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Leaded Petrol Death Throes

But Still No Action on Drinking Water

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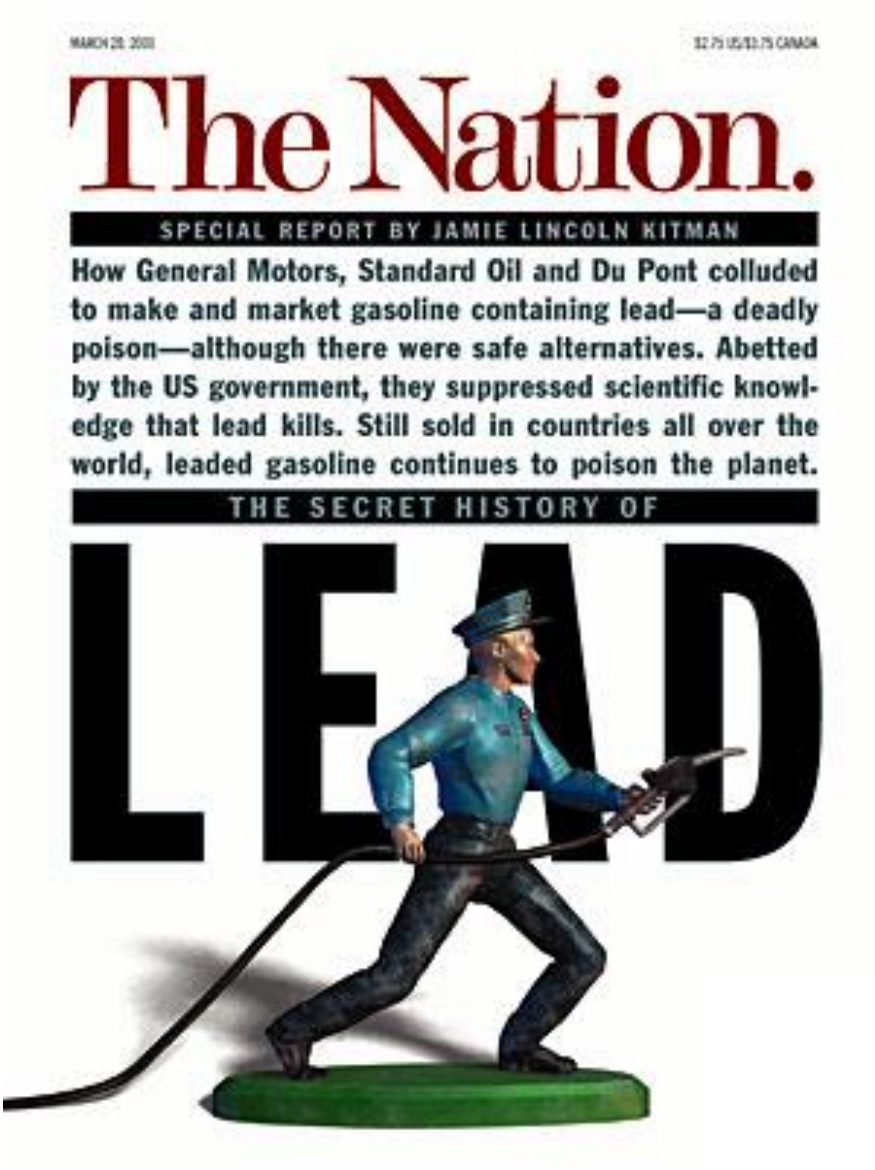
Graphic from front cover of The Nation *reprinted with the kind permission of artist Mirko Ilic of Mirko Ilic Corp, New York. Full article is at* www.thenation.com

If you go to "Archives" on the right-hand side of the screen and then to 2000 and the March 20 edition you will find it. See summary p3 of this issue of LEAD Action News.

Secret History of Leaded Petrol



Editorial

By Patricia Parkinson, Editorial Board, LEAD Action News

A very liquid edition for this *LEAD Action News*. Petrol and water are on the agenda, with some good news and some not-so-good news.

First the good news: the announcement by the Federal Minister for the Environment and Heritage, Senator Robert Hill of the national phase out of leaded petrol by the 1st January 2002. Not quite the breakthrough that it was presented to be, when you know that many countries are achieving this well ahead of Australia, including Japan (in 1980), the United States (1995), most European Union countries (2000) and some developing countries including China (2000).

Western Australia is to be commended for having phased out leaded petrol as of the 1st January 2000, and Queensland for implementing the phase-out ahead of schedule: by March 2001. Pity that the other Australian states have shown no sign of preempting the federal ban. They are, in fact, behind the petrol companies themselves: Shell and BP have already introduced lead replacement petrol. The story of how these companies have prepared for the phase out makes an interesting read. Whilst we applaud these initiatives, we need to emphasize that unleaded petrol does not mean safe petrol, and does not resolve the problems associated with the greenhouse gas and other oil related pollution. Take for example the current battle between BP and Greenpeace in relation to the construction of a Northstar new offshore oil platform in the Arctic Ocean, an area already badly affected by polar meltdown, a reminder of the hazards associated with petrol, leaded or unleaded. (see www.greenpeaceusa.org)

As the United Nations Commission on Human Settlement (HABITAT) endorses a resolution to "expedite action plans for the removal of lead from gasoline and the control of other sources of lead exposure" –we strongly recommend that you download the full "Secret History of Lead" from the web. We preview this captivating story of greed and criminal suppression of information in our first story. It also constitutes an excellent reminder of the dangers of relying on industry self regulation for public health and safety.

Now for the bad news. Lead in drinking water is one of them. In our series "government scorecards", it has been an easy one to establish as - to our knowledge - none or perhaps one of the recommendations have been acted upon. We publish in this issue our new fact sheet on lead in drinking water, a not so well known source of excess lead intake for at least 600,000 Australians.

The other bad news is the decision by the NSW EPA to discontinue funding of The LEAD Group to run the Lead Advisory Service (NSW), from the end of November 2000. After the de-funding of its own Lead Reference Centre last December, one could have been forgiven for thinking that the need to provide a source of reliable and easily accessible information on lead was essential. Unfortunately, both the NSW Health and Environment ministers seem to be of the opinion that they have done enough on lead, and are satisfied to force the public to approach all relevant government departments in turn for answers to their lead problems. In public service jargon it is called "mainstreaming the lead issue". So much for a whole-of-government approach! In a few short months, if your neighbour's contractor starts sanding the paint off their house, you could find yourself having to call the Health Dept, Pollution Line, the council, WorkCover, and the Dept of Fair Trading to gain even a hazy understanding of what you can do to stop the sanding.

From the Federal Government, we have obtained a renewal of the level of funding previously received for a guaranteed two years. Unfortunately, it relates to a ridiculously modest allowance, to be used towards the costs associated with the distribution of Environment Australia publications on lead and for allowing states outside NSW access to our toll-free line.

We are pleased to report that the South Australian Minister for Health has acknowledged our service to callers from his state by granting a $5,000 allowance to The LEAD Group this financial year.

The problem is, without core funding for the Lead Advisory Service, it will be very difficult to continue the service as we know it. But we are resilient, and we are spending a lot of time and energy trying to secure alternative funding. In that endeavour, we need all the support we can get! ν

From the chief editor

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Reprinting articles:

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

Acknowledgments:

Thanks to Patricia Parkinson for writing and reviewing articles, to Margaret Johnston for typing and Carol Bodle for proof-reading. ν

Hidden History of Leaded Gasoline Reveals Industry Conspiracy to Conceal Dangers

Lethal Product Still Marketed Throughout World

NEW YORK - The makers of leaded gasoline systematically suppressed information about the severe health hazards of their product for decades, even though they knew from the mid-1920s on that leaded gasoline was a public health menace, according to an investigative article published in the March 20 issue of The Nation, available in bookstores and on newsstands March 7. Moreover, both the auto and oil industries, as well as the makers of lead additive, knew from the early 1900s that safe anti-knock substitutes were cheaply available, but rejected them because they would be unprofitable. For years, according to automotive journalist Jamie Kitman, who researched and wrote the article, these manufacturers wildly exaggerated the benefits of leaded gasoline while downplaying or outright denying its dangers.

Moreover, 14 years after the federal government banned lead from gasoline sold in the US, the American company, Ethyl, and the British company, Octel, are still selling leaded gasoline throughout the developing world and Eastern Europe, despite lead's clearly established dangers, particularly to children. (Ninety-three percent of all gasoline sold today in Africa contains lead.)

