Thanks for the many contributions for consideration in the newsletter, sent in by Cathy Flanders, Noela Whitton, Roger Kilburn, Dorothy Robinson, Dr Chlo Mason, and Dr Craig Boreiko.

Thanks to those people who wrote articles: especially Cathy Flanders who I know stayed up until 3 am for several nights to finish her articles; Freya Koss, Monica Kauppi, Kate Hayter and others. Thanks to Gail Carson and Noela Whitton for graphics and thanks to Mike van Alphen for the photo. Sorry to all that there was not time for more cartoons.

Thanks to Carol Bodle for proof reading under time-pressure! ■

Banned: Leaded Wick Candles

Australian world first with ban on candles that can cause lead poisoning

A factsheet by The LEAD Group Incorporated, Sydney, Australia

What is the problem with candles?

Not all candles pose a risk of lead poisoning – most candles do not have a metal thread running up the centre of the wick. But all the candles with metal core wicks that have been tested have been found to contain some lead and are therefore banned in Australia as of the 1st September 1999. Not all metal cores are made of pure lead; some are lead and tin and some are mostly zinc. Some candles imported into Australia from China and Taiwan have been tested and found to have wicks containing a core with more than 95% lead in the wick.

What is the health risk?

When candles with more than 95% lead in the wick are burnt they emit 500 –1000 micrograms of lead per hour. Over one year, ½ to 1 micrograms of lead per cubic metre of air is regarded as the maximum level a child or adult should be exposed to. Long term use of these candles would contaminate carpets and soft furnishings in the house with fine particles of lead. In the short-term, high exposure risks are via inhalation. Dust wipes after several months of burning lead core wick candles in a room in Texas contained 40 mg per square foot, many times the acceptable level for a room to be regarded as safe for young children. These candles are not safe to burn!!!

Young children and unborn babies are particularly at risk. Even small quantities of lead are capable of causing IQ loss and learning difficulties and behaviour problems.

Pregnant women need to be especially wary of their lead exposure: the placenta offers no barrier to lead and it can result in miscarriage and damage to the foetus' developing brain and nervous system. Burning lead core wick candles poses a serious risk as these candles give off lead fumes in amounts that far exceed safe levels. Candles with more than 95% lead in the wick could conceivably cause severe lead poisoning (potentially death) when more than 3 candles were burnt in a small poorly ventilated room for more than 6 hours per day on an ongoing basis.

How do I tell if the wicks in my candles have a metal core?

Candles which potentially have a lead wick core can only be confirmed by laboratory testing but any metal wick core is very likely to contain some lead. You can tell if there is a metal core inside the fabric sheath of the wick by looking for a darkish line in the white wick or by poking through the outer sheath with a sharp needle to reveal the metal. The metal is very fine. If the wick has already been burnt, poking with a needle you might still be able to "feel" the metal filament or you may be able to turn the candle upside-down and inspect the wick from the base of the candle.

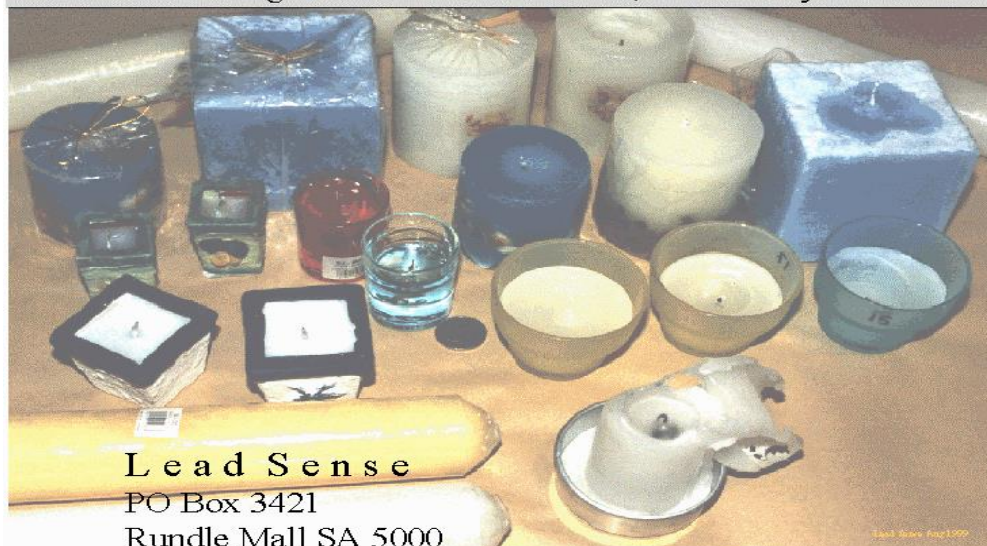
What do the metal core wick candles look like?

Metal-wick core candles come in all sizes, shapes and colours, (see photo for examples). The only reliable way to identify them is to examine the wick for a metal core and have it confirmed by laboratory testing.

Where do the candles and wicks come from and where are they sold in Australia?

The metal core wick candles already tested originate from the US, China and Taiwan. As more candles are tested the country list may increase. The metal core wick candles are generally cheap and have previously been available in shops with a name that denotes bargains or reject goods, though they have also been purchased in

Candles having metal wick cores of Pb, Pb:Sn alloy and Zn



a large chain store and quality homeware shops. They have been readily available so people who are likely to purchase cheap candles are the most likely to be affected. (The candle purchased at one homeware store was \$29.95 so not all these candles are cheap. The US candles with lead core wicks cost as much as US\$18.95 - also not cheap!). If you find a candle with a metal core wick, the chances are it does contain lead. We advise that you buy the candle(s), keep the receipt (for evidence) and notify your state or territory department of fair trading / consumer affairs as there has been a federal ban on the supply of these candles from the 1/9/1999 which prevents their supply in the NT, and a ban on their supply in NSW (since 10/9/99), Queensland (since 17/9/99), Victoria (since 11/11/99) and ACT and Tasmania (both announced on 20/10/99 and gazetted soon after). A banning order was signed in WA on 17/12/99 and will soon be gazetted. There is a ban on the supply and manufacture of candles or wicks containing lead in SA (since 23/9/99).

How many candles are we talking about?

The estimated range in number of possible lead wick core or lead/tin wick core candles imported into Australia in FY 1998-9 alone, is 615,600 candles up to 6,412,500 candles.

What should I do if I have bought a candle with a metal core and I suspect it contains lead?

You could return the candle to the shop you purchased it from and ask for a refund or an exchange, pointing out to the retailer that supply of the product is in breach of a Federal and/or State ban. The right thing for the retailer to do would be to offer a refund or an exchange of the product, although he/she is under no legal obligation to do so, as there has been no recall of the product.

Can I sue the retailer for supplying a prohibited product?

Yes, in the States where the prohibition order has been gazetted, you could elect to instigate legal proceedings in the Fair Trading Tribunal in NSW or its equivalent in other States. You should then keep the proof of purchase, ie the docket with the date of purchase, and the retailer's name. Evidence of the presence of lead in the candle wick should be provided. An analytical report of the lead content of the wick of the candle should be obtained. It is also important that a continuous chain of custody of the

candle be shown, with the candle being kept in a safe place and a statement signed by the laboratory which analysed the candle, stating that they have removed the wick from that particular candle and that analysis showed it to contain lead. Any quantity of lead in the wick of the candle makes it a prohibited product.

Instigating legal proceeding myself could be costly, is there any other way I can ensure the enforcement of the prohibition on candles containing lead?

Yes, you can decide to lodge a complaint with your State department responsible for fair trading/ consumer affairs (in NSW it is the Department of Fair Trading). The process is simple. Just obtain a complaint form from your department; complete the required details on the place and date of purchase, and the nature of the complaint. The department will then investigate the matter and decide whether to prosecute the retailer for breach of the prohibition order.

What do I do next if I've been burning metal core wick candles?

First, stop using the candles. Second, have a blood lead test. This is the only way to tell if you've been lead poisoned by the candles. Your GP can either take the blood and send it to a lab or send you to a pathologist for this. If you hate blood tests, wear an anaesthetic band-aid over the vein on the inside of your arm at the elbow (eg Emla Patch, available over the counter from the chemist) for at least one hour before the blood is taken. Wear an extra layer of clothing than you normally would for the weather on the day, and have plenty to eat and drink before the test. The result may take 1 – 2 weeks to come back. If the result is higher than 10 micrograms/decilitre (or 0.48 micromoles per litre) then call the Lead Advisory Service Australia on 1800 626 086 or your local Public Health Unit if the result is above 15 micrograms/decilitre (or 0.72 micromoles per litre) - the level for notification in NSW and Queensland. The home may need to be investigated for lead sources if blood test results exceed these levels. You may need hospital admission for lead poisoning (even if you currently show no symptoms) if your blood lead level is excessive.

Acknowledgments: thanks go to Mike van Alphen of Lead Sense in Adelaide for testing design and the laboratory analysis and for bringing this important issue to the attention of The LEAD Group. Mike van Alphen is now on the Technical Advisory Board of The LEAD Group Inc and kindly reviewed this factsheet.

Thanks also to other Technical Advisory Board members who assisted in the review of the information in this factsheet: -

- Assoc Prof Chris Winder
- Prof Brian Gulson
- Prof Grahame Vimpani
- Dr Karl Kruszelnicki

Candle Soot Damage Case

By: Cathy Flanders, Indoor Air Quality List Manager and Moderator, Plano, Texas, USA, September 1999

Back in November 1997 we filed a civil product liability suit against the Gap, Inc. (and its subsidiary Banana Republic) for selling candles which contained a substantial quantity of lead. [Ed. Note: *The Gap is a large clothing and homeware manufacturing and retail chainstore throughout the US.*] We burned a number of these candles over a period of months - until we began to see black & gray soot deposits on walls, ceilings, H/VAC [heating/ventilation air conditioning] vents, plastic items, carpeting, electronics, etc. At first we didn't make the connection to the candles, but through a process of elimination we determined the cause was candles & a forensic lab performed testing to confirm this. We also discovered through analytical testing of materials & air-chamber sampling that the candles contained lead and a number of other chemicals such as benzene, toluene, vinyl chloride, etc. that are known to be harmful. Dust wipe samples taken inside our home revealed lead dust deposits on surfaces throughout the ventilated living space, in some areas as high as 40 mg per square foot. Meanwhile, the Gap had been contacted prior to us finding out about the lead and prior to the lawsuit being filed, to report the damage caused by these candles & we requested a list of ingredients (which we were told would be forthcoming. We are still waiting, despite their defiance of a discovery order). The reason we wanted the list of ingredients is during the time the candles were burned everyone in the house noticed black mucus & an increase in respiratory infections & illness over what we normally experienced in the Winter. After the connection was made & discussed with our physician, he indicated he wanted an ingredient list to determine what else we may have been exposed to. At this time we also filed a complaint & incident report with the CPSC regarding these candles. The Gap sent out their insurance people & they flat out refused to issue any kind of recall, warning or change product warning labels. We filed the lawsuit the very next day.

We are but weeks away from another candle season; October through January is the period of highest candle consumption in the US. It also happens to be the time when we have our homes closed up the tightest. If history repeats itself the "candle burning season" will be followed by a rash of distressed homeowners reporting extensive soot deposition to their homeowners insurance only to find out that most insurance companies will decline coverage for this sort of damage. So the homeowner is left paying the clean-up bill for thousands of dollars in damage to their home & contents. It's really sad, but each report, letter, phone call or e-mail I get from homeowners basically all say the same thing..."if only I had known!" To date I have been contacted by over 350 of these unfortunate homeowners (I've kept a

running file collecting all these reports) & I've been contacted by countless 3rd parties investigating hundreds more.

The case received national attention for the first time when it was featured on page one of the *Wall Street Journal* 31st March 1999. Since then National Public Radio has aired a segment and a number of well known & highly regarded publications have run articles, ie. *Kiplinger's*, *Redbook*, *Good Housekeeping*, *Women's World*, and "E" [Environment] just to name a few. Broadcasting networks & affiliates also picked up on the story of lead in candlewicks with great interest this past holiday season resulting in a flood of televised warnings about toxic candle emissions. This firestorm of media coverage has turned out to be a public relations nightmare for the candle industry and their representing trade organization. And CBS just recently [Monday, Sept. 13 at 11 p.m.] aired a segment [Ed. Note: see list of websites below] on Channel 2000 - Burning Danger - A CBS 2 News Special Assignment: -

"If you like to burn candles in your home, some experts say you should think twice. CBS 2 News' Thelma Gutierrez reports you might be creating an invisible 'Burning Danger'."

The National Candle Association, even in light of all the negative media attention, has continued to give consumers assurances that they need only be concerned with **imported candles** when NCA is fully aware that evidence indicates both domestic & imported candles have been found to contain lead.

"The NCA's executive vice-president, Mary Ann McDermott, denies the accusations, insisting its members have not produced candles with lead-core wicks for more than 25 years.

"The NCA's McDermott says the association has never known there to be a problem with paraffin candles, though she says some volatile compounds burn off in minute quantities. Desperate candle lovers can find safe solace in beeswax or soy-based alternatives, though McDermott says they do not burn as clearly nor as well as paraffin candles." [SOURCE: *National Post Online - Artslife*, 30 November 99]

NCA has also encouraged consumers to test their own candle wicks if they have lingering questions by stripping away the cotton covering & scratching the metal wire on paper to see if it makes a mark. The NCA has included a description of this "test" in all of their recent press releases & it is prominently featured on their web site [see extract below in Web-links section]. The instructions don't provide any precautions or safety measures to be

taken when conducting this test or multiple tests. No guidance is given to: wear disposable gloves, not to touch eyes, nose or mouth, or wash hands afterwards, There is no plan to follow regarding disposal if you do discover lead. See www.ccohs.ca website listed below for an MSDS on lead metal. [Ed. Note: The NCA has not provided any note on their website of the likelihood that all metal cores for wicks will contain some lead and that lead alloys are also used - what would the result of the paper rubbing test be for an alloy?]

NCA had a voluntary ban (that they failed to monitor) which led to the mess we are dealing with today. It is my opinion that they are on a mission of damage control but they may be making things worse. Aside from ignoring the safety risks, the NCA has not provided any evidence that this test is reliable or accurate.

Candles have never been more popular with consumers, especially women consumers (96% of women have purchased candles in the past 12 months).

The more people that are exposed to correct information, the more damage to health & property that can be avoided. The sad truth is once a home is contaminated with sub-micron lead dust the cost to remediate can easily exceed the value of the home in some cases. In addition, once a homeowner begins to notice soot deposition on walls, carpets & household articles it's typically too late to prevent much of the property damage.

I've spoken to the Health Science Department at the CPSC (US Consumer Product Safety Commission) on a number of occasions nearly three years ago about the lead in candles problem. They are fully aware of the fact that candles have been & are continuing to be sold in this country containing significant amounts of lead. I know some of the experts that have been in touch with them, they have been sent lab analyses substantiating these facts & they have received well over 100 letters & messages (that I know of) requesting an immediate ban on the use of lead in candle products in the US. And yet the CPSC has failed to issue an enforceable ban & take the decisive steps Australia has implemented to protect the public from this totally unnecessary exposure to a very toxic poison.