"The story of how millions of tons of lead, a potent neurotoxin, were spewed into the environment and people's blood for 60 years ranks beside tobacco and the exploding gas tank of the Ford Pinto in the annals of corporate crime in America," said Kitman. "And what's truly outrageous, leaded gasoline continues to be sold around the world."

Ironically, Kitman also reveals that leaded gasoline, in addition to being harmful to humans, is also ruinous to car engines, leading to greater engine wear and damage.

Since leaded gasoline was phased out in the US, starting in the 1970s, blood levels of lead have fallen almost 80 percent, even as the makers of lead additive denied that their product was responsible for lead in Americans' blood, and at one point sued to prevent EPA and the CDC from even measuring lead in blood.

To reveal the hidden history of lead in gasoline, Kitman uncovered documents in the archives of corporate giants like General Motors, E.I. duPont, and Standard Oil of New Jersey (now Exxon), examined records of the US Public Health Service, and conducted dozens of interviews. The year-and-a-half long process revealed a shocking venture, with complicity of the US government, of putting corporate profits ahead of public safety. The parallel to the tobacco industry extends into the arena of junk science, with scientists from the lead additive industry denying, even today, that their product is dangerous.

Lead was added to gasoline in the 1920s to reduce engine knock and enable engineers to design cars with higher compression in the cylinders, permitting greater power and efficiency. Other octane boosters that early car designers experimented with included ethyl alcohol, also known as ethanol or grain alcohol. Because ethanol is plentiful and easy to make, however, it was rejected by corporate titans at General Motors and duPont, who needed an additive they could control and profit from - like tetraethyl lead (TEL), which could be patented. (In 1920 duPont controlled 35.8% of GM stock.) And so, despite its manifest dangers and unsuitability for internal combustion engines, TEL became the standard octane booster in gasoline. Among its foremost promoters were Alfred P. Sloan and Charles Kettering of General Motors, remembered today for having founded the prestigious Sloan-Kettering Cancer Center.

Early on, prominent health and safety experts, including officials at the US Public Health Service, expressed concern about adding TEL to gasoline. One expert called TEL "a creeping and malicious poison," and in 1922 the Surgeon General himself expressed concern in a letter to GM interim president Pierre S. duPont. A special committee of health and safety experts was formed to investigate the dangers of TEL, and in 1926 the committee found "no good grounds" for banning TEL. Significantly, however, the committee cautioned that if leaded gasoline became widespread, further studies would be warranted. But for the next 40 years, all research of TEL's health effects would be underwritten by GM, Standard Oil, duPont, and trade associations for the lead industry.

Since the 1920s, an estimated 7 million tons of lead burned in gasoline in the US remain in the soil, air, water, and bodies of living organisms. Worldwide, modern man's lead exposure is 300 to 500 times greater than background or natural levels. Children are the first victims of leaded gas. Because of their immaturity, they are susceptible to systemic and neurological injury, including lowered IQs, learning disabilities, hyperactivity, and behavioral problems. In adults, elevated lead levels are related to blood pressure increases, cardiovascular disease, and heart attacks.

Lead expert Dr. Paul Mushak, in a 1988 report to Congress, estimated that 68 million children had toxic exposures to lead from gasoline from 1927 to 1987. A 1985 EPA study estimated that as many as 5,000 Americans were dying annually from lead-related heart disease before the lead phase-out in the U.S.

An irony uncovered by Kitman is that leaded gasoline is ruinous to car engines, leading to more frequent oil changes and tune ups, piston ring wear, damage to exhaust systems, and camshaft and lifter wear. The damaging effects of lead necessitated the introduction of another gasoline additive, ethylene dibromide [EDB], which created even more environmental problems. When unleaded fuel was required in the US, EDB manufacturers found a new use for the chemical, as a pesticide. EPA banned EDB in 1974.

For further information or to interview Jamie Lincoln Kitman, contact Danielle Veith at +1 212 209 5426 or Peter Rothberg at +1 212 209 5425, or Stacia Tipton or Charles Miller of Fenton Communications at +1 202-822-5200. The full article is available at ***www.thenation.com*** ν

Habitat Resolution Calls For Eliminating Leaded Petrol

US Alliance to End Childhood Lead Poisoning (AECLP) Urges Follow-up Action to Take Advantage of this Important Step in the Fight Against Lead Poisoning

WASHINGTON, D.C. - The Alliance To End Childhood Lead Poisoning has endorsed the unanimous decision of the United Nations Commission on Human Settlements (Habitat) emphasizing the priority international commitment to reduce and eliminate lead poisoning. During the Commission's recently concluded 17th session in Nairobi, Kenya, the United States sponsored the resolution, which calls for a concerted effort among the UN system, national governments, and international organizations to expedite action plans for the removal of lead from gasoline and the control of other sources of lead exposure.

"The experience of the U.S. and other countries demonstrates that lead poisoning must be and can be prevented through practicable measures directed at controlling sources of exposure," said David F. Hales, Director of the Global Environment Bureau for the U.S. Agency for International Development and one of the principal authors of the resolution. "The Habitat resolution makes it conclusively clear that an international consensus exists to eliminate this tragic disease, a top world-wide environmental health and sustainable development priority - and there can be no further excuses for delay," Hales added.

"The Habitat resolution is consistent with the Alliance's integrated, priority-based approach to lead poisoning prevention as set forth in its International Action Plan for Preventing Lead Poisoning," according to K.W. James Rochow, the Alliance's Director of International Programs. The resolution calls for:

1) all governments to incorporate leaded-gasoline phase-out initiatives in their national agendas and to manage and control other sources of lead exposure;

2) all governments to provide publicly accessible information on the progress of phase-out programs using benchmark indicators; and

3) the international community to work together in the elimination of lead poisoning and to provide technical and financial assistance to developing countries working on phase-out strategies.

"The Alliance now calls on governments and organizations to take immediate steps to implement the phase-out and prevention plans called for in the resolution," Rochow added.

Leaded gasoline remains the most dispersive source of lead exposure and every day of its continued use adds to the reservoir of environmental lead that eventually must be controlled or abated. At the same time, the multitude of other sources of potential poisoning and pollution from the use of lead over the years must also be controlled based on risk posed and efficient opportunity for management and control.

Lead poisoning continues to be one of the world's most pervasively debilitating diseases. The World Health Organization has found that all urban children in developing countries under two years of age, and more than 80 percent of those between the ages of three and five, are suspected to have blood lead levels exceeding international health standards. Lead exposures can adversely affect everyone, but special populations such as children, pregnant women, and men and women of reproductive age are particularly vulnerable to lead's harmful effects. Even at very low levels, lead poisoning in children can cause developmental disabilities, hyperactivity, impaired growth, hearing loss, blood diseases, behavior problems, reduced attention span, and decreased productivity. Effects on adults include high blood pressure, kidney disease, and impaired fertility.

"Habitat is a critically important forum for advancing international phase-out and prevention because lead poisoning is a prime obstacle to building sustainable communities," Hales stated; "indeed the dispersion into the environment of an elemental toxic substance such as lead that persists and accumulates over time and that particularly interferes with children's development - the world's future - is the very opposite of sustainable development."

"Victory over the long-standing disease of lead poisoning would not only constitute a landmark victory in environmental health, but would also serve as an optimism-engendering model of effective international cooperation for tackling other environmental and sustainable development problems," Rochow concluded.

The AECLP is a non-profit public interest organization dedicated to the worldwide elimination of lead poisoning. For more information, including our Myths and Realities of Phasing Out Leaded Gasoline and International Action Plan, contact:

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Shell's History of Petrol Culminates in WA Lead Ban

The conception and subsequent development of the motor car in the past 100 years has been a significant contributing factor to the tremendous economic growth of the industrialised world.

The development of the car is primarily due to the invention of the internal combustion engine, but also to the fact that volatile fuels based on hydrocarbons are particularly suitable for running car engines and that the oil industry has been able to produce these fuels in adequate, economic quantities and with constantly improving qualities.

In the late 19th Century, the most suitable fuels for the automobile were coal tar distillates and the lighter fractions from the distillation of crude oil. Petrol was used as the fuel for the first four-stroke cycle spark-ignition engine in 1884. Petrol was, at that time, considered to be an undesirable by-product of kerosene manufacturing.

From 1900 to 1920, there was an increase in demand for petrol and it ceased to be just a by-product and the more volatile fractions of kerosene were diverted to petrol. During the early 20th Century, the oil companies were producing petrol as a simple distillate from petroleum, but automotive engines were rapidly being improved and their fuels needed to improve with them.

Thermal cracking was introduced in 1913 to convert a larger fraction of petroleum into petrol. Earlier investigations had shown that the heating of crude oil or certain fractions caused a split-up of molecules and thus increased the proportion of volatile fractions suitable for petrol manufacture.

Thermal cracking required elevated pressure for the process. In the 1920s, it was found that certain silica/alumina-based catalysts accelerated the reaction rate to the extent that high pressure became unnecessary. The advantages of catalytic cracking over thermal cracking were a higher petrol yield and a better quality of product.

Lead was first used as an anti-knock agent in 1926.

The greater breakthrough in catalytic cracking came when the initially developed fixed-bed catalytic process was replaced by the fluid-bed catalytic process. The fluid-bed process allowed for excellent control of temperature and reaction, which permitted better yields of petrol from the refineries.

The introduction of the catalytic cracking process and catalytic reforming in the 1940's was significant for the manufacture of high-octane petrol components.

The 1950s saw the start of the increase of the compression ratio in engines, requiring higher octane fuels. Octane ratings, lead levels, and vapour pressure increased.

Minor improvements continued to be made to petrol formulations to improve yields and octane until the 1970s - when unleaded fuels were introduced to protect the exhaust catalysts that were being introduced for environmental reasons.

From the 1970s until 1990 petrols were slowly changed as lead began to be phased out, lead levels plummeted and octane ratings initially decreased, and then remained 2 to 7 numbers lower.

Shell's Innovations re: Leaded Petrol Phase-out in Australia

The Shell Company of Australia Limited has a history of innovation in fuels. When the Federal Government announced in the late 1970s that all petrol-engine cars sold in Australia after 1985 would need to be fitted with catalytic converters and run on unleaded petrol, Shell was first into the market place with unleaded petrol.

The company launched its new fuel in Melbourne in March 1986, several months ahead of the deadline set by government. Shell branded unleaded petrol Ultra and that became the generic term for the new fuel in Australia.

Later in 1986, following extensive market research, Shell responded to the demand of some customers for a higher octane unleaded petrol and released Shell Ultra-Hi, the first premium unleaded on the Australian market.

This fuel was sought by drivers of high performance cars and those who wished to give their unleaded vehicles a 'treat' from time to time.

Over the past decade, the formulation of both unleaded and premium unleaded have varied only slightly through changing performance additives. Shell Ultra and Shell Ultra-Hi brand names have disappeared to be replaced by the generic names unleaded and premium unleaded.

Shell was also the first company to change the name of its 'super' fuel to 'leaded'.

In 1994 Shell responded to a government directive to reduce the quantity of lead in leaded petrol by slashing lead to less than half the minimum allowed by government. On February 1 that year Shell sites in Victoria and NSW were stocked with 'half lead'.

The launch of Shell 'half lead' was an environmental and marketing success made possible by massive investment in Shell's refineries at Geelong in Victoria and Clyde in NSW. It was suitable for use in all pre-1986 cars that previously ran on leaded petrol.

Shell remains committed to phasing out leaded petrol and in August 1999 Shell became the first oil company to launch lead replacement petrol in Australia, with its introduction in Perth. This was within four weeks of the WA Premier's statement that no leaded petrol would be sold in that state as of January 2000.

Shell seized the initiative, launching lead replacement petrol (LRP), a new petrol which maintained all the power of leaded petrol together with an additive that the RAC of WA said "…provided the best anti-wear properties."

Western Australian Environment Minister, The Hon. Cheryl Edwardes MLA, on 31st August 1999, launched Shell's new lead-free petrol, Lead Replacement Petrol (LRP), for use in cars that would normally run on leaded fuel.

Bruce Rosengarten, Shell's Managing Director, Retail said, "We're very excited that Shell in WA is leading the country to a cleaner and healthier environment.

"Our customers who use leaded petrol have for some time been telling us that they'd rather use a lead free petrol so that they too can contribute to a better environment. This was always contingent upon being assured that the petrol was just as good for their car. Shell's LRP does just that. It is a better fuel.

"Approximately one in four vehicles in WA currently run on leaded petrol and for the first time these drivers will have the choice of using a lead-free petrol with an appropriate additive," said Mr Rosengarten.

Shell Commercial Manager in Western Australia, Mr Craig James said that Shell Lead Replacement Petrol (LRP) had been developed to provide engine protection to

many pre-1986 cars by replacing lead with an additive, which had been approved by the US Environmental Protection Agency (EPA) and tested extensively overseas.

The launch of Shell Optimax is the most revolutionary in this long line of recent petrol initiatives from Shell to ensure that fuel technology keeps pace with the engine technology being developed by car manufacturers around the world.

On October 5th 1999, Shell claimed an Australian first by launching Optimax, a revolutionary High Density High Octane (HDHO) unleaded petrol that is suitable for all unleaded and most leaded petrol-engine vehicles.

Initially the new fuel will be sold in more than 100 sites in Victoria, but should become available throughout most of Australia during 2000. Optimax can be used in conjunction with leaded petrol in the ratio 2 tanks:1 tank, or with Valvoline valve lubricant which can be added at the pump, in those cars requiring lubrication due to the lack of hardened valves.

SHELL FIRSTS

1986 Ultra (Unleaded), and Ultra Hi (premium unleaded) introduced

1994 Half Lead introduced and the name "Leaded Petrol given to what was formerly called "Super"

1999 (August) Lead Replacement Petrol and (October) Shell Optimax [also a lead-replacement petrol] introduced

For further information contact:

Rob Hart, Shell Public Affairs
Ph. (03) 9666 5615

or visit: www.shell.com.au ν

EnHealth Council Applauds WA

Professor Christine Ewan, chair of the EnHealth Council (the national environmental health body) praised the West Australian Government for becoming the first state to phase out leaded petrol after the introduction of new Clean Fuel Regulations.

Professor Ewan said the move was in line with what is stated in the Commonwealth Government's new National Environmental Health Strategy (NEHS) – launched by the Federal Health Minister, Dr Michael Wooldridge in October 1999 - and would significantly cut the amount of air pollution from motor vehicles.

"The West Australian Government has shown that working in consultation with organisations which are concerned with the environment and how it affects our health, in this case the petroleum industry, the RAC and the Motor Traders Association, much can be achieved," Professor Ewan said.

Check out the new National Environmental Health Strategy at www.health.gov.au/pubhlth/strateg/envhlth

Editor's Note: Also write to the EnHealth Council to ask them to set as a priority for 2000, the leaded petrol phase-out in every state and territory in Australia – email environhealth@health.gov.au **(ph (02) 6289 8206).**

Write to Dr Wooldridge, Federal Health Minister (Parliament House, Canberra 2600) to ask him to bring forward the lead petrol phase-out [which is planned to be completed in Australia by January 2002 - i.e. too late] so we can catch up with the developing countries that have already achieved their phase-out. ν

BP Amoco Cleaner Fuels Report Card

By Greg Bourne, Regional Director/President, BP Amoco Australia, February 2000

JAN 1999-JAN 2000 - "What we promised, What we delivered, What we will do"

"In 1997, 129 metropolitan areas exceeded the standard level of at least one pollutant…The problems are not limited to the USA. In Paris there were 11 days last year when motorists faced restrictions on bringing their cars into the city because of poor air quality….. This is a challenge we can't ignore….

We can delay and resist and wait for the standards or taxes to be imposed. Or we can accept the challenge and start to provide the answer in a creative progressive way."…

Sir John Browne, CEO, BP Amoco plc, 25 January 1999

What We Promised…….

During the 1990s, Australia's petrol and diesel specifications did not keep pace with those in key OECD countries. By 1999, we were up to 5 years behind. Our diesel specifications allowed for 5000 parts per million sulphur. Petrol specifications allowed up to 5% benzene. Leaded petrol consumption remained substantial. The only substantial changes occurred in 1986 (introduction of unleaded) and 1992 (reduction of lead content in leaded). At the start of 1999, no major fuel specification changes were foreshadowed at all, despite the demands and responses for change in other advanced nations. All of us must take some blame for this inactivity.

Globally, BP Amoco committed to a proactive leadership strategy on Clean Fuels to do what we can, when we can, and where we can.

Group CEO Sir John Browne promised on 25 January 1999 in a speech to the Detroit Economic Club that the BP Amoco group would be:-

- a lead free company around the world by 2002
- offering clean fuels (unleaded, low benzene, low sulphur gasoline, and low sulphur diesel) in more than 40 cities worldwide by 2001
- be an industry leader on clean fuels.

Why have we done this

Sir John [Browne] said that the air quality problem is a challenge we can't ignore. We have accepted the challenge to help solve the air quality problems especially in cities.

What We've Delivered in 1999 from Australia……

We are delivering on these promises. Perth and Brisbane are in our 40 Cities Program. They are two cities where we can unilaterally introduce clean fuels due to our refineries in both cities.