Although, the National Candle Association and the CPSC will claim that lead was banned in candles 25 years ago there is overwhelming evidence that not only was/is the ban not observed but not enforced in any way. Never were any consequences indicated or administered to those who chose not to abide by this "voluntary action". This industry has proven wholly incapable of enforcing any policies to insure the safety & health of consumers. And for reasons unbeknownst to me, the CPSC chose to not issue an enforceable ban 25 years ago, in spite of a plea from the Administrator of the EPA at the time (Russell E. Train), evidence from Research Triangle Park studies & the Health Research Group and the filing of 2 petitions by Dr. Sidney Wolfe, Director of the Health Research Group (I do have copies of most of these). Not only did the CPSC fail to issue a ban but they also

succumbed to the Candle Industry's resisting-by-bemoaning a product warning label that could have at least indicated & warned consumers that the product contained lead. The Ad Hoc Committee's opinion was that such a label would have a negative impact with consumers & candle sales would suffer. The CPSC caving into pressure from ANY industry over the concerns of consumers flies in the face of reason & undermines the purpose of the CPSC.

[On the 10th Dec 1999 the CPSC emailed The LEAD Group Inc. their Public Calendar which noted a meeting with the National Candle Association (NCA) set down for 15th Dec 1999. We immediately advised Cathy]

I am just a housewife & Mom in Plano TX that just wanted to let others know of a danger lurking behind a seemingly innocuous product & keep others from having to go through what her family went through.

Aside from toxic emissions, hundreds of homeowners around the country have been reporting substantial property damage to their home's interiors & contents from candle soot deposits on everything from walls, ceilings and carpets to plastics, toys and computers and other electronics.

What to do if you have property damage in your home from candle burning.

Here are a few of the things that are important to do ASAP if damage is of substantial monetary value:

1. To the best of your ability try to recall a time frame when the candles that are suspected to have caused the damage were burned (eg. Oct. 98 to Mar. 99), how often were they burned, how many were burned, how many at a time, where they were located when they were burning. You may also want to save & date all your air filters if you have a forced air H/VAC system. See if you have receipts for any of your candle purchases. Collect all relevant information into a file so facts will be consistent on # 2 - # 4. Make note of who you speak to, when & what they had to say.
2. Contact your Homeowners Insurance Company &/or Agent.
3. Contact the candle retailer & manufacturer & get your report of damage resulting from product use "on the record".
4. File an incident report with the CPSC (there's a link to this on www.fiscorp.net/iaq/ - the Candles & Indoor Air Quality page).

We are finding that the homeowners who are well informed & have consulted with professionals have been faring much better in dealing with their insurance & claim settlement outcome.

The Gap candles emitted over 500,000 times the OSHA [Occupational Safety & Health Act] limit for airborne

lead or the equivalent VOC [volatile organic compound] emissions to running a semi in your living room for 1 hour with a 3 - 4 hour candle burn of only 2 of these candles [emissions from 6 to 8 candle burning hours = 1 hr of diesel emissions]. This figure is from the Gap's own pre-market testing reports & has been confirmed by the expert lab retained.

[The LEAD Group has again recently passed on to Cathy Flanders a notice from the CPSC of a meeting on Candle Products to discuss progress in standards development; on Friday 5th May 2000. Hopefully this will be the meeting at which CPSC bans lead wick candles in the US - then only a global ban remains to be achieved! Great work Cathy!!] ■

US Candle Makers Ban Fails

Australian Ban Cited in US Call for Candle Ban

By Public Citizen, Washington Feb. 24, 2000

Public Citizen is petitioning the CPSC to immediately ban and recall all candles with lead-containing wicks, candles in metal containers that contain lead, and wicks sold for candle-making that contain lead because they represent an imminent public health hazard. A continued sale of these items violates provisions of the Federal Hazardous Substances Act and the Consumer Product Safety Act, Public Citizen contends.

Public Citizen in 1973 petitioned the CPSC to remove candles with lead-containing wicks from the market. However, in 1974, in lieu of a ban, the candle industry and the CPSC arrived at a voluntary agreement to immediately stop making candles with lead-containing wicks. Public Citizen's Health Research Group conducted the survey, however, because of reports that these candles were once again being sold.

"Unless the Consumer Product Safety Commission immediately bans and recalls these candles, it will repeat the reckless and dangerous mistake made 26 years ago in trusting the industry to take care of the matter on a voluntary basis," said Dr. Sidney M. Wolfe, director of Public Citizen's Health Research Group. "How many more children will suffer lead poisoning before the CPSC fulfils its legal mandate to rid the country of this completely unnecessary source of lead poisoning? If the CPSC does not immediately ban and recall these dangerous products, we will seriously consider bringing

legal action against the agency."

In the study, Public Citizen examined 285 candles in 12 area stores. Of those, 86 had metallic wicks.

One country, Australia, recently tackled this problem. In September 1999, Joe Hockey, Australian Minister of Financial Services and Regulation, ordered a ban of all candles with wicks containing lead.

In 1974, Russell Train, then administrator of the U.S. Environmental Protection Agency, stated that "Inhabitants of homes in which lead-wicked candles are burned could be exposed to substantial incremental quantities of lead which, if continued on a regular basis, would pose a significant risk to health, especially among children with already elevated lead body burdens. In my opinion, candles [with lead wicks] represent an unnecessary incremental source of lead that can be readily controlled." He is still correct, Wolfe said. ■

Quotable Quotes from Cathy Flanders

"We must be the change we wish to see in the world" - Gandhi

"When a boat is in dangerous waters, one centered person with strong intention can prevent it from capsizing." - Thich Nhat Hanh ■

Web-Links about Candles

By: Cathy Flanders, Indoor Air Quality List Manager and Moderator, Plano, Texas, USA E-Mail: iaq-owner@onelist.com

Cathy Flanders has put together a comprehensive list of websites that carry information about the candle issue as it has developed in the US since 1997.

www.planostar.com/front/99/1120/index2.html The Plano Star Courier: Local news for the Dallas area - Candle safety melting in heat of lead concerns.

www.healthhouse.org/new/press/default.htm American Lung Association November 1999 Press Release:

Candles Can Create Unhealthy Indoor Air Quality: Health House Encourages Care In Burning Candles at Home, Especially This Holiday Season (November 8, 1999, PDF version) "...The Health House project of the American Lung Association warns that slow burning candles, particularly scented ones, can emit fumes with lead or mercury, as well as volatile organic compounds.

The following are links to various stories & reports that came out recently. Additional links to recent

media coverage & information can be found at:

www.loe.org/archives/991029.htm A Burning Issue: National Public Radio Broadcast Living on Earth Segment 29th October 1999.

www.ksl.com/dump/news/cc/candles.htm NBC & CNN Broadcast similar stories to the Living on Earth Segment on the evening news: Candle Dangers

www.wdiv.com/special/110899_hazardsocandles.html

WDIV: Hazards of Candles

www.9news.com/extra/candles.htm

Denver TV Market: 9 NEWS Consumer Corner - We the People

www.sph.umich.edu/eih/faculty/jnriagu.htm#research

Jerome Nriagu, Department of Environmental and Industrial Health, School of Public Health, University of Michigan

unisci.com/stories/19994/1007992.htm Nriagu Study - Some Candles Emit Dangerous Levels Of Lead. Dr. Nriagu's study resulted in the American Lung Association issuing a warning regarding candles & lead late in 1999. "Assuming that only 50 percent of the lead released is deposited in an area measuring 12 feet by 15 feet (such as a living room), we estimate that the loading of the lead to house dust will exceed the U.S. EPA guideline of 1000 micrograms per square meter by burning one of the Chinese candles for a few hours. Our data thus shows that burning leaded candles can result in extensive contamination of the air and house dust with lead," Nriagu said.

In general, Nriagu found that metal cores in Chinese candles were made of either pure lead or lead alloy while those made in the United States or Mexico consisted of zinc or lead-containing alloys. Lead was detected in small quantities in emissions from zinc-based wicks, suggesting that the lead may be a common contaminant in the zinc, wick or wax. The levels of lead were small, but still may represent a health risk over a long period of time.

www.baileyeng.com/index.html This is an excellent article that contains some of the test evaluations used to compile data for a candle emissions study by Bailey Engineering Corporation.

www.baileyeng.com/Soot.html Black Soot Deposition

<http://www.unified-eng.com/index.shtml> Dr. Lori Streit, Unified Engineering, Inc., Lombard, IL. Dr. Streit did some of the early air chamber emissions testing and analysis and was one of two labs to discover that a significant quantity of lead was present in the Gap candles.

<http://www.aflab.com/index2.htm#CONTACT> Contact: John Corn or Andy Armstrong, Armstrong Forensic Laboratory, Arlington, TX. John has performed in-depth testing, analysis and modelling re: lead emissions from candles from Gap & Banana Republic for the purpose of a class action.

NZ Warning

Tue Feb 29 2000

Candles that poison

The [New Zealand] Ministry of Consumer Affairs warned consumers and traders to immediately destroy candles with metallic cores in their wick. Australian tests show that the candles can cause lead poisoning, emitting 500 to 1000 micrograms of lead per hour into the air when burned.

The Ministry also urges consumers to inform them of existing candles and where they are being sold. "If we find that their sale is widespread we will be looking at having them banned," says the Ministry's Trading Standards Service Manager, Tony Leverton. The Ministry's local offices are listed in the phone book.

"People should look out for a silvery or dark metallic core in the fabric of the wick, or silvery droplets at the wick tip or in the melted wax when the candle is lit," said Mr Leverton.

"We are particularly concerned about these candles being burned around children, who are more susceptible to lead poisoning because of their size and developing bodies," said Mr Leverton. "Lead is absorbed into the body faster from inhalation than from ingestion — for example, a child putting a lead-based object in their mouth."

So far the Ministry has identified one shop in New Zealand selling these types of candles. "However, we know in Australia the candles have been found in discount stores or homeware shops, and were made in China or Taiwan," said Mr Leverton.

Ed note: the above article was taken from the Homeowners Soot Damage Discussion Board (see disc.server.com/Indices/41692.html listing below) and marks a growing number of countries concerned about the lead core wick candle problem. ■

www.choice.com.au Your Rights View Choice - Candle danger. Australian study sited in Australia's Consumer Publication. Lead Wicks & How to Spot Them

disc.server.com/Indices/41692.html Homeowners Soot Damage Discussion Board - This is a resource for homeowners & professionals who have encountered the problem of candle soot damage...what to do, who to contact, etc. Many, many links & contacts available here. The reports of sooting in homes from candle use have been steadily increasing over the last few years. This message board is for the discussion of problems associated with candle soot deposition in homes. Exchange of mitigation or clean up techniques, insurance advice, health concerns, identification of brands & types of candles is encouraged.

www.insure.com/home/candles.html Are scented candles damaging your home?

www.fiscorp.net/iaq/links.html Links to Prior Articles available on the Candles & IAQ Site

www.glrc.org/archive/1999/october99/oct18_n1.html Do Candles Pose Lead Dangers?

www.channel2000.com/news/specialassign/news-specialassignment-990914-005830.html

Channel 2000 - Burning Danger

www.seattleinsider.com/partners/kirotv/ Kiro 7 Eye-Witness News Consumer Reporter: Toxic dangers in candles?

www.seattleinsider.com/business/consumer/1999/11/candles.html Scientists warn candles may be dangerous

goodhousekeeping.women.com/gh/advice/good/gh102892.htm Good Advice from Good Housekeeping

www.pathfinder.com/drweil/archiveqa/0,2283,1608,00.html
From Dr. Andrew Weil's Web page: Ask Dr. Weil - Q&A: Downside to Aromatherapy? * [See box]

*Downside to Aromatherapy

By Dr. Andrew Weil

It turns out that some aromatherapy candles emit such hazardous pollutants as acetone, benzene, lead and soot. Since these harmful substances can impair the quality of indoor air, you have to be cautious about the aromatherapy candles you purchase. The National Candle Association suggests that you protect yourself by buying beeswax candles, which are cleaner and safer than those made with paraffin wax (the fumes of which have caused kidney and bladder tumors in laboratory animals).

Also, watch the wick. A wick that gets too long while a candle is burning may be releasing soot into the air (always keep wicks trimmed to 1/4 to 1/2 inch). If you have noticed sooty deposits in your house, scented candles may be at fault. To find out for sure, try this simple test [developed by Cathy Flanders]:

- Get a stack of thin, white plastic disposable plates.
- Set up the suspected candles in a confined space (like the bathroom) and make sure that any vents are closed.
- Light the candles and then surround them with the plates [avoiding any fire risk].
- Let the candles burn for an hour.
- If you see a black, sooty deposit on the plates, you can be sure that the candles are to blame for any soot you have noticed elsewhere in the house.

As much as possible, you should also make sure that candles are scented with natural essential oils rather than synthetic fragrances. This isn't always easy since candlemakers aren't required to list ingredients on their labels. You might also try scenting the air in other ways. You can evaporate essential oils in a small vaporizer or incense burner, or dilute essential oils with water and spray them from an atomizer. ■

www.drkoop.com/news/stories/october/candles_lead.html

From Dr. Koop's Web site: "Long-Burning Candles Can Emit Unsafe Levels of Lead

www.enn.com/enn-multimedia-archive/1999/10/102199/greatlakes_6646.asp

ENN Radio "Is burning a candle dangerous?"

www.fiscorp.net/iaq/ For a general overview of the hazards to property & health - Candles and Indoor Air Quality.

<http://www.fiscorp.net/iaq/WSL.html> Weckerling Scientific Laboratories Candle Soot Photographs of the Gap & Banana Republic candles in various stages of testing. The H/VAC air filter in photo # 7 was only used for 14 days when it was pulled out looking like it does in the photo. We hadn't yet figured out that the candles were causing all the soot deposition, so at the time they were still being burned. But look at that filter & then imagine that's what every consumer that burned these candles was breathing!!! Do you know that filter 2 years later still smells like those candles? Talk about industrial strength fragrance!

For some general information about lead, go to:

<http://www.ccohs.ca/products/databases/samples/cheminfo.txt>
Canadian Centre for Occupational Health and Safety - Material Safety Data Sheet (MSDS) for lead metal.

www.beesinc.org/about/heallead.htm Information about lead in layman's terms from BEES Environmental Health.

To see what the industry has to say, go to:

www.thomasregister.com/olc/atkinsandpearce/candwick.htm
Atkins & Pearce, Inc. - Candle Wicking (the largest wicking material manufacturer in the world & a very prominent member of the NCA).

www.candles.org/questions.htm National Candle Association (NCA), USA. [Italicised excerpt follows]:

"Are candle wicks made of lead? The majority of wicks manufactured today in the U.S. are made of 100 percent cotton – with no metal core. Those few wicks with metal are typically zinc-core wicks. All of these wicks are safe.

Even though the U.S. Consumer Product Safety Commission (CPSC) determined in 1974 that lead-core wicks do not present a health hazard, the National Candle Association's members voluntarily agreed to stop using lead wicks. Companies belonging to the National Candle Association make about 95 percent of the candles manufactured in the United States today.

It is possible that a small percentage of imported candles on the market today contain lead-core wicks. However, the National Candle Association and the Consumer Product Safety Commission have taken strong action to remove candles with lead-core wicks from store shelves. This will help ensure that all candles on the market today use safe wicks.