As at January 2000 we have delivered the following:-

- Low Sulphur Diesel (500 parts per million sulphur) in Western Australia
- Lead Replacement Petrol in Western Australia and Northern Territory, and unleaded petrol in Papua New Guinea
- Ultra Low Sulphur Diesel (50 parts per million sulphur) Project (cost $200m) to supply Queensland and northern NSW well advanced

- Established close liaison with Governments, Environment Protection Authorities, Green groups, vehicle manufacturers and motoring organisations

- We have strongly supported the Government's Clean Fuels Agenda, which by end 1999 was firmly embedded as a key Government initiative.

What this means……

These changes mean annual reductions in these toxic compounds in the fuel of:-

- 67 tonnes of lead (equivalent to the lead content of almost 9000 car batteries)

- 1,800 tonnes of sulphur (enough to fill 27 B-double semi trailers)

What We Commit to in 2000/01 in Australia…..

- We will commence production of Ultra Low Sulphur Diesel in Brisbane to supply Queensland and other parts of eastern Australia in 3rd Quarter 2000

- We will invest at Kwinana (Perth) refinery to produce Low Sulphur Diesel to supply all of WA, and to produce some Ultra Low Sulphur Diesel for WA, as from 2001

- We will lower the benzene level from 2% to 1% in all grades of petrol at Kwinana as from 2001 for WA and other customers

- We will commence supplying Lead Replacement Petrol to Queensland, and northern NSW from Bulwer (Brisbane) refinery in mid 2000

- We will supply Lead Replacement Petrol to South Australia early in 2000

- We will supply it elsewhere in Australia where the supply logistics allow this.

We will do what we can, where we can, and as soon as we can.

What This Means…..

These changes in 1999 and 2000 mean annual reductions in these compounds in fuel of:-

- 115 tonnes of lead (equivalent to lead content in almost 15,000 car batteries)

- 2,700 tonnes of sulphur (enough to fill 41 B-double semi-trailers)

They also mean supplying cleaner fuels up to 5 years before the Government's mandatory requirements to do so, to the benefit of the environment and the consumer. Australia will have gone from 5 years behind the advanced economy norm to be with or ahead of the pack.

What's Next……

This is a journey which we will travel with the community, Governments, car manufacturers, green groups, and motoring organisations. ν

Lead in Harry Potter

Our "Lead in Literature" quote this issue comes from *Harry Potter and the Goblet of Fire*, the fourth Harry Potter book by J.K Rowling. One of several references to lead in the book occurs after Harry asks a girl to the end of 4th year high school ball with him, only to discover that she's already going with his rival, and is genuinely sorry.

"[After Harry puts the question] It was odd; a moment before, his insides had been writhing like snakes, but suddenly he didn't seem to have any insides at all…

"[After her reply] His insides had come back again. It felt as though they had been filled with lead in their absence.

Those of you who have been reading Harry Potter and often wondered how to pronounce Hermione, the 4th Book in the series gives the correct pronunciation "Her–my–oh–nee". ν

Socio-political Aspects of Lead Petrol Ban in South Africa

Extracts of Letters from Peter Wood, Safety Chemist, South Africa - Aug 2000

[Note from Elizabeth O'Brien] I began corresponding with Peter Wood after reading his submission on lead core wick candles to the US Consumer Product Safety Commission (CPSC) and asked him whether lead core wicks or lead core wick candles are manufactured, imported into or sold in South Africa or neighbouring countries. He posted my message to the local occupational hygiene email group. Peter also did some local research and then began sending some fascinating insights into reasons for the unlikeliness of a successful ban on leaded petrol in South Africa. Here are excerpts from his emails:-

Candle making seems to be a very popular pastime here. The local library has 8 titles on the subject in stock, including some locally published books (in both English and Afrikaans), but all these books were booked out.

There was a very large quantity (around 1000) of decorative candles available at the [local homewares] outlet, in numerous sizes and types. None of the candles was marked either with a country of origin, or with details about the manufacturer. [About 5% of the candles were] very fancy boxed candles in the shape of apples, lemons and other fruit which had wicks that appear to have a metal core.

Anybody who is concerned about the risks of lead absorption in South Africa, should also be concerned about the type of petrol they themselves use. Premium petrol here contains (if I remember right - I was on the SABS committee, but do not have the petrol Spec at hand) up to 4 grams of lead per litre. Since lead-based decorative paints were phased out here, many years ago, the chief source of lead in ambient air has been from the continued use of leaded petrol here. Research by, amongst others, Professor Harald Annegarn as long ago as 1979 showed that ambient lead levels in Johannesburg CBD increased markedly in the day, as cars entered the city, and then declined at night. Further research by a doctor in Cape Town, Yvonne von Shirndling (hope my spelling is right) some years ago on lead levels in the teeth of children, related the levels to behavioural traits and international experience. This was before unleaded petrol was introduced here; her work was one of the motivators for the release of unleaded petrol [in 1995]. Unfortunately, unleaded petrol has not "taken off" here, even though it was until recently priced at 4 cents less per litre than leaded petrol (for petrol 2 octane units lower than leaded petrol.) Since the octane rating of unleaded petrol was raised to that of leaded premium petrol 3 months ago, the price of the unleaded fuel was increased to that of leaded petrol. Unleaded petrol can be used by 95% of local vehicles, yet **only about 5% of local motorists have so far switched to unleaded petrol.**

Anybody who is concerned about lead absorption, and the risks it poses of especially developmental damage to young children, needs to look both at the type of candles they and others use, as well at the type of petrol they choose to use. We should be concerned about lead exposure from these sources, because the people who are exposed to lead in ambient air have no choice in the matter, and the exposure arises only because of the choices you and I make. We don't need to buy candles with metallic wicks; and most local motorists have no reason to keep buying leaded petrol. Furthermore, with both these sources of lead pollution, the risk of exposure does not stop, once the candles are extinguished, or vehicle ignitions are switched off. The volatilised lead in the air eventually settles out as inorganic lead

compounds - chiefly lead oxide - on all surfaces in the area. This settled lead is invisible, and no-one is aware of potential exposure. Lead settles on clothing, curtains, utensils, cigarettes, food, toys, infant's dummies, and all other objects. Lead exposure from leaded petrol or lead-core wick candle use can therefore also occur around the clock, from eating food (remember how many road-side vendors we have) or from chewing or licking any objects that have been in the vicinity of leaded-core wick candles or close to vehicles and busy traffic routes. Continued exposure by breathing can also occur whenever settled dust is disturbed and once more becomes airborne, or whenever contaminated clothing or curtains are disturbed.

I must tell you that I think it will be difficult to raise the issue of the toxicity of lead here, because of the number of other health issues that are getting media attention at present.

Possible lead poisoning is only one of a number of health-related issues that are causing concerns here now. Most of the concerns about poisoning (by a variety of substances) relate to exposure in the workplace, and to substances other than lead. Several workers have died or suffered severe disablement as a result of occupational exposure to **asbestos, silica, chromates and mercury**. (You may have heard about the Thor Chemicals case, where a number of employees were poisoned by mercury; mercury wastes were imported into the country, and widespread environmental pollution was caused near the Thor Chemicals plant.). The major pollution topic in the media here at present is about the effects of occupational and environmental exposure to asbestos (the Cape PLC case.). Whole tracts of the country are contaminated with asbestos mining tailings; rivers are contaminated; rural roads have been built with asbestos, scores of communities are living in asbestos-contaminated areas, and it is probable that hundreds if not thousands of people die annually from either asbestosis or mesothelioma. (There are no accurate statistics, because many deaths occur among rural communities without hospital or diagnostic services.). Numbers of people living near a large state-owned steel mill have also been poisoned by underground water contaminated by effluent from the steel mill; and near the historical gold mining town of Barberton, **arsenic** entered the river (the only water supply for many villagers) because of pollution from milling gold ore that contained arsenic. We have also had scares about **radioactive waste**, resulting from the mining of uranium - radioactive elements deposited in the scale that formed on pipes and tanks used for processing ore, tailing dumps and leachate dumps were found to be radioactive, and several scrap metal dealers were found to be at risk from metal contaminated with radioactivity.

These are just the pollution-related issues of concern. There are many more issues regarding public health: the primary health care system here is underfunded; and many people do not receive adequate care - the **infant death rate** is one of the highest in the world. There has been a resurgence in **malaria**, and low-lying areas of the country to the north are suffering an epidemic of malaria that is resistant to chloroquine. Last week, 3 newly born babies were found dead, abandoned by their mothers - although abortion has been legalised here for about 6 years, not everybody knows who to contact; several clinics and hospitals that are listed as offering to terminate unwanted pregnancies, refuse to take such cases because the staff have moral objections to abortions. Whatever one's stance on abortion, it is clear that some mother's see no solution except that of **infanticide**.