If a consumer is still worried, how can he or she tell whether a candle has a lead-core wick? A consumer can

determine if a candle has a lead-core wick by using this simple test: Rub a piece of paper on the tip of an unused metal wick. A lead-core wick will leave a gray pencil-like mark, while zinc or tin will not. It is important for consumers to know that wicks made with cotton, paper, zinc, or non-metallic materials are safe."

ILMC Help with Global Ban?

The LEAD Group asked whether ILMC will help to achieve a ban of lead in candle wicks worldwide and received the following responses in e-mails from Dr Craig Boreiko dated 23rd and 26th April 2000:- "we do not believe that the use of lead for such products is consistent with sound public health policy."

"For the moment, we are evaluating the situation with some priority. I have assigned an information specialist to the matter with instructions to both sort out the present situation with US manufacturing and (as much as possible) the material flows in international commerce.

"Where we go from there will be a function of the information received. If there is significant international trade in a product that is producing unnecessary human exposures - then we would view it as part of our mandate to act. Early actions would include awareness building, dissemination of information through the various inter-governmental agency channels, etc. The response we mount will in essence be proportionate to the risk that seems to exist...."

US Scented Candles Study

The following is an **extract only** of a Master of Science in Public Health thesis entitled "CHARACTERIZATION OF SCENTED CANDLE EMISSIONS AND ASSOCIATED PUBLIC HEALTH RISKS" by J. DAVID KRAUSE, Department of Environmental and Occupational Health, College of Public Health, University of South Florida, August 1999. Major Professor: Raymond D. Harbison, Ph.D. Copyright by J. David Krause 1999. All rights reserved. Extracts were chosen (and emphasis added) by The LEAD Group Inc.

ABSTRACT

The recent increased popularity of scented candles has prompted concerns by consumers and public health officials about their emission products. According to the National Candle Association, candle sales are approaching \$2 billion annually. The combustion of scented candles in residences, which typically have low ventilation rates, may raise indoor concentrations of combustion products. A recently described phenomenon of residential black soot deposition, sometimes associated with scented candle usage, prompted concerns that occupant exposures to soot and other candle emissions may constitute a health risk. The lack of data on candle emissions prompted this research into the volatile, semi-volatile and particulate emissions from scented candles and their potential health risks.

This study characterized the products of emission by individually burning 91 candles inside a stainless-steel combustion chamber and determining specific emission rates of soot, benzene and lead. Candle soot was typically less than 1 µm, contained up to 66% elemental carbon and carried numerous adsorbed organic compounds including dibutyl phthalate, diethyl phthalate, toluene and styrene. Volatile organic compound emissions included benzene, styrene, toluene, ethyl benzene, naphthalene, acetaldehyde, benzaldehyde, benzene-

ethanol, and 2-butanone (methyl ethyl ketone). Analysis for lead revealed some candles emitted significant quantities of aerosolized lead during combustion.

A risk assessment of occupant exposures to soot, benzene and lead resulted in the highest attributable risk being from soot, ranging from 9.7×10^{-5} to 4.7×10^{-2} . Lead exposures were modelled for children and suggest the potential to raise blood lead levels of children above 10 µg/dL when typical back-ground exposures are also present. The possible impacts on public health from consumer use of scented candles may include increased risk of cancer, neurological and behavioral deficits and acute aggravation of existing respiratory diseases such as asthma.

Chapter 3 - Results

Scented candle emissions were determined to consist of vapor-phase and particle-phase components. Low levels of benzene emissions were also detected from a non-burning candle.

Soot

Particulate emissions exhibited the physical and chemical characteristics of soot. SEM analysis revealed particle sizes ranging from 0.045 µm to 0.2 µm diameter.

Elemental carbon content ranged from 6% to 66%, with a median value of 32%. All soot samples tested for semivolatile organic compounds revealed high quantities of paraffins but varied in amounts of other adsorbed compounds. Dibutyl phthalate was identified in 33 of 53 samples, diethyl phthalate (8/53), bis (2-ethylhexyl) phthalate (7/53), didecyl phthalate (4/53), toluene (7/53) and styrene (3/53).

Analysis of soot did not reveal measurable amounts of benzo[a]pyrene or other PAHs typically identified in combustion products. This finding was

inconsistent with previously reported studies and could not be readily explained. A recent study of candle soot from non-scented candles by Fine and Cass also did not reveal measurable amounts of PAHs.

Soot emissions from scented candles were significantly higher than those from non-scented candles. Forty-five percent of non-scented (n=11) candles produced detectable amounts of soot, while 63% of scented candles (n=80) produced detectable amounts of soot. Soot production from non-scented candles, that produced soot, ranged from 20-175 µg/min/wick (mean 83 µg/min/wick). Soot production from scented candles, that produced soot, ranged from 20-3100 µg/min/wick (mode 1 = 180, mode 2 = 1650 µg/min/wick). The fine particulate matter collected from candle emissions was similar to that of diesel engine exhaust in particle size, morphology, elemental carbon content, and adsorbed chemical constituents, although lacking detectable quantities of PAHs.

Lead

All candles which had wire core wicks were tested for lead emissions. Of the 91 candles tested, 27 had wire core wicks in addition to one candle which was in a metal container. Four of the 27 candles with wire core wicks were determined to emit detectable quantities of lead, ranging from 0.40 µg/min to 120 µg/min. **The candle in the metal container, which did not have a wire core wick, was found to emit lead at a rate of 1.3 µg/min.** Only one of the candles determined to emit lead also emitted detectable amounts of soot. This observation suggests that a visually clean burning candle could still emit significant quantities of lead.

Chapter 4 - Risk Assessment

Public health risks associated with scented candle usage, were estimated by identifying chemical emissions and then determining occupant exposures. The emission characterization performed on candle emissions in Phase I revealed there was great variability in both the vapor phase and soluble organic fraction of particulate emissions, but that the particle size was consistently less than 1 µm. The first step in assessing risk is identifying the chemical hazards associated with candle emissions.

Hazard Evaluation

Soot

While unit risk values exist for many of the vapor phase emissions from candles, unit risk values for candle soot have not been developed. Due to the numerous similarities between candle soot and diesel soot, the unit risk value for diesel exhaust could be used for the purpose of assessing risk associated with candle soot.... **IARC has classified diesel exhaust as a probable human carcinogen 2A.**

Lead

Although lead was only detected in the emissions of 5 out of 91 candles, the implications of lead exposures from a previously uncharacterized source

supports its inclusion in this risk assessment. Extensive data exist on exposures to lead in both occupational and residential settings. Tremendous resources have been expended to remove lead containing materials from homes and schools.

Exposure Modelling

Due to the lower air exchange rates in newer homes, the residence time of emissions were determined to continue for up to 10 hours after extinguishing a candle.

Risk Characterisation

Scented candles have become common-place in homes and in certain businesses such as boutiques, salons, and spas. However, the indoor environment where the most significant exposures are likely to take place, due to low ventilation rates and long duration of occupancy, are homes.

Chapter 5 - Discussion

Scented candle usage indoors may cause high levels of respirable soot, with risks to occupants for both acute and chronic health effects, including an increased risk of cancer. Similarities between candle and diesel soot, suggest the potential for similar toxicological effects on exposed occupants.

Comparison with Diesel Exhaust

Studies indicated that filtered diesel exhaust is not as toxic or carcinogenic as whole diesel exhaust. The marked difference between whole and filtered diesel exhaust was also evident from general toxicological indices such as decreased body weights, increased lung weights, pulmonary function measurements, and pulmonary histopathology in animals (ie. proliferation of Type II cells and changes in the respiratory bronchiolar epithelium, and fibrosis). Numerous studies have shown that animal exposure to diesel particles plus vapor-phase compounds produced biochemical and cytological changes in the lung that are much more prominent than those evoked by the vapor-phase chemicals alone. These studies point to the predominant effects that soot may have on occupant health. Comparison of the particle-phase products from diesel and candle emissions is essential to demonstrate similarities in potential toxicity.

Acute health endpoints due to soot exposure include reduction in alveolar macrophage activity and acute inflammatory response. For individuals with pre-existing asthma and allergies an increased risk of acute attacks are also potential health effects. The US EPA has determined a Reference Concentration (RfC) for diesel exhaust of 5 µg/m³. The American Conference of Governmental Industrial Hygienists (ACGIH) has served notice of intent to change the Threshold Limit Value (TLV) for diesel exhaust particulate from 150 µg/m³ to 50 µg/m³ for 8 hour exposures. These are considered safe levels of exposure based upon a scientific consensus. The lowest observable adverse effects level (LOAEL) for DPM has been determined to be 300 µg/m³ (HEC [human equivalent concentration]). The no observable adverse effects level (NOAEL) was determined to be 155 µg/m³ (HEC). The concentrations of candle soot an occupant may be exposed to due to candle combustion

may be significantly higher.

Ambient Particulate Matter

Concerns of population risks associated with exposure to submicron dust particulate and its impact on acute respiratory and cardiopulmonary disease has resulted in regulation of ambient particulate levels. Changes in NAAQS to include regulation of particulate matter 2.5 μm and smaller (PM_{2.5}) are intended to address microscopic soot, which is believed to contribute greatly to the urban illnesses associated with air pollution. The contribution of candle soot during indoor exposures can be orders of magnitude higher than outdoor exposures and may be significant sources of total soot exposure.

Conclusions

Soot Exposure Risks

The characteristics observed in candle emissions match those of diesel emissions in the aspects considered to contribute to toxicity. Their size, less than 1 μm , allows deep penetration of the respiratory system and alveolar deposition. The insoluble, carbonaceous core structure with high surface area allows adsorption of extractable volatile, and semi-volatile organic compounds. Its origin is from the incomplete combustion of hydrocarbon containing fuel, allowing the formation of aromatic structures, which become adsorbed to the carbonaceous core. Studies of diesel particulate have indicated the above factors are those which contribute to its toxicity and carcinogenicity. Diesel soot and candle soot share the same physical and many of the same chemical properties which are believed to contribute to both toxicity and carcinogenicity. These similarities point to a similar potential for adverse health effects.

Comparison with the reference concentration (RfC = 5 $\mu\text{g}/\text{m}^3$) for diesel soot shows the emissions from candles can cause significantly higher exposures to occupants (3-520 $\mu\text{g}/\text{m}^3$). This exposure indicates that further examination of scented candle emissions is needed to determine its toxicity and carcinogenicity. Due to the current absence of information on scented candle emission toxicity, and its numerous similarities with diesel exhaust, it would be prudent to tentatively adopt the recognized toxicity values for diesel emissions until specific testing can be accomplished. When the unit cancer risk for diesel exhaust is applied to exposures to candle soot, the estimated increased cancer risk for a lifetime exposure, would range from 9.7×10^{-5} to 3.0×10^{-4} for the lowest emitting candle to 1.5×10^{-2} to 4.7×10^{-2} for the highest emitting candle, using the range of unit cancer risk of 2.9×10^{-5} to 9.0×10^{-5} per $\mu\text{g}/\text{m}^3$.

Benzene Exposure Risks

Candle emissions can contribute to increased exposure to benzene and other potentially carcinogenic volatile and semi-volatile organic compounds. Average

daily inhalation exposures to benzene were found to range from 0.02 - 1.6 $\mu\text{g}/\text{m}^3\text{-day}$ due to the use of 1 candle per day. The carcinogenic risk attributable to a lifetime exposure would range from 3.3×10^{-8} to 1.2×10^{-7} for the lowest emitting candle to 3.5×10^{-6} to 1.2×10^{-6} for the highest emitting candle using the Inhalation Unit Risk of 2.2×10^{-6} to 7.8×10^{-6} per $\mu\text{g}/\text{m}^3$. Further consideration of benzene as a significant risk in the use of scented candles should be made. Due to the use of multiple candles simultaneously, occupants may become exposed to levels of benzene constituting a cancer risk greater than 1×10^{-5} .

Lead Exposure Risks

Average daily doses of lead were shown to range from 0.4 to 120 $\mu\text{g}/\text{day}$. By comparison, the upper range of these values exceeds the equivalent dose caused by exposure to the NAAQS limit of atmospheric lead of 1.5 $\mu\text{g}/\text{m}^3$, equivalent to 30 $\mu\text{g}/\text{day}$. Using the IEUBK model, blood lead levels for children 2-3 years of age could exceed 10 $\mu\text{g}/\text{dL}$ if exposed to daily emissions of certain candles which emit lead.

Summary

Use of scented candles may contribute significant quantities of pollutants to the indoor environment, **especially soot, benzene and lead. Dozens of other compounds** were identified in individual candles, but their contribution to occupant risks were not characterized in this limited scope risk characterization. Due to the variability in candles and their respective emission rates, great uncertainty would exist in a generalized risk assessment. The available data suggest that each candle type should be evaluated for its emissions and contribution to occupant exposure. There appear to be three distinct candle types with regards to soot emissions; low emitting candles, with no detectable emissions of soot; moderate emitting candles ranging from 20-600 $\mu\text{g}/\text{min}$; and high emitting candles ranging from 900 to 3000 $\mu\text{g}/\text{min}$. It has also been observed that visible soot emissions are not associated with significant lead emissions, thus do not offer any protective warnings for users. The absence of consumer warnings concerning candle emissions and their potential health effects may contribute to exposure of susceptible individuals to respiratory inflammatory agents, carcinogens and teratogens. ■

"I love it when you talk toxics"

What the Lead Industry says on the Web

Extracts chosen from the internet by Elizabeth O'Brien, National Coordinator, The LEAD Group Inc., Sydney, Australia

International Lead Zinc Research Organization, Inc.

1. <http://www.ilzro.org/>

P.O. Box 12036
Research Triangle Park, NC 27709-2036, USA
Ph: +1 919-361-4647
Fax: +1 919-361-1957
e-mail: rputnam@ilzro.org

About ILZRO

The International Lead Zinc Research Organization, Inc. was formed in 1958 as a non-profit research foundation for the purpose of conducting research on behalf of the international community of lead and zinc miners and smelters. Since that time, ILZRO's membership has grown to include significant numbers of end-users of these metals from among the steel, automotive, die casting, battery, galvanizing and other industries.

The ILZRO website has links to all the other websites and describes the other lead organisations as follows: -

[International Lead Management Center](#) (ILMC) is an international center providing advice on all aspects of lead risk management to the lead industry. [Ed. Note: see article in LEAD Action News vol 7 no 1 1999 on the ILMC. As an industry-sponsored Association, most of ILMC's resources are devoted to technology transfer to developing countries on matters of lead production and recycling in an effort to reduce occupational exposures and environmental emissions. ILMC works at the invitation of governments and industry - with priorities and actions being established by the entity issuing the invitation. ILMC's product initiatives have largely focused upon the priorities dictated by OECD in the Ministerial Declaration on Lead. REF: Email from Dr Craig Boreiko, Director ILMC, 26th April 2000.]

[International Lead Zinc Study Group](#) (ILZSG) is an inter-governmental organization based in the U.K. which provides a comprehensive range of lead and zinc statistics.