The major public health concern here though is probably the incidence of **HIV**; **in some areas 25% of the population is infected**; many children are born with HIV, and many are orphaned as a result of AIDS. AZT and other drugs that inhibit development of HIV are not available under the state health scheme, and are too expensive for anyone except about 0.5% of the population.

Editors will not publish a letter concerning the risks of lead; from the perspective of the

editors, they choose the items that seem most relevant to their readers… because **crime (highjacking, armed robberies, rapes** etc) are very emotive issues now… [and] **unemployment is close to 30%**. I am involved with a coalition of local community groups who are involved in a fight about dust and air pollution caused by a local gold mine, and… I have helped organise protest meetings about dust pollution and have taken part in a march to activate the local community.

Elizabeth O'Brien responded (in part) with the following email:

My whole philosophy of the way things work is that lead is the perfect model for toxics use reduction. The ban on leaded petrol that is sweeping the world is often touted as the greatest success in public health in the last fifteen years and conversely the widescale sale of leaded petrol is thought to be the greatest disaster for public health of the twentieth century.

Lead is the most studied toxic substance and the one to appear uppermost on lists of priority toxics (eg lead is priority "number one" for both the US Agency for Toxic Substances and Disease Registry and for the Organisation for Economic Cooperation and Development (OECD) [whose member states are the top 24 developed countries in the world].

Lead has led the way in toxics use reduction legislation throughout the world with the first ban on leaded paint at a height accessible to children, placed by the Queensland (Australia) government in 1922. Legislation banning leaded paint is still slowly making its way across the planet and in its wake, legislation ensuring adequate management of the lead paint (that has already been used) is a matter of constant vigilance for public health campaigners.

Yet we are told that lead control legislation is still a model of public health practice. Can you imagine how slow legislation and other controls on other toxics from the cradle to the grave, must be, to make lead control look like a success story??

The mechanics of change in terms of public health policy appear to me to be about raising an issue at the right time in the right place (maybe not South Africa today but possibly South Africa tomorrow) and hitting critical mass. That is, your letter to the editor would be far more likely to have been published had there been other items on lead in the news or among the letters and if it was able to be linked to some other big news story. For example, lead poisoning may well be an issue for the gold assayists at your local gold mine and if you could get a local journalist interested in workers health it is likely that blood lead tests are not occurring as frequently as they should. There is an article that may inspire you, about a gold assayist who had arguably the worst case of lead poisoning in the world. Denver toxicologist says former gold-mine employee of Newmont Mining Corp "is probably one of the most acutely lead-poisoned people in the world" at 250 µg/dL. The Denver Post article dated 25/4/00 can be found at www.denverpost.com.

Peter Wood responded:

There is an additional socio-political aspect to the leaded petrol issue in South Africa that I did not mention : the age and ownership of the vehicle fleet. There is a fairly high proportion of cars still on the roads here, that are older than 10 years - I myself have one 6-year old car that I run on unleaded petrol, and one 22-year old pick-up that perforce still runs on leaded petrol. Now I note from postings on the global lead network that you directed me to, that older vehicles apparently can be run on unleaded petrol without danger of valve-seat recession; but this is certainly not the picture available to the public here. Both local petrol companies and vehicle distributors are united in saying that older model vehicles should under no circumstances run on unleaded petrol, because of the risk of valve seat damage. **The vehicle manufacturers say that if an older vehicle is run on unleaded fuel, it will be at the owners' risk.**

This is a politically sensitive issue in South Africa, because the owners of older vehicles are generally economically disadvantaged people - some are pre-maturely retrenched, others are black citizens who have only one car, that may be 25 or more years old. The major transport mode for urban black commuters is by means of "taxis" that use vehicles such as Toyota Hi-ace vans and Nissan E-20s. Taxi ownership has been one of the major ways some black citizens have had for economic development; the taxis the drivers own are their only source of income. Many of these taxis are more than 10 years old and run on leaded petrol. If the government were to ban sales of leaded petrol here, there would be major political pressure brought to bear, because the people who would be forced to replace their vehicles with younger models, and the people who would be at risk from failed valves, would be the very people who could least afford it.

It is not politically wise to pick a quarrel with taxi-owners here. The government recently proposed that current taxis should be phased out; to be replaced by larger, safer "mini-buses". This move caused a day-long protest by taxi associations that saw major roads blocked off and city centres deserted. Taxi associations are very powerful and militant here; rival taxi groups regularly shoot at each other in the streets, or set the taxis of rival groups on fire. I would estimate that between 150 and 200 taxi-owners, passengers, police and passers-by have been killed in so-called "taxi-violence" during the last 10 years; in the last 6 months alone there have been about 6 incidents when gunmen, believed to work for taxi owners, have attacked "Golden Arrow" buses near Cape Town, apparently because the "Golden Arrow" buses are perceived to "steal" passengers from taxis. One taxi killing in 1994, where 8 people were shot dead, took place in Wadeville, 10 km from where I stay; I actually came onto the scene about ten minutes after it happened, fortunately after the gunmen had already left.

I note you say that China has been one of the countries that has moved completely to unleaded petrol; how they could do this, I do not know, unless car engines there are different in design, and are not susceptible to valve problems. I would be very interested to know more about the reasoning that lead China to ban leaded petrol; there may well be useful information for South Africa in these details. Most of the vehicles here come from either Japan or Europe; there are very few American designed models (much like Australia, I expect).

If there is a technically sound way of showing that older vehicles of Japanese and European design can be safely run on unleaded fuel, without additional costs for valve lubricants, despite what the vehicle manufacturers and petrol companies say, there may be a chance to advance a ban on leaded petrol here. Otherwise anybody who stands up to propose a total ban on leaded petrol will stand a real risk of suffering lead poisoning in the form of an AK-47 bullet!

Elizabeth responded: Hopefully you will find the answers at ***www.oecd.org/ehs/LEAD/reports.htm*** *to many of your questions about how it is* ***not necessary*** *to kill off all the old cars on the road. Valve lubricants and octane enhancers that do not contain lead are the key.* ν

OECD LP Ban Scorecard

The Organisation for Economic Cooperation and Development (OECD) website (above) contains half a dozen documents under the heading *Co-ordinating International Activities Aimed at Reducing Lead in Gasoline: A JOINT PROJECT BETWEEN* ***OECD*** *AND* ***UNEP****.*

It is worth noting that while Japan was the first country outside Europe and North America to join the OECD, and Australia was the second - Japan was the first OECD member country to ban leaded petrol (in 1980) and Australia may be the last (in 2002). ν

Lead in Drinking Water in Australia

Hazards associated with lead based solder on pipes

In Australia, little is heard about drinking water as a source of lead poisoning, probably because – unlike Europe and the US[1] – lead pipe plumbing is not widespread in Australian homes. The late Lead Reference Centre (a section of NSW Environment Protection Authority devoted to lead policy and education from 1997-9) has not even devoted a fact sheet to the subject. Nevertheless, it may be an issue worth investigating if your home was built prior to the 1930's, when copper pipes replaced lead pipes.

The main concern, however, arises out of the common use of lead based solder on brass fittings and copper pipes up until as recently as 1989. As a result of corrosion, there is a potential for the lead to leach into the water after prolonged contact. It is therefore the consumption of first flush water – the first cup of tea in the morning – which presents a hazard.

This was demonstrated in a study conducted by Dr Brian Gulson[2], in 1992 in the Sydney suburbs of Turramurra, Burwood, and Epping and in Broken Hill in the far west of New South Wales. The study revealed that the lead levels in first flush tap water in many cases exceeded the acceptable level.

Further studies conducted in Perth (WA) in 1993 on cold water from kitchen taps have indicated that 5% of samples were above the acceptable lead level as defined by the National Health and Medical Research Council (NHMRC), 2% were above the limit for cadmium and 12% above the limit for copper.[3]

The maximum acceptable level of lead (and other heavy metals) in drinking water has been established by the NHMRC in the "Australian Drinking Water Guidelines" at 0.01 mg/L (lowered from 0.05 mg/L). And yes, as your plumber should be able to tell you, the use of lead based solder on drinking water pipes has been banned in Australia since 1989 (see box).

However, there is virtually no monitoring of the water quality at the kitchen tap. Water quality monitoring takes place before the water reaches your home, with the exception of the occasional monitoring at the garden tap. This is not going to tell you whether the water in your kitchen is safe after travelling in your plumbing system.

Legal framework: Standards and Regulations…

The Australian Standard AS 3500 Part 1.2 (1998) 'National Plumbing and Drainage – Water Supply – Acceptable Solutions' effectively prohibits the use of lead based solders by providing that soft solder shall "not contain more than 0.1% lead by weight". This requirement was adopted in the 'Plumbing and Drainage Code of Practice' and given its legal force by its inclusion in Water Authorities regulations. In Sydney for example, it is in the 'Sydney Water Corporation (Plumbing and Drainage) Regulation (1995)', section 4.

The manufacturers of lead solder are under no obligation to label their product as unsuitable for use on drinking water pipes. So beware of the Do-It-Yourself (DIY) plumber jobs!

There is also a standard pertaining to the lead content of taps (and other water supplies, currently allowing up to 4.5% lead as an alloying element in brasses used in potable water supply.

[1] The USEPA has suggested that 20-40% of the average blood lead levels in children in the US is from drinking water.

[2] 'Effect of plumbing on lead content of drinking water and contribution to lead body burden', Brian L. Gulson, Alistair J. Law, Michael J. Korsch, Karen J. Mizon, *The Science of the Total Environment,* 1994.

[3] 'Lead contamination in Perth drinking water', Peter McCafferty MRCI, Roger Schulz and Ron D'Ercole, *Chemistry in Australia,* August 1995.

What can you do about it?

Here are some steps you can take to protect yourself and your family if you suspect that lead based solder was used in your home:

- If you do not know when or how your plumbing system was installed, you can collect a sample of water from your kitchen tap and send it to a laboratory for analysis;
- Flush your plumbing in the morning. It takes on average 10 litres – or one minute – of running water to flush each tap every morning (I know, this is not good for water conservation). This is however impractical in high rise buildings including most office buildings, due to the length of pipes;
- Avoid using hot water for drinking or cooking purposes (this advice applies equally to non-leaded plumbing systems - in order to reduce copper intake);
- Install a water filter.

If your drinking water comes from a rainwater tank…

You should definitely have your tap water tested for lead by a laboratory. Phone the Lead Advisory Service Australia - 1800 626 086 - to ask for a free sample bottle and instructions. **One quarter of the tankwater samples tested in a Victorian study[4] contained more than the acceptable drinking water level of lead.** Lead contamination of tankwater could be the result of lead paint or flashing on roofs, lead paint or soldering in the guttering, soft soldered tanks or lead fallout from air pollution including from smelting, mining, lead paint removal, vehicle emissions and woodsmoke, lead washers from corrugated roofing (which sometimes fall into the tank), overflow from hot water systems and evaporative air conditioners. Go to www.dhs.vic.gov.au/phd/9911054 for a pamphlet on maintenance of tanks, entitled "Your Private Drinking Water Supply".

Government policies on lead in drinking water in Australia

The recommendations of the National Strategy for Reducing Lead Exposure in Australia[5], include to:- "implement a pilot program for testing lead in first flush drinking water, rainwater tanks and drinking fountains; conduct education programs to inform home handy persons of the dangers in using lead solder in plumbing and review drinking water guidelines for lead in context of an overall lead reduction strategy." **Contact your state health department** to ask for an update on this policy and f education program in your state.

> ***"Will that be leaded or unleaded coffee sir?"***
>
> *A study conducted in Perth on water collected from water boilers, urns and coffee and cappuccino machines from restaurants, offices, workplaces and schools, found that 67% of the samples contained excessive levels of lead. The probable source of the contamination was brass components in contact with hot water[6].*

Factsheet written and illustrated by Patricia Parkinson, Lead Advisory Service Australia

[4] 'Investigation of Microbiological and Chemical Water Quality in Rainwater Tanks in Victoria, Report No. 139/97' by Bannister, R; Westwood J; McNeill, A; Water Ecoscience Pty Ltd for Department of Natural Resources and Environment (VIC), June 1997.

[5] Recommendation 8: 'Recommendations for a National Strategy' in *Reducing Lead Exposure in Australia* – July 1993, Final Report, 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.

[6] Op cit note 3.

Government Policies on Lead in Drinking Water in Australia

Comments and collation of policy extracts by Elizabeth O'Brien, National Coordinator, The LEAD Group Inc

It is unacceptable for public authorities to turn their interest and funds away from the lead issue without having implemented their own policies. What happened to the recommendations of the National Strategy in Reducing Lead Exposure in Australia, to "Implement a pilot program for testing lead in first flush drinking water, rainwater tanks and drinking fountains; conduct education programs to inform home handy persons of the dangers in using lead solder in plumbing and review drinking water guidelines for lead in context of an overall lead reduction strategy" ??? The LEAD Group Inc. invites anyone to show that any single lead in drinking water strategy planned in the following 5 government policies has been carried out adequately and to completion.

Further, on the basis of one Victorian study that found <u>one in every four</u> rainwater tanks tested in Victoria had lead levels at or exceeding the Australian Drinking Water Guidelines, and knowing that 13% of all Australian households use rainwater tanks for drinking water [Reference: "Guidance on the Use of Rainwater Tanks" by David Cunliffe (1998)]***, it can be extrapolated that <u>over 600,000 Australians have too much lead in their drinking water.</u>***

<u>When one in four tanks is likely to be lead contaminated, a much greater effort at education, lead testing of tankwater and blood lead testing of exposed people needs to be undertaken.</u>

<u>REFERENCE 1</u>: "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 other things]:

- Lead in water and wastewater – through review of existing data on drinking and wastewater and identification of problem areas

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

- Lead in water and wastewater – through assessment of data on lead contamination and the development of action plans to address problems identified.

<u>REFERENCE 2</u>: "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.

<u>Recommendation 8:</u> Implement pilot program for testing lead in first flush drinking water, rainwater tanks and drinking fountains. Conduct education program to inform home handypersons of the dangers in using lead solder in plumbing. Review drinking water guidelines for lead in context of an overall lead reduction strategy.

Rationale: Despite widespread confidence among water industry professionals about the low level of lead in Australian water, there is virtually no evidence about the lead content of

first flush water in homes and drinking fountains. Testing of drinking water is almost exclusively, focused on water sources and distribution systems. If lead is present in drinking water, it will not be detected in these tests because its likely source is household plumbing; commonly lead solder used with brass fittings or copper pipes.

Even where tap water is tested for lead, standard procedures involve measurement of running water. Lead from plumbing shows up in first flush tap water, that is, water drawn after the system has been standing idle for several hours or overnight. A small test in several Australian cities found that although most samples had very low lead content, a very high level (up to 64 µg/litre) was found in some cases. Given the hazard posed to children by levels of lead in drinking water, there are good reasons for immediately undertaking a pilot sampling program to determine lead levels from first flush water in homes and drinking fountains used by children.

Although the contribution of lead in water to blood lead level is relatively small in comparison with that of lead in petrol, an overall lead strategy should examine the contribution from all sources and the potential for reduction. The potential for reducing lead exposure from each source must be examined. Only by considering all sources together will it be possible to determine the appropriate guideline for lead in water. (For impacts, see page ES-34.)

Principal agencies: NHMRC, Water Resources Council. **Others involved:** Water authorities, State health departments, consumer organisations.

Major activities:

- Develop and implement pilot program for testing lead in first flush water. The program should target houses most likely to have conditions generally associated with high lead levels in tap water.
- Develop and implement pilot program for testing rainwater tanks to determine if lead is a problem in drinking water from tanks.
- Develop and implement pilot program for testing water from drinking fountains, particularly first flush water.
- If the results of the pilot programs indicate that lead is present in water from taps, rainwater tanks or drinking fountains, develop appropriate programs of remediation. Prepare and conduct public education program aimed at home handypersons to warn of dangers in using lead solder in plumbing. This issue should also be one aspect of the program for renovators.
- Review drinking water guidelines in context of maximum overall lead intake that will permit achievement of the blood lead level goal.

Timetable: Immediately develop and implement pilot drinking water testing program. Immediately prepare and implement public education program on dangers of lead solder use. Immediately begin examination of maximum lead intake to achieve goal, including contribution of drinking water.

***REFERENCE 3*: NSW Lead Management Action Plan (LMAP).** *Published for the *Interdepartmental Lead Taskforce by NSW Environment Protection Authority, Sydney, November 1994.*

*** Agencies represented on the Interdepartmental Lead Taskforce:**

1. **Department of Agriculture**
2. **Department of Conservation and Land Management**
3. **Environment Protection Authority**
4. **Office of Energy**
5. **NSW Health Department**
6. **Department of Housing**
7. **Department of Local Government and Co-operatives**
8. **Department of Mineral Resources**
9. **NSW Public Works**
10. **Roads and Traffic Authority**

11. **Department of Transport**
12. **Water Board**
13. **WorkCover Authority**
14. **Board of Studies**
15. **Technical and Further Education Commission**
16. **Commonwealth Environment Protection Agency**

N.B. the number of each strategy was assigned by the Lead Advisory Service – in the original document, the 125 strategies appear as dot points underneath each sub-heading.