[Lead Development Association International](#) (LDAI) is a U.K.-based trade association representing companies and associations in Europe and internationally which are concerned with the safe production, use and disposal of lead and lead products.

[Lead Industries Association](#) (LIA) is a U.S.-based trade association for the North American lead industry. This site offers information on lead production, uses and benefits, as well as environmental issues.

[London Metal Exchange](#) (LME) specializes in non-

ferrous metals, including lead and zinc. This site lists contract specifications and current and archived statistics for traded metals.

International Lead and Zinc Study Group

2. <http://www.ilzsg.org/>

2 King Street
London SW1Y 6QP, England
Ph: +44 20 7839 8550
Fax: +44 20 7930 4635
e-mail: root@ilzsg.org

[ED Note: None of the wide variety of lead and zinc statistics, maps or other information that the general public have access to on the International Lead and Zinc Study Group website may be reproduced without permission.]

Briefly, in 2000, the ILZSG plans to prepare a directory of product restrictions on lead, zinc and cadmium imposed by either national governments or inter-governmental organisations.

Lead Development Association International

3. <http://www.ldaint.org/>

42 Weymouth St
London W 1N 3LQ, England
Ph: +44 171 499 8422
Fax: +44 171 493 1555

Date 23rd January 2000

The LEAD DEVELOPMENT ASSOCIATION INTERNATIONAL is dedicated to encouraging the responsible use of lead and its compounds.

Lead Consumption by End-Use 1997

□_r
Batteries 72%
Chemicals 11%
Sheet / Extrusions 6%
Shot 2%
Alloys 2%
Cable Sheathing 2%
Petrol 1%
Miscellaneous 4%

Top Mining Countries		Largest Lead Producers	
China	710,000	USA	1,440,000
Australia	583,000	China	707,000
USA	458,000	UK	370,000
Peru	258,000	Germany	353,000
Canada	189,000	France	289,000
Major Users of Lead		Main Recyclers of Lead	
USA	1,741,000	USA	1,101,000
China	505,000	Germany	191,000
Germany	361,000	UK	184,000
UK	310,000	France	178,000
Japan	306,000	Japan	158,000

For those people who do have the time and the internet access: -

- Some free publications can be requested on the LDAI website, including: -: Lead batteries: a look to the future, Medical aspects of lead absorption in industrial processes, Health & hygiene in lead processes, Secondary lead smelting and refining: Health and safety guidelines, Lead - Technical notes on production, properties & uses, Lead - Resource material for the National Curriculum, Lead - a general introduction, Lead and the environment, BTA Study cards.
- The LDAI website has a Technical Enquiry Service - Environmental and general questions on lead are answered free of charge [by e-mail].

Lead Industries Association, Inc.

4. <http://www.lia.org>

13 Main Street
Sparta, New Jersey 07871, USA
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Fax: +1 (973) 726-4484
Or send e-mail to miller@leadinfo.com

Lead Facts

Lead is one of the first metals to have been used by humans, with uses dating back to 6500 BC.

Extract from Media Release dated February 24, 1998

For the past two years, Vulcan Lead [a sponsor of the U.S. Olympic Luge team for more than 10 years] and Mark Grimmette [of the United States Olympic Luge Team], who won the bronze medal in Nagano, have participated in the Lead Industries Association's Lead Expo, held in Washington D.C., to discuss the importance of lead to Members of Congress and their staffs.

Vulcan provides specifically manufactured lead weights that are used in the Olympic athletes' racing vests and for the weighting of their sleds.

Technology

Without the use of lead solders and leaded glass you would not be able to safely sit in front of your computer. Lead alloy solders enable your computer to send electronic data. Lead is the glue that binds our electronic world together. It plays a vital role in space exploration, energy conservation and telecommunications.

Lead-based materials are facilitating the development of hyper fast computers and high definition TV, as well as cathode ray tubes used in viewing screens for television, computers and radar.

NASA's Space Shuttle uses lead-alloy solder. No other means of connecting transistors, relays and other electronic components is as reliable. Lead glazes are used to encapsulate and protect the latest generation of electronic microcircuits from atmospheric corrosion. Our space program relies heavily on lead products.

Sources of Concern

With rare exceptions, elevated blood lead levels in young children are believed to be the result of old, discontinued uses of lead.

A study relying on EPA data by ENVIRON Corp. of Arlington, Va. concluded that the "average blood lead level in two-year-old children nationwide [US] would be reduced only by approximately 0.1 µg/dL if all exposures from current uses of lead were subtracted from total lead exposure." Such a change would be too small to even be detected in actual measurements of blood-lead levels.

The Future

The ENVIRON study concluded that blood-lead levels could be expected to drop further over the coming decade, without further changes in lead usage. This decline may be accelerated by concentrating public health efforts toward urban centers. ■

Q & A: Why use Lead?

A recent caller to The LEAD Group's **Lead Advisory Service Australia** asked me (EO'B) the following:

"I was recently at a dinner party and a friend noticed a sliver of metal on her food instantly before swallowing it. It was probably off a wine bottle. Wine capsules don't contain lead do they?" My answer: "Lead is still permitted here." Her next question: "Why do we go on being so stupid and allowing lead in consumer products?" My answer: "Lead is a by-product of zinc, copper and silver mining and while ever we mine these metals, in the absence of any other controls, the market will always be supplied with the cheap lead by-product." She responded with the contention that "Fluoride is also a by-product, of the aluminium industry and fluoride is in the water because the aluminium industry is very powerful and they have to use up this by-product." ■

Fluoridation Increases Lead Absorption in Children

By New York State Coalition Opposed to Fluoridation

The chemical most commonly used to fluoridate America's drinking water is associated with an increase in children's blood lead levels, according to research being presented to the 17th International Neurotoxicology Conference ("Children's Health and the Environment," Little Rock, Arkansas, October 17-20, 1999).

Most studies that purport fluoridation's safety and effectiveness in preventing cavities use the chemical sodium fluoride. However, most communities inject cheaper silicofluorides (fluorosilicic acid and sodium silicofluoride) into their drinking water based on the theory that each chemical comes apart totally, so that freed fluoride can incorporate into tooth enamel. However, the silicofluorides (SiF) do not separate completely, as sodium fluoride does, reports Professor Roger D. Masters, Ph.D., of Dartmouth College, and co-researcher Myron Coplan, chemical engineer. "As a result, water treatment with silicofluorides apparently functions to increase the cellular uptake of lead," they state.

In research published in the International Journal of Environmental Studies (September 1999), Masters and Coplan studied lead screening data from 280,000 Massachusetts children. They found that average blood lead levels are significantly higher in children living in communities whose water is treated with silicofluorides. Data from the Third National Health and Nutrition Evaluation Survey (NHANES III) and a survey of over 120,000 children in New York towns (population 15,000 to 75,000) corroborate this effect. Masters and Coplan reported that some minorities are especially at risk in high SiF exposure areas, where Black and Mexican American children have significantly higher blood lead levels than they do in unfluoridated communities.

Silicofluorides are used by over 90% of U.S. fluoridated towns and cities. Ironically, children with higher blood lead levels also have more tooth decay (Journal of the American Medical Association, June 23/30, 1999 [see below]). "So water fluoridation may prove to cause tooth decay rather than prevent it," says lawyer Paul Beeber, President, New York State Coalition Opposed to Fluoridation. "This research is just another block stacked on a giant wall of evidence that proves fluoridation is neither safe nor effective -- no matter what fluoride chemical is used," he says.

Lead poisoning can cause learning disabilities, behavioral problems, and at high levels, seizures, coma and even death, according to the U.S. Centers for Disease Control (CDC). "Lead is a highly significant risk factor in predicting higher rates of crime, attention deficit disorder or hyperactivity and learning disabilities," says Masters. In an interview with the Coalition, Dr. Masters said that in still another study, now in press, his research team found higher rates of violent crime and substance abuse in silicofluoridated communities. "We're appalled that this month, the CDC celebrates fluoridation as one of the ten great public health achievements of this country, when science tells us it's harming our children," says Beeber.

Web sites:

<http://www.fluoride-journal.com/>
<http://www.cadvision.com/fluoride/>
<http://SaveTeeth.org/>
<http://sonic.net/~kryptox/fluoride.htm>
<http://www.bruha.com/fluoride/html/f>

For more information e-mail New York State Coalition Opposed to Fluoridation on: nyscof@aol.com ■

Association of Dental Caries and Blood Lead Levels

By Mark E. Moss, DDS, Ph.D.; Bruce P. Lanphear, MD, MPH and Peggy Auinger, MS

The following are extracts from the abstract and full text, available from the website of the Journal of the American Medical Association [June 23/30 JAMA. 1999;281:2294-2298] (c) AMA 1999. (www.jama.com) (c) 1995-1999 American Medical Association. All rights reserved.

The results showed a staggering 80% increase in the number of dental caries for every increase of 5 µg/dL (0.24 µmol/L) in a child's blood lead level. It is also worth noting that the terms "high-" and "moderate blood lead level" are different for the three different age groups looked at, but that overall the numbers of United States children now exceeding the Australian goal for blood lead (10 µg/dL or 0.48 µmol/L) must be very small. For the worst affected age group reported in this article (2-5 year olds), nearly 75% of the children are below half the Australian goal (ie below 5 µg/dL).

Context Experiments show that dental caries rates are higher among lead-exposed animals, but this association has not been established in humans.

Objective To examine the relationship between blood lead levels and dental caries.

Design Cross-sectional survey conducted from 1988 to 1994 that included a dental examination and venipuncture blood lead assay.

Setting and Participants A total of 24,901 persons aged 2 years and older who participated in the Third National Health and Nutrition Examination Survey, which assessed the health and nutritional status of children and adults in the United States.

Main Outcome Measures For children aged 2 to 11 years, the sum of decayed and filled deciduous or

primary surfaces; for persons aged 6 years and older, the sum of decayed and filled permanent surfaces; for those 12 years and older, the sum of decayed, missing, and filled surfaces.

Results The log of blood lead level was significantly associated with the number of affected surfaces for both deciduous and permanent teeth in all age groups, even after adjusting for socio-demographic characteristics, diet, and dental care. Among children aged 5 to 17 years, a 0.24 µmol/L (5 µg/dL) change in blood lead level was associated with an elevated risk of dental caries (odds ratio, 1.8; 95% confidence interval, 1.3-2.5). Differences in blood lead level explained some of the differences in caries prevalence in different income levels and regions of the United States...

Conclusions Environmental lead exposure is associated with an increased prevalence of dental caries in the US population. Findings may help explain the distribution of caries by income and region of the United States. JAMA.1999; 281:2294-2298 ↗

[INTRODUCTION] ...Several ecologic and cross-sectional studies, conducted in the 1960s and 1970s, implicated lead as a risk factor for dental caries. [7] ...the most compelling basis for a causal relationship between lead exposure and dental caries showed prenatal and perinatal lead exposure to be linked to increased incidence of caries in a well-controlled animal study. [10]...

RESULTS ...The population attributable risk of lead exposure is estimated to be 13.5% of dental caries among individuals exposed to ...high ...lead level[s] and 9.6% of caries among individuals exposed to ...[moderate] ...lead level[s], compared with low [lead levels] [see Table below]. ...

COMMENT ...Three different mechanisms can be hypothesized concerning lead exposure and dental caries: salivary gland function, enamel formation, and interference with fluoride in saliva. Watson et al [10] showed differences in salivary gland function, which suggested that exposure to lead during salivary gland development may have adversely affected the ability of the gland to produce adequate amounts of saliva. ↘

TABLE – Blood Lead Level Distributions by Age Group, NHANES III, 1998 - 1994

Age Group years	No. of subjects	Blood Lead Level µmol/L				% With Level ≥ 0.24 µmol/L
		Geometric Mean	Low	Moderate	High	
2-5	3547	0.14	≤0.11	0.11-0.20	>0.20	25.6
6-11	2894	0.10	≤0.08	0.08-0.14	>0.14	12.1
≥12	18460	0.12	≤0.09	0.10-0.17	>0.17	18.5

Saliva has several protective properties that operate against caries: it acts as a buffering agent when acids are produced, it physically removes debris from tooth surfaces, and it has immunologic and bacteriostatic properties.[23] Lead also incorporates into tooth structure before the tooth erupts into the mouth and this may result in defective enamel that is more susceptible to caries.[24] Also, lead may interfere with the bioavailability of fluoride by binding to fluoride ions in saliva and plaque, thereby reducing the preventive capacity of fluoride to remineralize enamel after an acid challenge. [25]

...In conclusion, these data suggest that blood lead levels are associated with dental caries in the US population. These data further indicate that approximately 2.7 million excess cases of dental caries in older children and adolescents may be attributable to environmental lead exposure itself or a factor that is directly linked to environmental lead exposure. If a causal association between environmental lead exposure and dental caries is substantiated, it would have important implications concerning the need to broaden the focus of health interventions for dental caries beyond modifying dietary

habits, improving personal oral hygiene behaviors, and increasing fluoride exposure in high-risk groups.

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Home Education Visits Reduce Childhood Lead Levels

Extracts of an article by Brad Schultz, David Pawel, and Amy Murphy: "A Retrospective Examination of In-Home Educational Visits to Reduce Childhood Lead Poisoning" in Environmental Research Section A 80 364-8 (1999)

A number of human health effects from lead are well known. However, the means for reducing lead exposure in children has been a subject of uncertainty. This paper presents results of a retrospective study of educational lead reduction interventions in Milwaukee, Wisconsin for children who had elevated blood lead [PbB] levels between 20 and 24 µg/dL.

The study examined Milwaukee Health Department (MHD) records of baseline and follow-up PbB measurements. A study group of children received an in-home education visit by an MHD paraprofessional. The educational visits last about an hour and the importance of reducing lead exposure, nutritional suggestions, and dust clean-up practices and behavioral changes that can reduce lead exposure are discussed. After the intervention, the average observed PbB level ($n = 187$) declined by 4.2 µg/dL or about 21%.

A decline of 1.2 µg/dL (6%) [was] also observed in a reference group of 226 children who did not receive an MHD in-home visit. The decline in the reference group may be partially due to education at the clinics taking the blood samples. The study group had a decline in PbB levels 3.1 µg/dL (15%) greater than the reference group, with the difference between groups being statistically significant with a P value of less than 0.001. Although significant exposure remained in most of the children studied, important lead reductions were observed with this relatively inexpensive and simple intervention. Education in the homes of families at risk for lead poisoning may be an effective component of programs to reduce blood levels.

RESULTS

The analysis suggested that 4 months after the first measurement, average declines in PbB levels would be about 1 µg/dL for the reference group and 3.6 µg/dL for the study group. After 12 months, the average declines would be about 3µg/dL for the reference group and 5.6 µg/dL for the study group.

The effect of the educational interventions did not depend significantly (at $a = 0.05$) on sex. For males, average declines in PbB levels were about 3.7µg/dL in the study group and -0.4 µg/dL in the reference group. For females, these declines were 5.0 and 2.8 µg/dL, respectively. The difference in declines in PbB levels was 4.1 µ/dL for male and 2.2 µg/dL for females.

DISCUSSION

This is the first study of educational interventions that has a reference group of children without the educational intervention.

From this study we saw that PbB levels decline significantly after the in-home educational intervention. The decline appeared to be fairly rapid, with declines appearing to occur within a few months after the relatively simple intervention. The data were sufficient to compare the reductions in PbB levels up to about 1 year after the intervention.

CONCLUSIONS

Costs of the Milwaukee educational visits were estimated to be in the range of \$100 per visit including all program costs. Educational intervention appears to be a useful and inexpensive component of lead exposure reduction programs. ■

Relationship of Ascorbic Acid to Blood Lead Levels

By Joel A. Simon, MD, MPH and Esther S. Hudes, PhD, MPH

The following is an extract of the abstract from the Journal of the American Medical Association - Abstract, June 23/30 JAMA. 1999;281:2289-2293] (c) AMA 1999.

Context Some animal studies suggest that orally administered ascorbic acid may chelate lead and decrease the risk of the toxic effects of lead.

Objective To examine the relationship between serum ascorbic acid levels and prevalence of elevated blood lead levels.

Design, Setting, and Participants Cross-sectional analysis of a probability sample of the US population enrolled in the Third National Health and Nutrition

Examination Survey, 1988-1994 (4213 youths aged 6-16 years and 15 365 adults aged >17 years) without a history of lead poisoning.

Main Outcome Measures Elevated and log blood lead levels by serum ascorbic acid level.

Results After controlling for the effects of age, race, sex, income level, and dietary energy, fat, calcium, iron, and zinc intake, youths in the highest serum ascorbic acid tertile had an 89% decreased prevalence of elevated blood lead levels compared with youths in the lowest serum ascorbic acid tertile (odds ratio, 0.11; 95% confidence interval, 0.04-0.35; P for trend=.002).

Conclusions Our data suggest that high serum levels

of ascorbic acid are independently associated with a decreased prevalence of elevated blood lead levels. If these associations are related causally, ascorbic acid intake may have public health implications for control of lead toxicity.

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Indoor & Outdoor Dust & Soil Lead Levels

By: Thomas D. Matte, MD, MPH - Division of Environmental Hazards and Health Effects, National Center for Environmental Health, Centers for Disease Control and Prevention, Atlanta, Georgia, USA.

The following is an extract of the June 23/30 Journal of the American Medical Association. Editorial - Reducing Blood Lead Levels Benefits and Strategies [June 23/30 JAMA. 1999;281:2340-2342] (c) AMA 1999© All rights reserved.

The study by Simon and Hudes [11] concerns ...potential interventions to reduce the risk of lead toxic effects... An ...unfortunate limitation of this study is the lack of data on the group of greatest interest—children younger than 6 years. Even though a beneficial effect of ascorbic acid supplements on lead levels is supported by a recent report from a small randomized trial in adult smokers, [15] more evidence from controlled intervention trials is needed to demonstrate the real value, if any, of increased ascorbic acid intake, especially in young children. Even if a nutritional manipulation is proven effective in reducing blood lead levels, reliance on such an intervention places most of the burden for prevention on those most affected and least responsible for the underlying environmental causes of lead toxicity. [16] Nutritional interventions, therefore, must never substitute for efforts to reduce lead exposure to safe levels. On the other hand, when used as an adjunct to environmental measures, some nutritional changes may prove to have benefits beyond any impact on lead toxicity. For example, studies have suggested benefits of higher ascorbic acid intake on blood pressure, [17] blood lipid profiles, [18] and respiratory symptoms. [19] What needs to be done to hasten the reduction of lead exposure, especially for the populations most affected? While existing efforts, such as screening and responding to lead-poisoned children, need to continue, it would seem reasonable to propose expanded activity on 2 fronts in particular. First, public and private efforts should be made to increase the testing and remediation of residential lead hazards from deteriorated paint and contaminated dust before children develop lead toxic effects. Interior dust lead measurements, available at relatively low cost, can now be used to help identify the most immediately hazardous dwellings, [20] and interventions are available to substantially reduce residential lead exposure. [21] The use of this relatively inexpensive test should be expanded, thus decreasing the reliance on elevated blood lead levels in children to identify hazardous home environments. Second, additional research is needed regarding the sources, fate, and remediation of contaminated exterior dust and soil,

which can have major effects on blood lead levels. [20,22] Approximately 11% of pre-1980 homes are estimated to have soil lead concentrations exceeding 1000 ppm, [23] and lead levels in some urban communities may be comparable to those found in communities contaminated by smelting and mining operations. [20] Practical interventions and the resources to implement them in large urban areas are currently lacking.

Editorials represent the opinions of the authors and THE JOURNAL and not those of the American Medical Association. Reprints are not available from the author.

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Letters

Scuba Diving Weights Made at Home

FIRST EMAIL FROM SCUBA DIVER:

Dear Elizabeth,

I've just read your fact sheet on lead sources, and one other occurred to me that you seem to have missed: lead weights for scuba divers. Modern weight belts are either based on pockets of lead shot which are more comfortable (they distribute the weight more evenly around the diver's waist) and keeps the lead out of contact with wetsuit or (shudder) skin; or epoxy coated lead, which minimises dermal contact.

However most, if not all older weight belts are simply 500 or 1000 g slotted chunks of lead threaded onto a nylon belt. The manufacture and handling of such may constitute a significant exposure route for anyone handling them. Further, simple moulds used to be available, enabling divers on a budget with a DIY [do-it-yourself] flair to cast their own weights from scrap lead (I used to do this when I was much younger, using an old vacuum cleaner to blow air into a charcoal-fired brick furnace to melt the lead in an old pot. I hate to think how much lead vapour I inhaled during this process. The things we do as teenagers, eh? Keep up the excellent work.

RESPONSE FROM THE LEAD GROUP:

Thanks for your feedback on the list of sources of lead - I guess you were looking at our website (www.lead.org.au) where we have a factsheet that is called the "Main Sources of Lead". You'll find a more complete list of sources in the newsletter section of the website (in Lead Advisory Service News – "Sources of Lead") [we'll have to put a link to it on the factsheet]. Of course, we are regularly advised of new sources what with industry being out there constantly thinking up ways to get rid of, what is after-all, a by-product of copper, zinc and silver mining.

Thanks for your account of diving weights making. Any time is a good time to have a blood lead test - just ask your doctor - and that would at least tell you how much lead is in your blood at the moment. The current blood lead level is a measure of both current absorption of lead from your last 2-3 months of lead exposure, plus lead that is coming out of your bones from your whole of life stores. It is possible that your teenage lead exposure could be showing up in your current blood lead level. You can call us with the blood result (both the number and the unit) for an interpretation.

Regards, Elizabeth O'Brien, National Coordinator

SECOND EMAIL FROM SAME DIVER:

Elizabeth,

Current lead levels could be kind of interesting, as a number of my pastimes have involved lead exposure at varying levels, and I have lived in the inner city for the majority of my life. Hmm, I'll let you know when the results come in. ■

Do Regulations Protect Us from Lead?

20 September 1999

The Assistant Secretary
Air and Water Quality Branch
Environment Australia
GPO Box 787
Canberra ACT 2601

Dear Sir/Madam

I am writing to ask about regulations regarding lead in various products.

There has been a lot of publicity in recent years about the dangers of lead exposure to children. My medical encyclopaedia at home states that even low levels of exposure to lead may affect children's intellectual development. In recognition of this, lead in paint has been reduced, and lead in petrol is being phased out. However, there still seem to be many other products on the market, which still have lead in them. For example:

(a) Lead in PVC window and sliding glass door seals. I had chalking paint on my aluminium window frames and had this tested for lead to make sure it wasn't a health hazard. It transpired that there wasn't any lead in the paint, but that there was an extremely high amount of lead shedding off the window and sliding glass door seals (there is an Australian standard recommending that the amount of lead dust per square metre should be no more than 1,000 micrograms per square metre-the amount of lead dust per square metre for the PVC seals was 70,000 micrograms!)

I contacted Boral Windows, who had taken over Dowell, which is the brand of windows in my house. I was told that lead was and is routinely added to the PVC seals as a UV stabiliser (to stop the sun perishing the product). The lead content would have varied, because the PVC product was obtained from a variety of sources, but it was common in those days (my house was built in 1976) for the PVC to have a lead content of around 7%. (By 1976 the lead content in paint had already been severely reduced, so why was it still allowed in other products used in houses?) The lead content these days might often be about 1%, but this is not because of Government regulations, it is simply because of the cost of the lead additive. Boral Windows could not find any Government regulations about the amount of lead that could be put into such products.

The seals apparently become 'embrittled' over time, and so when they are touched or wiped, tiny particles are shed, including the lead in them.

I have two young children who are constantly touching the window and sliding glass door frames and seals with their fingers and then putting their hands in their mouths, and I am horrified that their health and intellectual development may be affected because companies have been allowed to make or use products which result in such dangerous levels of lead contamination. I am now also concerned about other 'rubber' seal products, such as fridge, dishwasher, oven, washing machine and shower screen seals, and car window and door seals.

(b) Other PVC products. I understand that lead is also used in a number of other PVC products. However, it is very difficult to know whether particular products such as toys are made out of PVC or some other type of plastic. PVC is so widely used that it is impossible to avoid it.

(c) Pewter and other kitchen items.

My husband had a lot of old pewter mugs which he used for drinking Coke. I recently found out that pewter is made of tin and lead. The Lead Advisory Service advised that this is a problem if acidic liquids are drunk from or stored in them. Coke is very acidic, and my husband used to drink enormous quantities of it from these mugs. Often he would leave Coke sitting in a mug for several hours and then come back and drink it. He would therefore have been at risk of lead ingestion. I rang up some pewter manufacturers and it seems that although Selangor no longer uses lead in pewter, there is no guarantee with other products.

I understand there are similar dangers with lead glass crystal and lead glazed oven pottery. Why is such a dangerous substance as lead allowed to be put in items that come into contact with food?

(d) Hobby items

I was staying with my sister, and my little boy spent a lot of time looking at and touching a terrarium. I realised later that it was made with lead (ie lead lighting), and rang up the Lead Advisory Service, who advised that this was of concern if the lead was chalking or oxidising, (which it was) or if it came into contact with saliva or an acidic product such as vinegar, which would act to 'dissolve' the lead. Other lead lighting products which are used in windows, or light shades or other hobby lead lighting products would also be of concern as they age and deteriorate or come into contact with saliva or acidic products.

I was at a model train exhibition at Malkara Special School. I was told that all the accessories (landmarks, scenery, signals, posts) etc were made with lead. Children attending the exhibition were touching these items, and a person making one of these items out of lead for demonstration purposes was using a child's desk, which would have been used by the child the next day.

Sinkers for fishing are made of lead. Children often

accompany parents fishing, or fish themselves as they grow older, and will handle the sinkers (or put them in their mouths when they are younger).

Why do we allow such a dangerous product as lead to be used in hobbies?

(e) Candles. I have recently been informed that lead has even been put into such unlikely items as the wicks of candles and that the fumes when such candles were burnt would have a serious effect on young children. I understand that NSW has recently introduced regulations banning the sale of these, but I don't know if other States have.

I would like you to answer the following questions:

1. What regulations are there about the production, import, sale or usage of products containing lead?
2. Are there any regulations about the products I have mentioned above?
3. If not, why not?
4. Will there be any new regulations introduced as a result of the concerns I have expressed?
5. What other products are there on the market containing lead?
6. At the very least, why aren't products containing lead marked with a warning, as is the case with poisons?
7. I am extremely concerned about the health of my children in relation to the high levels of lead shedding from my window and sliding door frames. I feel very strongly that action should be taken against those responsible for allowing known hazardous products to be used in this way. Who is responsible in this situation - the company that produced the item, the company that used the item, or the Government that failed to regulate against the use of the hazardous substance?
8. What consumer rights do I have in this situation?

I would appreciate your prompt and comprehensive response on these matters.

Thank you for your assistance.

Yours faithfully

[Name and address provided]

Kambah ACT 2902

[No adequate reply was made to the above letter] ■

Review of Govt Plans re: Leaded Consumer Products

Review of NSW & Federal Government Plans / Policies on Lead in Consumer Products - from Publications from the 1990's in Australia

By Elizabeth O'Brien, National Coordinator, The LEAD Group Inc. Sydney

The following series of 6 articles are all linked in that each is a review of the parts of a government plan related to lead in consumer products [see note* below].

It is very important to state at the outset that the absence of a lead strategy in every state apart from NSW and Victoria in no way should be regarded as indicative of the remaining states and territories having no lead

problem. NSW is to be applauded for having the most comprehensive Lead Management Action Plan and other strategy documents, which eclipse even the federal government plans in the level of detail. It also must be said that the NHMRC strategy is by far the broadest plan - if only it had been implemented there would be no need to keep asking governments for even the basic actions on lead such as blood lead surveys and the phase-out of leaded petrol.

But the prize for writing the most achievable plan must go to Ros Kelly - the Lead Roundtable Agreements, though admittedly focussing on only leaded petrol, has achieved the highest score for the number of items acted upon.

When seen together, I trust that this review of the detailed, the broad and the achievable plans will allow insight for those states and territories and indeed the federal government who all need to now create their own public health success stories. The attainment of the Australian blood lead levels goal (all non-occupationally exposed adults and children to be below 10 micrograms per decilitre) is certainly achievable in the short term. It

may even be possible to achieve the blood lead goal in workers within the next decade.

I have requested a review of the Northern Territory's policy on inhalant substance abuse because leaded petrol is potentially fatal when inhaled and I hope to report on that in the next *LEAD Action News*. I am also waiting on information from the Victorian Health Minister to be able to carry out a review of the plans made in their "Lead Strategy" 1993.

Note*: plans regarding consumer products which allow lead into drinking water, eg leaded plumbing solder and lead flashings for roofs used for tank-water collection, will be dealt with in a later issue of *LEAD Action News* and are not listed here.

IMPORTANT REQUEST TO READERS – I have written italicised comments after each component in the following government plans regarding consumer products – but I would love to hear from you if my comment is wrong or incomplete and will be happy to print a retraction with the good news about what has actually happened, in a later issue of LEAD Action News. ■

Review of NSW Lead Issues Paper

REFERENCE 1: "Lead Issues Paper Strategy Framework" in *NSW Lead Issues Paper – March 1993*, published by NSW EPA and NSW Health Department, Sydney, March 1993.

1 To implement a comprehensive program for the reduction of lead from its many sources focusing on [among others]:

Lead in petrol – primarily through a phased reduction campaign. *Comment – the first phase in January 1994 in the campaign, reduced allowable lead content of NSW petrol from 0.8 g/L (rural) and 0.4 g/L (metropolitan) to 0.3 g/L statewide in NSW. The second phase reduced the level to 0.2 g/L in January 1995.*

Lead in paint – through continued reductions in the lead content of paint voluntarily undertaken by the paint industry. *Comment – one reduction in domestic paint content took place in Dec 1997, from 0.25% to 0.1%.*

Lead in food – through review of legislation and the enforcement of standards for lead content of food and container storage [sic]. *Comment – ANZFA (Australian New Zealand Food Authority) reviewed the Australian Food Code standards for heavy metals in foods in 1999. Very little testing of foods is done so enforcement rarely, if ever, arises as an issue.*

2 To implement a comprehensive program for the continuing reduction of historical lead contamination by addressing the following issues [among others]:

- Lead in paint – through public awareness campaigns and technical review programs to allow the community to take actions to individually address this historical problem. *Comment – you certainly are on your own when it comes to lead paint problems – there is virtually no protection for either the homebuyer or tenant. "Let the buyer / tenant beware."* ■

Review of NHMRC Strategy

REFERENCE 2: "Recommendations for a National Strategy" in *Reducing Lead Exposure in Australia - July 1993, Final Report Vol 1 - Pages ES 7 To ES 20*. Funded by National Health and Medical Research Council. Published by Commonwealth Department of Human Services and Health, Commonwealth of Australia, Canberra, 1994.