3.11 Lead in Water and Wastewater

1. Data collection

Strategy 110. Conduct a water sampling program which includes the following areas:

- high rise (complex plumbing systems)
- schools (long run systems)
- old urban areas

(***Strategy*** implementation: Water Board and other local water authorities through the provision of research grants funded by appropriate Commonwealth and State authorities. NSW Public Works to develop a program for rural water authorities)

Strategy 111. Information obtained through implementation of the above should be incorporated into the education strategy where appropriate.

(***Strategy*** implementation: Lead Reference Centre)

Strategy 112. Data collected on lead within the water and wastewater section to be included in the EPA State of the Environment report, to enable the effectiveness of reduction initiatives to be monitored.

(***Strategy*** implementation: Data collection undertaken by water authorities and NSW Public Works. EPA to incorporate data into the State of the Environment Report)

2. Materials and Standards

Strategy 113. Reduce the allowable level of lead in plumbing products to the minimum practical level.

(***Strategy*** implementation: industry, water authorities and Standards Australia, co-ordinated by the Department of Consumer Affairs)

Strategy 114. Investigate the application of environmentally benign alternatives to lead plumbing products.

(***Strategy*** implementation: industry)

Strategy 115. Mark solders as either suitable or unsuitable for use in plumbing systems.

(***Strategy*** implementation: industry; co-ordinated by the Department of Consumer Affairs)

Strategy 116. Develop standard methods for testing the extraction of metals from products in contact with drinking water [Australian Standard AS 4020 (interim Standard)]

(***Strategy*** implementation. Standards Australia)

Strategy 117. Amend the draft NHMRC goal of 10 μg/L of lead in drinking water to include prescribed sampling methodologies.

(***Strategy*** implementation: NHMRC; co-ordinated by ANZECC)

3. Education

Strategy 119. Develop comprehensive general and targeted education campaigns which:

- focus on key target groups (eg carers of young children, lead industry workers and do it yourself plumbers)
- focus on ways to minimise individual exposure
- focus on problems associated with first draw water and the use of hot water systems used specifically for consumption purposes.

Investigate the feasibility of distributing this material with water bills and at plumbing hardware centres.

(***Strategy*** implementation: water authorities in consultation with the Lead Reference Centre)

4. Water Supply and Water Treatment

Strategy 120. Develop exposure reduction strategies, especially for domestic situations, where indicated necessary by the outcome of the recommended data collection program.

(***Strategy*** implementation: Undertaken by the relevant water authorities or Public Works in rural regions. Prevention strategies which focus on education should be developed by

the Lead Reference Centre with input from relevant authorities)

Strategy 121. Where practical, introduce water treatment to reduce lead leaching rates from supply systems in high risk areas.

(***Strategy*** implementation: Water Board/local water authorities/local government)

Strategy 122. Strictly apply the guidelines for the application of biosolids and sewage effluent to land within water supply catchments.

(***Strategy*** implementation: Water Board/local water authorities)

Strategy 123. Investigate the efficiency of water filters to remove lead especially for schools and multileveled buildings.

(***Strategy*** implementation: Manufacturers. Information co-ordinated and reported by the Lead Reference Centre)

Strategy 124. Investigate ways of reducing the cost to the consumer of lead analysis of drinking water in areas of high lead exposure.

(***Strategy*** implementation: Water Board/local water authorities)

Strategy 125. Develop effective and economic mitigation techniques.

(***Strategy*** implementation: Water Board/local water authorities)

REFERENCE 4: "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 the following Members of Parliament:

1. Paul Zammit (Chairman)
2. Jeff Hunter (Deputy Chairman)
3. Bill Beckroge
4. Jeremy Kinross
5. Sandra Nori
6. Bill Rixon
7. Clover Moore

81. That tank water in rural communities and on individual rural properties be randomly tested for lead content by an appropriate authority.

Lead in Plumbing Products

85. Due to the differing views given in evidence, the Select Committee recommends that further testing for lead in first flush drinking water, rainwater tanks and drinking fountains ("bubblers") in schools, high rise buildings and older urban areas be undertaken.

86. That the NSW Government conduct an education program to inform home handy persons of the dangers of using lead solder in plumbing.

Other Lead Exposures

96. That the Select Committee supports the implementation of the remaining recommendations of the *New South Wales Lead Management Action Plan 1994.*

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]:

Data Collection

Both the TR [***Report*** *of the NSW Interdepartmental Lead* ***Taskforce*** *1994*] and the LWaterWWGR [*Lead in Water and Wastewater Working Group Report*] recommend a water sampling program but, whereas the TR gives examples of areas to be sampled high rise buildings, schools and old urban areas, the LWaterWWGR gives high rise buildings, schools, bottled water and rainwater tanks.

Materials and Standards

The TR omitted the following recommendation of the LWaterWWGR: "that water supply authorities and individuals take action to reduce the lead present in systems under their control whenever the opportunity arises".

Education

The LWaterWWGR recommends that the education campaign should clearly describe the relative risks and importance of different

lead sources and the interaction between the components.

The Lead Education Working Group Report recommends "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."

REFERENCE 5: 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).

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…

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….

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.

… 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;

(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; …

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; …

Annex I

… g. Reduce lead levels in drinking water through appropriate measures (e.g., treatment of the water, use of materials in the distribution system which do not release lead into the water);

j. Establish strategies, including public information programmes, to abate significant exposures arising from the historic use of lead-containing materials in buildings. ν

Victorian Tankwater Lead Results Alarming!

Lead Advisory Service Australia staff had an incredibly hard time tracking down a copy of the Victorian drinking water survey - Victorian Health Department officials were unaware that a lead in drinking water (at the kitchen tap) survey had been done in Victoria - apparently the only one done in Australia since 1993. The study possibly arose out of the second strategy in a sixth government plan (see below) or, more likely, through a policy to assess tankwater quality (in general) in another department.

*It is amazing that the extremely high rate of excess lead in drinking water from rainwater tanks revealed by the study - **one in four rainwater tanks** - was not mentioned in the book that health bureaucrats in most states regard as the best government guide on rainwater tanks in Australia - "Guidance on the Use of Rainwater Tanks" by David Cunliffe. This book is one of the National Environmental Health Forum (NEHF) Monographs and all state Directors of Environmental Health are members of the forum. The book does quote results for other contaminants from the Victorian study, whose title is " Investigation of Microbiological and Chemical Water Quality in Rainwater Tanks in Victoria, Report No. 139/97 (1997) by Bannister, R; Westwood J; McNeill, A; Water Ecoscience Pty Ltd. It is published by Victoria's Department of Natural Resources and Environment, but even Victoria's Department of Human Services glossy colour pamphlet on tankwater does not mention the lead results. Is drinking water, like indoor air, one of those issues that no government agency is solely responsible for, and thus dealt with adequately by no agency? Please let the editor know if your state deals adequately with the issue of lead in drinking water.*

REFERENCE 6: *"Lead Strategy"* (prepared By Environment Health Program, Public Health Branch, Dept Of Health and Community Services [H&CS], Victoria) Sept 1993 Publ'n No. 93/0093.

WATER

- H&CS will conduct a survey of lead in drinking water at the point of use in metropolitan homes. {Appendix I timetable: TAP WATER SURVEY October 1993 - April 1994}

- There may be a small number of rural supplies (including possibly some tank supplies to preschool centres) that are unable to comply with this level [the proposed World Health Organization level of 10 micrograms per Litre (10 μg/L)], and a small survey to assist in identifying these is also planned in conjunction with the State Water Laboratory. {Appendix I timetable: RURAL/TANKWATER SURVEY May - October 1994} ν

Babies Soothed To Sleep With Petrol Sniff

The following is an article from the Sydney Morning Herald (SMH) 15/8/00 p.1. Reprinted with the kind permission of AAP.

Some indigenous mothers used petrol-soaked rags to comfort their babies, according to a submission to a parliamentary inquiry yesterday.

The House of Representatives inquiry into substance abuse in Australian communities was told the petrol rags were tied to babies' jumpers to get them to sleep.

This was one of several "alarming anecdotes" in the submission from the Department of Family and Community Services, which "highlight the impact of substance abuse on indigenous people and communities".