Recommendation 3 Lower the limit for lead in petrol to 0.15 grams per litre. Refine costings for lowering to 0.026 grams/litre. Impose controls on benzene and other aromatics in petrol. *Comment – the*

limit for lead in petrol is generally 0.2 g/L in Australia but because Shell Half Lead (0.1 g/L) is sold in some states, these states actually average around 0.15 g/L in leaded petrol sold. As of 1st January 2000, Western Australia is banning leaded petrol and Federal Environment Minister, Senator Hill has asked all the other states when this is achievable Australia-wide. The conclusion is by 1st January 2002. The allowable benzene content in Australian petrol is still 5% though the federal government has plans for Cleaner Fuel.

Recommendation 4 Increase excise on leaded

petrol by at least two cents per litre, with the revenue earmarked for lead abatement activities. Implement on-going information/education program targeted to drivers, car mechanics. *Comment – the excise was increased to 2 cents in 1994 but the revenue, more than \$725,000,000 collected as at February 2000, has never been earmarked for lead abatement activities. The education campaign was brief – funds have dried up.*

Recommendation 6 Identify housing with high risk of lead paint exposure. Implement inspection program. Abate paint in high risk houses. Develop training program for paint abatement workers. Develop methods for disposal of wood painted with lead-based paint. *Comment – risk factors have been identified and incorporated into the education campaign but it is up to the individual to identify that their own house is “high risk”. No houses have been abated for paint in government programs with the exception of state-funded smelter and mining town remediation programs such as in NSW and SA. Federal and state government grants for Heritage homes give no information or financial support for lead-safe renovation though assistance is available to ensure that Heritage colours are used when repainting. Master Painters Australia run training courses in some states, though in other states a lead-aware painter is a rarity eg South Australia, Western Australia, Northern Territory and Tasmania. Canberra Institute of Technology and CTI Consultants in Sydney run lead paint management courses. CTI even offer courses interstate.*

Wood painted with lead-based paint is either burned as firewood or re-used or landfilled with the paint still on it. I know of no plan in place to resolve this problem.

Other Recommendations

- Undertake a program to rationalise the many and varied regulations covering lead use in products. This effort should focus on regulations that are now out-of date because of the revision of the NHMRC guidelines. Efforts should also be made to identify and correct gaps in controls on lead sources and to rationalise variations between State requirements, where appropriate. *Comment – has not happened.*
- Prohibit sale and use of lead shot, lead in children's toys, paints and crayons, lead fishing weights, lead curtain weights and other products in which lead can be readily replaced. *Comment – Victoria, Northern Territory and South Australia have begun phasing out use of lead shot in wetlands or certain designated areas, though of course lead shot is still on sale everywhere. The Australian toy standard (AS 1647.3) limits lead content in children's paints and crayons, surface coatings and other components of toys to 90 parts per million and there was a federal survey to ensure compliance in 1999, but it was not published. Lead fishing weights and curtain weights have not even been considered for banning yet though lead fishing weights and jigs are definitely on the way out in the US.*
- Encourage fuel efficiency among drivers of pre-1986 cars. Reductions in fuel use will reduce lead emissions from cars using leaded fuel. Activities such as keeping the car tuned, removing roof racks when not needed, using recommended tyre pressure, and smoother driving can reduce fuel use. This program would, of course, also have wider air pollution and greenhouse benefits. *Comment – done, usually by state environment departments and federal Dept of Primary Industries and Energy [now called Dept of Industry, Science and Resources].*
- Evaluate sources of lead in food to determine why lead intake from food is estimated to be 15 micrograms per week in Australia and only 5 to 8 micrograms in the United States. If the primary contributor is found not to be petrol (which is separately addressed), identify and implement programs for reducing lead content. *Comment – who knows? People have questioned the estimate. Market basket surveys found that the percentage of the Provisional Tolerable Weekly Intake (PTWI) of lead from food for an adult male fell from 34% in 1987 to 18% in 1990. However the PTWI stands at 50 ug/kg/week (micrograms of lead per kilogram of body weight per week) and must be questioned - this "tolerable intake" was determined when the "tolerable blood lead level" was 2 1/2 or 3 times the current level of 10 ug/dL. By comparison, the US has set a maximum intake allowable for children of 15 ug/day from consumer products. The question of whether it is safe to have a fertiliser plant next door to every Australian lead smelter and using sulphuric acid from the smelter to make the fertiliser, has never been adequately answered. Also, since the ban on the duck season in NSW in 1995, hunters (mainly from Victoria) have been free to use lead shot to kill ducks over ricefields in Southern NSW - the ricebowl of Australia. The impact of this practice on the lead content of rice (previously already one of the larger contributors to food lead intake of typical Australian 2 year olds) has not been ascertained in published form. The question of lead content of calcium supplements has been investigated in the US but apparently not in Australia. Whether there is lead in dolomite or other nutritional supplements would only be known if these items were adequately labelled, not just with the added ingredients but also with the contaminants listed.*
- Develop information materials for people engaged in hobbies involving lead that warn of the dangers to themselves and their families. *Comment – done by Environment Australia (EA) and published in 1995. However, updates of the various factsheets have been awaiting approval by EA since May 1999 and have not been released as of March 2000.*
- Examine availability and labelling of paint containing lead. Determine if lower lead content is feasible. Determine if greater restrictions, warnings and/or information programs are required to prevent use in domestic situations. *Comment – not done publicly.*
- Develop mechanisms for notification of potential purchasers by vendors of homes containing lead-based

paint. *Comment – not done.*

- Examine the extent of current recycling programs for products containing lead, such as batteries, television sets, electronic devices, and others. Identify barriers and opportunities for recycling. Where appropriate, develop programs for greater recycling of these products. *Comment – not done publicly. Compaq is currently recycling the lead from computer monitors wherever they have convinced local councils and large businesses to contact them to organise pick-up of large consignments. Individuals and small businesses should contact their local council for information or to encourage the council to organise Compaq pick-ups of significant quantities of monitors. Lead acid battery recycling seems reasonably well organised for vehicle batteries through vehicle service centres but there has been no survey and some evidence to say that other uses such as in alarm systems, do not carry out systematic recycling of their lead acid batteries through the service provider. Eg alarm maintenance companies leave the used battery for the building occupier to dispose of and only some councils organise lead acid battery pick-up and recycling.*
- Work with plastics industry to identify current uses of lead additives and develop alternatives. *Comment – the plastics industry did their own plan but it got put on the back burner.*
- Examine cosmetics and hair dyes in Australia to determine if they currently contain lead. If so, adopt appropriate regulations to eliminate its use. *Comment – not done publicly for cosmetics. Even if Australian made cosmetics contain no lead (as would be expected) there still needs to be a survey of the cosmetics imported (usually privately though sometimes for commercial sale) from countries such as India and Arabic areas where leaded eye make-up and lip blackener are traditional. Claims that medicated nappy*

rash creams and baby powders containing zinc (which is typically contaminated with lead) also contain lead have not been adequately investigated in Australia. Leaded hair colour restorers are usually labelled with their lead content and the appropriate regulation, the Therapeutic Goods Act, is being reviewed in 2000.

- Determine if traditional medicines containing lead are in use in Australia. If so, working with the relevant community, develop information materials and programs to warn of dangers and to discourage use. *Comment – not done publicly.*
- Examine the current status of sump oil recycling programs and determine if efforts are needed to encourage further recycling. *Comment – in March 1999, the sump oil recycling industry was determined to be at grave risk of becoming financially non-viable if the proposed tax system reduced the excise on diesel fuel. According to the federal Senate Committee report, 'Inquiry into the GST and a New Tax System' (March 1999) the current low rate of recycling of sump oil in Australia – about 28% - would be reduced even further, perhaps to zero. The report predicted that between 390 and the total figure of 540 million litres of oil annually, would not be collected for recycling and would therefore be at risk of entering "soil, the water table and eventually waterways, damaging terrestrial and marine vegetation and wildlife." The Committee recommended that waste oil recycling "should attract appropriate government support." The NSW EPA has informed me that the national oil recyclers industry association has written guidelines for their members on waste classification and management but to date I have not been able to obtain a copy. Of course, recycling is not the same as re-use and reports received by the Lead Advisory Service several years ago that oil was being collected and then used as fuel without any filtration or treatment to remove contaminants, have never been adequately addressed.* ■

Review of Ros Kelly's Lead Roundtable

REFERENCE 3: Lead *Roundtable Agreements. 29th July 1993.

*The Lead Roundtable was convened by federal Environment Minister Ros Kelly and involved over 150 delegates from all Australian governments, car, petrol, paint and mining industry groups, unions and environment and consumer groups. The *Lead Roundtable* agreements below were reached by consensus at the daylong meeting on 29th July 1993.

- It was agreed that there are compelling health reasons to reduce lead in petrol. To do so should be a principal element in a national lead abatement strategy. *Comment – reducing lead in petrol and a public information campaign were the only 2 elements in the "national lead abatement strategy".*
- There was broad support for a national approach with

recognition of regional/state circumstances. There was universal agreement that the problem was serious and warranted urgent action by all concerned. *Comment – action was taken.*

- There was agreement that petrol sourced from Victoria and NSW move to 0.2 g/L at 96 RON by the end of 1994 and that other States move to 0.3 g/L at 96 RON and aim to get to 0.2 g/L by 1995 provided that octane demand can be significantly reduced. It is encouraging to see that oil companies have given a commitment to move towards 0.2 g/L by the end of 1995. A total phaseout should be achieved as soon as practical. *Comment – the phased reductions occurred but I don't believe 2002 as a total phase-out date constitutes "as soon as practical".*
- The impact of a reduction of the RON rating below 97

be further assessed between now and 1994. *Comment – it was found to have negligible impact.*

- There was support for urgent study of the possibilities and implications of the use of additives such as MTBE as a substitute for lead. *Comment – achieved.*
- There was unanimous agreement on a national education campaign targeted at consumers and petrol station operators to be undertaken as a partnership initiative between Governments, industry, unions and community and trade organisations with a particular focus on the health benefits and information at the pump. There was also support for the suggestion that the name of Super be changed to Leaded petrol. *Comment – achieved.*
- Without delaying action, there was support for selective studies in partnership with industry and other relevant bodies such as NHMRC of the incidence and distribution of blood lead levels to monitor the effectiveness of the interventions. *Comment – an inner Sydney blood lead survey of young children was published in 1996 which found that the percentage of children with a blood lead level over the Australian goal of 10 ug/dL had halved (from 50 % of children to 25 % of children) since a similar study published in 1992. No other study or pairs of studies could be said in any way to have monitored the effectiveness of the petrol and education interventions. If the national blood lead survey of Australian children were revised and reported accurately, and a follow-up study were done, this would also provide some comparative data to monitor the effectiveness of the lead in petrol reduction and education campaign Australia-wide.*
- The importance of a price differential was emphasised by many participants. The economic and equity implications were noted. The importance of an incentive element in a total package and the fact that the cost of manufacture of leaded fuel was now greater than that of unleaded was recognised. Price differentials of between 2c and 5c per litre were canvassed. While the community groups, Victoria and some industry groups strongly urged the case for price differentials, some State and Territory Governments emphasised their reservations. *Comment – a 1c price differential was introduced in 1993 and increased to 2c in 1994.*
- The need to monitor the effects of measures adopted and to reassess strategies in 12 months time was emphasised. At that point vehicle modification and possible vehicle replacement strategies may have to be considered. *Comment – the Lead Roundtable Review was held in Adelaide on 20th September 1994 but because only the lead petrol and education strategies had been implemented, no representatives from paint, mining or other lead industries were invited to the review. The meeting almost exclusively looked at leaded and unleaded petrol sales statistics and air lead monitoring data as no blood lead data had been collected for monitoring purposes. Negligible problems*

with the octane reduction were noted, as was the need to include education on benzene in further education campaigns, to overcome the successful benzene scare campaign that had been helped by the poor methodology and the media's misinterpretation of data from the benzene study by the University of Technology in Sydney. The EPA's "intention to establish a national protocol for testing devices" [to modify vehicles so they can run on unleaded petrol] and agreement that the "significant problem" of misleading claims on the devices "would be drawn to the attention of Consumer Affairs when the protocol was finalised." I am not aware of this follow-up having occurred. Delegates at the Lead Roundtable Review were advised that "ANZECC [Australia New Zealand Environment and Conservation Council] had established a working party to look at the use of economic instruments in achieving environmental objectives. A report should be available in 6 months... Delegates discussed a range of investigations and reports relating to vehicle replacement schemes, concluding that this was a complex issue with major ramifications." In 1999, a report by OECD and UNEP (Organisation for Economic Cooperation and Development, and United Nations Environment Program) - "Phasing Lead Out of Gasoline: An Examination of Policy Approaches in Different Countries" stated categorically that:

*"It has now been conclusively demonstrated in a variety of countries, that **taxation policies that ensure that unleaded gasoline is cheaper than leaded gasoline can be very effective in accelerating the rapid introduction of unleaded fuel.**"*

- The public transport option was also pointed to as deserving closer consideration. *Comment – it was stated at the Lead Roundtable Review that the issue of use of public transport was being reviewed by the Department of Urban and Regional Development." Smogbusters is an initiative of Environment Australia run by environment groups, funded for most of the time since 1995, with a focus on public transport use, cycling and walking.*
- It was agreed it would be useful to investigate the way that premium ULP might contribute to reducing lead use in the longer term. *Comment – this was not discussed at the Lead Roundtable Review, though it was stated that the development of a National Environmental Standard for Petrol "had been funded as part of the National Lead Abatement Strategy".*
- Finally it was agreed that all Governments would work towards the development of a National Lead Abatement Strategy including appropriate strategies for remediation of areas with site-specific lead problems. *Comment – it was stated in the minutes of the Lead Roundtable Review that "NSW and Victoria were working towards a lead abatement strategy" but that any future national "lead abatement activities would be discussed at ANZECC [in November 1994]" and initiation of additional activities was dependent on*

“results of the National Blood Lead Survey” and completion of current projects. “Outstanding lead abatement issues were in mining, education and training. Contaminated sites and problems related to lead in paint were State/Territory matters.” The WA EPA delegate stated that “lead in paint was not a significant issue in Western Australia.” The Queensland environment department delegate tried to claim that “Queens-land did not have a problem with lead in paint” but the manager of the national Lead

Advisory Service [the present writer] countered this. I also expressed concern that the federal government was not addressing the NHMRC's published lead strategy recommendations (see above). “It was pointed out that lead abatement activities at the national level were being carried out in accordance with the recommendations of the Lead Roundtable” This statement clearly related to every recommendation of the Lead Roundtable **except this one that I am commenting on.** ■

Review of NSW Lead Management Action Plan

REFERENCE 4: NSW Lead Management Action Plan (LMAP). Published for the *Interdepartmental Lead Taskforce by NSW Environment Protection Authority, Sydney, November 1994.

* 16 NSW Government Agencies were represented on the Interdepartmental Lead Taskforce:

NB the number of each strategy was assigned by The Lead Group – in the original document, the 125 strategies appear as dot points underneath each sub-heading.

3.3 Lead In Air

1. Identification of Problem Areas

Strategy 3. Undertaking source emission inventories. Estimates of emission rates from sites, which produce or incorporate lead products should be undertaken and updated regularly. The information should be included in the State of the Environment Report. *Comment – the 1997 “State of the Environment Report” on the NSW EPA website www.epa.nsw.gov.au gives a graph of ambient air lead levels over time for the Southern Copper smelter in “Case Study: Air Quality in the Illawarra” but does not list an emission inventory for lead-emitting industry in NSW. Under the heading Waste in Section 2.10.4 Sources of Lead, it says:*

“The NSW EPA currently administers 18 pollution control licences listing lead as a pollutant. The permitted levels of emissions vary by company and pollution pathway [you have to buy a copy of the licence to find out the levels – knowing the level of emissions that is allowed under the licence does not tell you the actual emissions]. Although there are environmental controls for certain mining and refining activities, an estimated 146 million tonnes of waste and some processing activities that contain residual amounts of metal were exempt from waste regulations.”

Under the heading Water and Air in the same section, a 1985 figure is quoted: - 11.4 tonnes of lead was released from municipal incinerators in 1985. The information could not be said to be “updated regularly”. As of mid-1999, under the provisions of the NSW Protection Of the Environment Operations Act 1997 (POEO Act), Section 320, people can request emissions data from NSW EPA on any of the facilities that are licensed to emit the

particular emission (eg lead to air, lead to water). Unlike an application for information under the NSW Freedom of Information Act, an application under this section of the POEO Act does not require a fee to be paid. The National Pollutant Inventory (NPI) website www.environment.gov.au/npi which was first published in December 1999, gives no emission data for lead smelters or any of the major lead product manufacturers as the industry handbooks on NPI reporting were so slow in being finalised by these industries. Of a total of 237 facilities from 23 industry sectors in Australia that did report their lead emissions during FY 1998-9 on the NPI website, 43 facilities are in NSW. The caveat for NPI reporting states that facilities were not required to report for the whole year, but it was only 3 mines that reported for the month of June 1999 while the other 40 facilities gave the annual emission. Multiplying the June 1999 figure by 12 puts Pasminco Broken Hill as the top emitting facility of those listed, with 804 kg/year lead emitted to air. ACI Glass Packaging at Penrith was second with 580 kg/year and Hunter Valley Operations – Howick Pit at Ravensworth was third with a multiplied estimate of. Lowes Petroleum was fourth, fifth and sixth with its Depots at Lightning Ridge, Tamworth and Moree emitting 220, 210 and 100 kg/year respectively. All other facilities reported emissions of less than 100 kg/yr including petrol refineries, lead and coal mines, paint factories, brick, steel, plastics and concrete works, and airports and paper mills. Nearly half the reporting facilities reported air emissions of 1.6 kg/yr or less eg maltings, breweries, bakers, lamp manufacturers. One facility only reported emissions to land. Reports of emissions to land and water are not required in all industry handbooks or are not yet mandatory.

The biggest question arising from reading the website is when will the community actually have full data sets for all emissions for whole years with all emitting facilities reporting so comparisons can be made and baseline data established? The strategy was developed 7 years ago – how long does it take? Is it working to rely on industry reporting?

Looking at the data provided by NSW EPA on air emissions from other lead sources on the NPI website – one can only conclude that we should close all our petrol stations and open more lead mines to get less lead in the air. By comparison to the estimated 804 kg/yr emitted to

air by Pasmaico Broken Hill Mine, petrol stations in the Sydney Newcastle Wollongong airshed emit 140,000 kg/yr or nearly **175 times the mine**. Of course the caveat warns against comparisons of figures determined by different estimation techniques so no such statement can actually be made.

Even our metropolitan lawn mowing emits more lead than the mine (1100 kg/yr). Unfortunately these are the only 2 categories given by NSW EPA, whereas every other state EPA has reported on between 4 and 15 categories. Just comparing service station and motor vehicle lead emissions between the airsheds, we have (see table below).

It is quickly apparent that they were all worked out using different estimation methods and thus the validity of all the data is highly suspect.

Airshed lead emissions (kg/yr)	Service stations	Motor vehicles
Adelaide, SA	0.11	35,000
Hobart, TAS	0.000013	11,000
Kalgoorlie, WA	0.23	1,900
Perth, WA	7.6	43,000
Port Phillip Region, VIC	97	190,000
South East QUEENSLAND	5.7	160,000
Sydney, Newcastle and Wollongong, NSW	140,000	not reported

When industry air emission figures are all low and the state government figures seem to have been plucked out of the air, it makes you wonder if the community wouldn't have done a better job at measuring and estimating emissions given the millions that have been spent on the NPI.

3.8 Lead In Paint

2. Augmentation of administrative and regulatory control

Strategy 72. Review the Standard for the Uniform Scheduling of Drugs and Poisons to reduce the permissible lead concentration of all paints except zinc based paints as defined by Australian Standards AS 2105 and AS 2204. *Comment – as mentioned above, one reduction in domestic lead paint content took place in December 1997, from 0.25% to 0.1%.*

Strategy 73. Extend the existing prohibitions for the use of First Schedule paints under the Uniform Paint Standard to include industrial buildings and structures, mines and oil terminals, food and drink preparation equipment and utensils and small-scale automotive repair work. *Comment – this may have taken place but to my knowledge does not include auto paints.*

Strategy 77. Adopt under the Commonwealth Trade Practices Act Australian Standard 1647 to control the levels of heavy metals in imported toys. *Comment – according to the federal consumer affairs section of the treasury, this is not necessary and will not be done.*

Strategy 78. Review monitoring surveillance for imported toys to ensure compliance with AS1647. *Comment – federal consumer affairs have written a report that has not been published or disseminated to the public.*

Strategy 79. Direct all Government departments and agencies to use Government Paint Committee (GPC) Specifications for all painting work, to use GPC approved contractors for the removal of First Schedule paints and to comply with the proposed Australian Standard code of practice for the removal of paint containing lead. *Comment – this has probably not happened as the Lead Advisory Service Australia still receives calls from government officers in charge of organising paint removal on government structures who are unaware of the existence of the Australian Standards on Lead Paint Management or indeed the basic methods of lead-safe paint removal.*

The Government Paint Committee has been replaced by the Australian Paint Approval Scheme, which has set up a Paint Contractor Certification Program but only industrial lead and other hazardous paints removal certification has been awarded and only to a handful of companies throughout Australia. So it would be safe to say that with the possible exception of bridge paint removal, government paint removal jobs would fall to non-lead certified painters in the vast majority of cases.

3.9 Lead In Petrol

1. Information and education

Objectives:

To make as many motorists as possible aware of the possibility of using unleaded petrol in pre-1986 vehicles. To make as many motorists as possible aware of the dangers of lead in leaded petrol to children's health.

Strategy 86. Continue to support the Federal Government's "Take the Step" campaign. *Comment – the NSW Government provided minimal support for the campaign.*

Strategy 87. Widely distribute the list of pre-1986 vehicles which can use unleaded petrol without engine modification. *Comment – the NSW EPA produced a factsheet in 1994 on trialing unleaded petrol in cars not on the list but this was not reprinted when stocks ran out. During it's lifetime from 1996-9, the NSW Lead Reference Centre has been very discouraging of the Lead Advisory Service doing much at all in the way of proactive distribution of this information eg to car clubs.*

2. Augmentation of Administrative and Regulatory Control

Strategy 90. Gain industry agreement to relabel "super" petrol as "leaded" as soon as possible. *Comment – done.*

Strategy 91. Amend the Clean Air Regulations to take account of the use of other possible fuel additives if this becomes necessary. *Comment – this does not appear to have been done. It is quickly apparent that they were all worked out using different estimation methods and thus the validity of all the data is highly suspect.* ■

Review of NSW Parliamentary Select Committee

REFERENCE 5: “Recommendations for Strategies, Priorities and Guidelines” in *Report of the Select Committee upon Lead Pollution* December 1994. Published by the *Select Committee upon Lead Pollution, NSW Parliament, Sydney, December 1994.

*The Select Committee upon Lead Pollution was comprised of 7 Members of Parliament. The non-bolded boxed text below comprises the Terms of Reference of the Select Committee and the bolded and numbered text is the Recommendations made by the Select Committee for each of their Terms of Reference.

(b) the impact of lead pollution on the health of people in the community, especially infants and school children, in particular the emissions from:

(v) other lead based industries in New South Wales including lead-acid battery manufacture:

46. that a register be compiled of all sites where lead-based industries are currently operating or have operated in the past. *Comment – the NPI website mentioned above is probably the most accessible list of lead-emitting facilities but as mentioned above, it in no way comprises a full list. The NSW EPA Contaminated Sites section deals with over 3,000 contaminated sites in NSW but generally only gives scant information out to the public and usually only when you are a neighbour or potential neighbour of an industrial site. A register could readily be compiled from their information and published in the State of the Environment Report. Individuals may be able to locate historical information on their local area from Historical Societies contactable through the local council. Current lists of lead-based industries operating can be deduced to some extent from the Yellow Pages in each area or from the web www.yellowpages.com.au (Yellow Pages On-Line).*

47. That lead usage be strictly monitored and registered: lead smelters/producers to compulsorily register precise amounts sold to processor/end-user, who in turn must log the precise amounts used in their product and the precise amounts “lost”/wasted during subsequent processing. *Comment – what a great idea! This is the concept behind the Community Right to Know legislation in the US – that if you do a mass balance of incoming and outgoing lead, then you know how much you are losing/wasting (up the stack, into the air, off the wharf or open truck, in wastewater etc). Then you can eliminate losses and make more profits. I don’t know of anywhere in NSW where lead usage has been strictly registered.*

(b) the impact of lead pollution on the health of people in the community, especially infants and school children, in particular the emissions from:

(vi) motor vehicles with particular emphasis on inner city areas and known locations of traffic congestion.

53. that the NSW Government and NSW petrol refiners negotiate with the Federal government to reduce federal tax on leaded petrol to compensate for expected increased costs to refineries as lead is removed from leaded petrol. (Currently there is a two-cent price differential between leaded petrol and unleaded petrol). *Comment – this did not come to pass: it is in line with the best environmental policies overseas that taxes on petrol are never reduced. Reducing the price of petrol encourages its use and is a disincentive to reduce car use.*

54. That the government investigate the use of ethanol and other additives to replace lead as an octane enhancer. *Comment – the federal government to get the ethanol industry running funded a small program with a 3-year term. Caltex has a 50 % share in the company that supplies ethanol in petrol from over 120 service stations in the Newcastle area.*

(c) To recommend:

(vi) Any other action deemed necessary to address the lead problem

82. That the NSW government undertake a program to rationalise the many and varied regulations covering lead use in products. That the program focus on regulations that are now out-of-date because of the revision of the NH&MRC lead in blood guidelines. *Comment – this hasn’t happened.*

Lead in Paint

83. That there be an extensive education campaign to distribute lead poisoning prevention leaflets with the sale to the public of paint and the sale and hire of paint removal and dust abatement equipment. *Comment – Environment Australia was more successful than the NSW government in organising for this to happen – there is endless room for improvement.*

84. That a warning label about all risks of lead poisoning and lead contamination be placed on all paint cans. *Comment – this hasn’t happened.*

Lead in Fertilisers

92. that the NSW Government seek Federal cooperation to examine the prohibition of the sale of fertilisers containing more than 0.05% lead or lead compounds. *Comment – I do not know whether such a prohibition is in place or has been examined. A recent publication by NSW WorkCover states simply that “In agricultural areas lead may be introduced into the soil from contaminated fertilisers. (Ref: p 53 “Occupational Medicine Handbook” 7th edition, revised April 2000). An officer of NSW Agriculture reported to the Lead Advisory Service in December 1998 that something like 99.9% of cadmium in Australian fertilisers comes from the rock phosphate [would this also supply some lead?] and that fertiliser made from US smelter waste has been banned in Western Australia. Presumably the sulphuric acid*

from Australia's lead smelters still passes to the fertiliser plants that are alongside the smelters.

Other Lead Exposures

94. (a) that the NSW Government consider the prohibition of the sale and use of lead in children's toys, paints and crayons and other products in which lead can readily be replaced. *Comment – if they considered it, they decided against it. I don't even know whether the Toy Standard has been taken up into any regulation.*

(b) that the dangers of lead shot, lead fishing weights, lead crystal ware and ceramic ware, hobbies involving lead and other products in which lead can be readily replaced be subjected to public awareness campaigns and alternatives promoted. *Comment – not done convincingly. The NSW Environment Minister handed over responsibility to NSW National Parks and Wildlife (NPWS) for lead shot control in 1995 when a ban was placed on the duck season. Unfortunately, it is possible that more ducks are now shot during licensed pest culling over NSW ricefields (see comments above for food recommendation of NHMRC strategy). Now NSW NPWS is reviewing the ban but the impact of lead shot on the environment is not part of the terms of reference, nor is it the responsibility of NPWS, as the deposition of tonnes of lead shot per year now occurs over farmland, not National Parks. The ANZECC proposal to phase out lead shot only relates to wetlands so the question becomes, is the lead shot on ricefields best dealt with as a waste issue or contaminated land? And is EPA, NSW Agriculture or Conservation and Land Management responsible? Which of these agencies is going to promote alternatives to lead shot in NSW? See comments on fishing weights above (in NHMRC strategy) and below (in OECD Declaration).*

96. That the Select Committee supports the implementation of the ... recommendations of the New South Wales Lead Management Action Plan 1994. *Comment – see above comments in "Review of NSW Lead Management Action Plan.*

97. That the Select Committee supports the implementation of the Recommendations of the nine Interdepartmental Working Groups Reports [ie any omitted or altered during the synthesis into the New South Wales Lead Management Action Plan 1994 – as listed below, from Appendix 4 of the Report of the Select Committee]:

Omitted Lead in Air Working Group recommendations:

102. determination of the amount of lead emitted from various Australian timbers during wood burning. *Comment – not done publicly.*

107. an education strategy "should include provisions to ensure that local councils, developers and residents are aware of the potential risks involved and are provided with appropriate advice to enable informed decision making". *Comment – some councils have on their counters the Lead Safe booklets and/or factsheets and*

some councils sent council officers to training sessions held by the Lead Reference Centre. Judging by calls to the Lead Advisory Service about developers, most of them do not take lead into account at all and some council officers are of no assistance to residents who complain about lead hazards.

Omitted Lead in Children's Blood Working Group Report recommendations:

119. proposals which will reduce children's blood lead levels [not just measure children's blood lead and evaluate interventions]. For example, the first "public health intervention most likely to have the greatest impact on blood lead levels in NSW: [is] the removal of lead from petrol". *Comment – there is no proposed date for the removal of lead from petrol in NSW, apart from 1996 – see below.*

Omitted Lead Education Working Group Report recommendations:

129. "That Local Government includes in all Building Applications, information on lead paint and plumbing issues. This issue should be developed by the Institute of Environmental Health with input from the proposed Lead Reference Centre, Councils, Community, Industry and the EPA." *Comment – there may be something in the Development Consent Plan for Lead (DCP) on this. The Lead Reference Centre (LRC) drafted the DCP for Councils but its publication is a year overdue and the LRC closed on 30th December 1999. As at April 2000 the DCP was being finalised by the Manager, Community Education within the NSW EPA.*

Omitted Lead in Food Working Group Report recommendations:

130. encouragement of food producing industries to take part in the forthcoming National Residue Survey. *Comment – according to the Australian New Zealand Food Authority website www.anzfa.gov.au "the National Residue Survey monitors residues in agricultural produce at the farm gate. The Australian Market Basket Survey estimates the intake of selected agricultural and veterinary chemical residues in the total diet by measuring residue levels in food as consumed." Unfortunately the results of the National Residue Survey do not appear to be on the website so it is not clear how many food producing industries volunteered to take part. There are over 24 Commonwealth government acts including "National Residue Survey" in their titles and one of them, the NATIONAL RESIDUE SURVEY ADMINISTRATION ACT 1992 - SECT 11, includes the following:*

"Release of information

11. (1) Subject to subsection (2), information collected under a survey conducted using funds paid or reimbursed out of the National Residue Survey Account that identifies a particular person may not be released.

(2) Such information may be released to authorities of the Commonwealth, of a State or of a Territory that are responsible for the monitoring or regulation of pesticide

or other residues in food related products for the purpose of such monitoring or regulation."

So to find out about lead in food, you have to ask your relevant authority!!

132. routine testing of imported and Australian fertilisers, sewage fertilisers and sewage composts, for lead. *Comment – Presumably NSW Agriculture would be responsible for this - a search of the website www.agric.nsw.gov.au failed to reveal any test results.*

133. customer-pays testing of garden soil lead levels and food lead levels to be provided by NSW Agriculture at a cost of \$25 per sample. *Comment – cost was \$85 at last inquiry for food samples and \$33 for soil samples.*

Omitted Lead in Paint Working Group Report recommendations:

134. the Lead Reference Centre should be required to keep: -

i) a register of consultants and labs who can identify, sample and test paint suspected of containing lead;

ii) a list of suppliers of do-it-yourself lead test kits. *Comment on i) and ii) – the LRC and later the NSW EPA funds the Lead Advisory Service (LAS) and LAS keeps these lists, among many others.*

Omitted Lead in Soil and Dust Working Group Report recommendations:

138. study the costs and benefits of recycling lead paint waste. *Comment – this may have occurred as, after a delay of several years, ARA (Australian Refined Alloys) in Sydney was granted a licence by the NSW EPA to receive lead paint waste (dry flakes or dust) for the purpose of recycling the lead.*

Omitted Lead in Petrol Working Group Report recommendations:

139. that a stepwise reduction to zero lead in petrol by the end of 1996 be legislated as soon as possible. *Comment – not done.*

140. reduce lead in petrol to an average of 0.15 and a maximum of 0.2 g/L by the end of 1994. *Comment – not done.*

141. reduce lead in petrol to 0.05 g/L by the end of 1995. *Comment – not done*

142. explore associated matters to determine the achievability of the above lead in petrol levels. *Comment – not done.*

143. initiatives that aim to increase the modal share of public transport and reduce transport emissions (eg pricing mechanisms that reflect the advantages of public transport over private cars). *Comment – done to some extent.*

144. raise community awareness about use of unleaded petrol (ULP). eg stickers identifying cars capable of using ULP to be applied during re-registration check, pamphlets sent to NRMA members with Open Road, membership renewal and insurance renewal. *Comment – not done.*

145. "The NSW Government should make all possible efforts to have the Federal Government fund, in whole or part, required education and abatement programs in NSW from the increase in the Federal leaded petrol excise on the basis of litres sold." *Comment – not achieved.*

146. Use economic instruments (such as tradeable rights) to reduce the amount of lead from petrol. "These economic instruments should target refiners, distributors and consumers." *Comment – not done?*

147. review the total tonnage of lead used in petrol and set targets for the continued reduction of total lead used in petrol. These recommendations were to take place at the Lead Roundtable Review. *Comment – according to the minutes of the Lead Roundtable Review, this did not occur. Senator Hill set a final phase out date of 1/1/2002 in March of 2000.*

148. that the NSW Government assist the Federal Government in "testing and implementing alternative octane enhancers and fuel additives to protect valves of leaded vehicles." *Comment – Environment Australia commissioned reports and Western Australia acted on the results by banning leaded petrol, but NSW has not implemented alternatives.*

149. Data for NSW sales of leaded and unleaded fuel, figures of total tonnage of lead added to petrol, and ambient air data should be assessed by the relevant authorities on a quarterly basis to ascertain the short-term impact of the lead in petrol reduction strategy." *Comment – done.* ■

Review of OECD Declaration

REFERENCE 6: Resolution of the Organisation for Economic Cooperation and Development (OECD) Council Concerning the Declaration on Risk Reduction for Lead. OECD Document number: C(96)42/FINAL (adopted by the Council at its 869th Session on 20 February 1996 [C/M(96)4/PROV]).

THE COUNCIL

I. NOTES the Declaration on "Risk Reduction for Lead"

adopted by the Governments of OECD Member countries at the meeting of the Environment Policy Committee at a Ministerial level on 19-20 February 1996 (the text of the Declaration is reproduced in the Annex to this Resolution). *Comment – I had to ask 5 staff members within Environment Australia over a period of three months in 1999 as no one I spoke to could tell me whether Australia was a signatory to the OECD Lead Declaration.*

II. RECOGNISES that the support and publicity to be given by Member Governments to the Declaration will be an important factor in its authority, efficiency and success... *Comment – not done. The publicity given to the Declaration by the Australian government was such that The LEAD Group, with all of its network connections and information, did not know the declaration existed until three years after it was signed. If it weren't for the Assistant Director General of the NSW EPA directing us to the website, we might never have known.*

III. INSTRUCTS the Environment Policy Committee to review the progress made by Member countries and to assess the need for further action in conformity with paragraph 9 of the Declaration.... *Comment – Australia's input to the review of progress made since 1992 was submitted towards the end of 1998. The review omitted to respond with any relevant information to most of the items requested. For example, for the question: "Are there programmes or activities within your country to measure blood lead levels in specific populations, such as children or workers, or in the population in general?" the answer should have been: "There are no programmes to measure blood lead levels in children (except in some smelting and mining towns) or the general population. Workers generally risk losing their job if they even ask for a blood lead test (except in smelters and some mines). One activity that falsely reported the NHMRC target as having been met was the Report on the National Survey of Lead in Children. Results were not reported such as to be directly comparable to the NHMRC target but nevertheless the target was clearly not achieved. The NHMRC target was for all Australians (with the exception of occupational exposures) to have a blood lead level less than 15 ug/dL (0.72 umol/L) by 1998. The Report made no comment on the result that 1.7% of the 1-4 year old children tested had a blood lead level equal to or greater than 0.73 umol/L (results for 0.72 umol/L were not reported). Instead the Report re-wrote the NHMRC target, claiming only that the target "was that, by 1998, 90% of Australian children should have blood lead levels below 0.49 umol/L". The incidental result of achieving the actual NHMRC target of zero children equal to or above 0.72 umol/L was expected to be that 90% of children would be below 0.48 umol/L. It is false to claim that achieving 92.7% below 0.49 umol/L is equivalent to 90% below 0.48 umol/L – the true result most likely was below 90% so even the expected incidental result was not achieved. Yet the Report concludes on page 69: "This [NHMRC] target has already been surpassed." Even if the figures had been reported correctly, their statistical significance is in doubt as there were 4,000 blood lead results in the study design yet only 1,575 results were obtained. This experience confirms that Australia needs a second blood lead survey with adequate sampling of at-risk groups, and accurate reporting against the actual goal of having all Australians below 0.48 umol/L (since it is too late to achieve the first target by 1998)". Instead of the above correct answer, mimicking the false report, the*

Australian input to the OECD Lead Declaration review, even after initially stating that the "first target... [was] a reduction of lead in all Australians to less than 15 ug/dL", in the very next paragraph says: "The NHMRC's first target of having 90% of children under the lead limit by 1998 was met ahead of schedule." Having taken the care to say "the lead limit" instead of reporting the level used (0.49 umol/L) it is possible to imagine that the person who wrote Australia's input was aware of the deception being perpetrated. Alternatively, they were just not precise enough to be writing such an important review. In another question on data obtained etc from monitoring "lead levels in environmental media, such as air or soil, food or drinking water" not one item of data is given in the answer and food and drinking water are not mentioned at all. The answer wrongly states the standard for lead in air as 50 ug/m³ averaged over one day. Luckily, the correct standard (0.5 ug/m³ averaged over a one year period) is given on the next page of Australia's input, where again, only air is discussed in answer to another broad question on lead in humans and environmental media.

ANNEX

DECLARATION on Risk Reduction for Lead

THE GOVERNMENTS OF OECD MEMBER COUNTRIES,¹

¹ The mention of "Governments" is deemed to also apply to the European Communities.

... Having regard to the conclusions of the meeting of the United Nations Commission on Sustainable Development in May 1994 concerning the health impact to humans exposed to lead in gasoline, and encouraging further efforts to reduce exposure of humans to lead in gasoline (UN Economic and Social Council Official Records, 1994, Supplement No. 13, pp 32-34);...

Recognising the willingness of industry to share their experience in the sound management and prudent use of products containing lead including development of alternative solutions;

... DECLARE THAT THEY WILL:

... (2) Give highest priority to actions which address the risk of exposure from food and beverages, water, air, occupational exposure and other potential pathways in accordance with Annex I; *Comment – not done. As the Australian input to the review of this declaration states "Although the [1994-6 lead education] campaign has now wound down, the issue still generates a lot of public interest, rating as the second most frequently asked after topic with the Department's Community Information Unit." Despite this public interest and the signing of the OECD declaration, Australia does not seem to give lead the "highest priority" or indeed much priority at all.*

(3) Continue to review lead levels in the environment and exposure to lead of sensitive populations (such as children and pregnant women) and of high risk populations (such as certain groups of workers) using the results to evaluate the effectiveness of national programs

in reducing risks from exposure to lead and to identify priorities and opportunities for future actions; *Comment – not done. It's easier to avoid reviewing lead levels if you fail to monitor them in the first place – this seems to be the policy in Australia.*

(4) Promote and maximise the use of environmentally sound and economically viable collection and recycling programmes for lead and lead containing products in order to reduce the release of lead to the environment from waste streams; ... *Comment – recycling of lead and lead containing products (like light bulbs) and lead contaminated wastes (like paint chips, ceiling dust and sump oil) does not seem to be a priority of any Australian government. NSW EPA is possibly the best-placed and motivated to have the best practice in terms of waste and recycling generally. Unfortunately, NSW EPA set a policy on certain lead wastes being exempt from classification on the basis of levels of lead and other contaminants. Instead, if a lead contaminated waste is removed from a house, childcare centre or educational institution it is automatically classified as "solid waste" rather than industrial or hazardous which it may otherwise have been classified as. If the federal government can do no more than to point out (as in the "6 Step Guide to Painting your Home") that waste policies vary from one area to another, then perhaps the International Lead Management Center or the OECD could inspire greater efforts?*

FURTHER DECLARE THAT THE OECD SHOULD:

... (9) Review progress by Member countries in pursuance of this Declaration three years after adoption and assess the need for further action; ... *Comment – not done. The review done by Environment Australia was appalling in not answering most questions and including at least a page (out of the six pages) of vehicle emissions information irrelevant to lead. It in no way assessed the need for further action.*

Annex I

a. Progressively phase-down use of lead in gasoline except where needed for essential or specialised uses for which there are no practical, viable alternatives; *Comment – the phase out date as it stands at the moment is 1st Jan 2002, embarrassingly slow for a developed country and behind many developing countries such as China and the Philippines. Western Australia banned leaded petrol as of 1st Jan 2000, and Queensland looks like the next state to achieve a ban by 1st March 2001.*

b. Eliminate exposure of children to lead resulting from products intended for use by children (eg, toys, cribs, crayons); *Comment – in the period when the US Consumer Product Safety Commission has recalled well over 100 different consumer items due to lead content, the Australian government has recalled 4 products. Lack of testing would seem to be the key once more.*

c. Eliminate exposure to lead from food packaging (eg, for cans, by phasing down use of lead solder in existing canning lines, not using lead solder in new canning lines, or where these are not practical, using functional barriers

to prevent lead migration; for wine-bottle capsules, substituting other materials); *Comment – lead soldered food cans are still produced in Australia for ham etc and some leaded cans are imported. Lead capsules are still manufactured and allowed to be imported into Australia.*

d. Phase down the use of lead in paint and rust-proofing agents except in cases of essential or specialised uses for which there are no practical alternatives; *Comment – one phase has taken the allowable lead content of domestic paint to 0.1% but the US level of 0.06% seems not to have been considered.*

e. Restrict exposure to lead from the leaching of lead from ceramic ware and crystal ware used for food and beverages (eg, by effective production and process controls); *Comment – labelling of these products would also be essential as there is no process control that will help you if you leave alcoholic beverages stored in leaded containers. A severely lead poisoned couple were hospitalised in Sydney recently due to drinking a health drink grown in a ceramic pot. An education campaign is required as long as people still have these items in their homes.*

f. Restrict the use of lead shot in wetlands and promote the use of alternatives to lead sinkers in shallow waters; ... *Comment – not done by the federal government despite a recommendation from ANZECC (Australian New Zealand Environment and Conservation Council) in 1996 that lead shot in wetlands should be banned within 4 years. The Victorian government plans to ban lead shot in certain areas by 2003. An officer in the Animal and Plant Health Service of the Department of Primary Industries in Queensland told me that there is a ban on metal being present in meat. This has led to a virtual ban on lead shot for mustering cattle etc - only hard plastic is now used. The same officer was under the mistaken impression that lead shot was banned from sale in Australia. Australian manufacturers of alternatives to lead sinkers have had to go to the US to market their product with any hope of success due to the Australian government's lack of support on this issue.*

j. Establish strategies, including public information programmes, to abate significant exposures arising from the historic use of lead-containing materials in buildings. *Comment – there has only been public information programmes of the scantest kind since this declaration was signed, and only on paint abatement. There is no federal government support available for lead abatement with the exception of ceiling dust removal in the Sydney Aircraft Noise Insulation Project that is now winding down and appears not to have been repeated around any other major airport in Australia. The fact that a recent case occurred of a woman reaching a blood lead level of 64 ug/dL after her tankwater reached 50 times the acceptable NHMRC lead level in a house with lead flashings on the roof, would seem to indicate that neither the lack of lead testing (of humans or environmental media), nor the lack of strategies to abate significant exposures is helping the Australian people to achieve the NHMRC goal of all Australians below 10 ug/dL. ■*