"There is evidence to suggest that indigenous people suffer depression at a higher rate than non-Aboriginal people; that rates of self-harm and suicide are higher; and that substance abuse, domestic violence and child abuse contribute additional risk factors," the submission said.

"Indigenous women have identified that a common practice among some mothers to soothe babies and get them to sleep has been to dip rags in petrol and tie them on to babies' jumpers."

Child neglect and abuse was a common result of substance abuse in Aboriginal communities.

"Children are left to fend for themselves whilst their parents spend time in local clubs and pubs," the department said.

In some rural areas, a significant number of children did not attend school or dropped out at a very young age.

The department also drew attention to the practice of hanging a tin filled with petrol around a person's neck, presumably to leave their hands free to do other things while sniffing. "Many of the people who do this are children."

A school principal in one area of regional NSW identified the top three health issues for the area as drugs and alcohol, petrol sniffing and mental illness.

The life expectancy for indigenous people in the area is 33 years.

Domestic violence in Aboriginal communities is made worse by excessive substance usage.

Women and children were often forced to leave the family home because of domestic violence and in some towns, it was generally expected that incidents of domestic violence would be higher on pension days when people had funds to finance their drug and or alcohol dependency.

The department said these were typical of the experiences of indigenous communities throughout Australia.

"Solvent sniffing appears to be a significant problem among isolated Aboriginal communities, where it has major health and social implications, particularly as the people becoming addicted to this are so young."

To compound the problem, it had been suggested this addiction was harder to break than more "commonly understood" forms of abuse, such as alcohol and heroin.

The submission said that high levels of substance abuse among young people between 16 and 21 in communities was often accompanied by "nightly violence and law-breaking which the communities have no resources to alleviate or manage".

In some cases, drug abuse problems were aggravated by lack of adult supervision and the absence of indoor recreation facilities to provide a focus for young people during the rainy season.

"Substance abuse leads to high levels of incarceration among indigenous people. This results in a whole range of social issues for the individual concerned, their family and dependants, and their community."

The submission said that indigenous communities tended to seek their own solutions to substance abuse, partly because of a "shame factor" associated with revealing the issues to outsiders.

The lack of trained indigenous counsellors created pressures in communities trying to deal with the problem by using their own resources.

"Indigenous families will also take responsibility for feeding, housing and supporting individual users and their children, creating further pressures in communities with high existing levels of poverty."

The submission stressed the importance of culturally appropriate responses. It was necessary to overcome "the overwhelming influence of the dominant culture that is inherent in all service structures in remote Aboriginal communities".

The parliamentary inquiry is investigating the social and economic costs of substance abuse with particular regard to family relationships, crime, violence, law enforcement, road trauma, workplace safety and productivity, and health care costs. ν

Lead Advisory Service Australia

Extracts of Lead Advisory Service Australia Reports for FY 2000 to Environment Australia

By Elizabeth O'Brien, Manager, Lead Advisory Service Australia

In June 1999, The LEAD Group was granted $15,000 out of the publications budget of the Air and Water Quality Section of Environment Australia, so a free-call number for the Lead Advisory Service Australia (LASA) could be given in the Section's "Lead Alert: 6 Step Guide to Painting Your Home" booklet. *These extracts are from the quarterly reports to Environment Australia on the interstate calls dealt with by LASA.*

The volume of calls dealt with by LASA staff has drastically increased (by 35.8%) during a period when our total funding only increased by $15,000 (to 6.5% of the total funding) that is, the grant from Environment Australia (EA). Firstly, looking at the total calls from all states, here is a comparison of the **twelve months** that LASA has been funded by EA [July 1999 to June 2000] with the previous **twelve months** when LASA was only funded by NSW EPA [July 1998 to June 1999].

PERIOD	12 mths prior to EA funding	12 mths EA funded	% Increase
Total no. of calls	**4,053 calls**	**5,503 calls**	**35.8%**
Interstate calls	**402 calls**	**1111 calls**	**276.4%**

Secondly, the number and percentage of calls with callers in states and territories outside NSW has shown a general increase from the first quarter to the fourth quarter:

Number and Percentage of Calls with Callers in States Outside NSW

FY 99-2000	**1st Q**	**2nd Q**	**3rd Q**	**4th Q**	Total
CALLS	(Jul-Sep 99)	(Oct-Dec 99)	(Jan-Mar 00)	(Apr-Jun 00)	12 mths
Vic	50 (3.37%)	80 (5.94%)	95 (6.65%)	109 (8.85%)	334 (6.07%)
ACT	45 (3.04%)	56 (4.16%)	81 (5.67%)	67 (5.44%)	252 (4.58%)
Qld	40 (2.70%)	32 (2.38%)	74 (5.18%)	61 (4.95%)	206 (3.74%)
SA	49 (3.31%)	37 (2.75%)	41 (2.87%)	50 (4.06%)	177 (3.22%)
WA	13 (0.88%)	12 (0.89%)	29 (2.03%)	19 (1.54%)	73 (1.33%)
Tas	4 (0.27%)	5 (0.37%)	20 (1.40%)	24 (1.95%)	53 (0.96%)
NT	1 (0.07%)	2 (0.15%)	12 (0.84%)	1 (0.08%)	16 (0.29%)
TOTAL	**202 (13.6%)**	**224 (16.6%)**	**352 (24.6%)**	**331 (26.9%)**	**1111 (20.19%)**

Government Contributions to Call Costs Compared to Lead Income

"Lead Income" is here defined as the tax for the lead used in petrol, introduced in 1994 as part of the agreements of the Lead Roundtable, and does not take into account the tax on lead concentrates, ingots or products exported by Australia. Total "Lead Income" between March 1994 and January 2000 was over $725 million - only the income for the most recent complete calendar year is considered here.

	Lead Advisory Service Aust (LASA) CALLS(%)	Total cost of calls per state	**CONTRIBUTIONS** to LASA in FY 99-2000 from State and Federal Govt Agencies:		*% of Lead petrol excise spent on LASA calls**	Fed'al Govt. Lead petrol excise **INCOME 1999 ****
			NSW EPA	Env't. Aust		
NSW	4148 (75.38%)	$173,354	$162,047	$11,307	*0.0454%*	**$24,908,496**
Vic	334 (6.07%)	$13,961	$13,050	$911	*0.0036%*	**$25,374,843**
ACT	252 (4.58%)	$10,534	$9,847	$687	*0.0572%*	**$1,201,039**
O/seas	237 (4.31%)	$9,912	$9,266	$646	*N/A*	N/A
Qld	206 (3.74%)	$8,602	$8,041	$561	*0.0027%*	**$20,512,631**
SA	177 (3.22%)	$7,406	$6,923	$483	*0.0051%*	**$9,480,737**
WA	73 (1.33%)	$3,058	$2,859	$199	*0.0020%*	**$9,891,712**
Tas	53 (0.96%)	$2,208	$2,064	$144	*0.0038%*	**$3,797,482**
NT	16 (0.29%)	$666	$623	$43	*0.0052%*	**$824,954**
Any (email)	7 (0.13%)	$299	$280	$19	*N/A*	N/A
TOTAL	**5503 (100%)**	**$230,000**	**$215,000**	**$15,000**	***0.0171%***	**$87,933,131**

Notes to the above table:-

As 5,503 is the total number of calls for FY 1999-2000 and the total grant to LASA for that period was $230,000, one way of looking at this is that each call cost $41.80 of which the Federal Government's contribution was $2.72 per call for a total of $15,000 per annum or 6.5% of the total grant to LASA. The community cost of each lead poisoned child (ie for each 10µg/dL rise in lead in blood) is $10,280 in remedial education costs, health costs and lost earning potential. When compared to the call cost of LASA's service, if only one of 246 calls results in preventing one child from exceeding the Australian goal, the service is cost effective. We estimate our service to be many times more effective than this.

* - This figure was obtained by comparing the Environment Australia contribution to LASA for FY 1999-2000 (to cover costs of calls), with the Federal Government's income from the price differential between unleaded petrol and leaded petrol - approximately 2c per litre - (called the "lead petrol excise") in calendar year 1999.

** - Data on leaded petrol volumes sold by state and the varying lead excise figures were obtained from Department of Industry, Science and Resources. The excise figures for NSW and ACT were obtained by taking the NSW lead petrol excise figure and splitting it according to population as separate data is not collected for NSW and ACT.

The split was 4.6% for ACT and 95.6% for NSW, based on Australian Bureau of Statistics (ABS) population data for the December Quarter 1999.

Conclusions about Equity of Contributions to LASA

From the above it can be concluded that only a tiny fraction (0.0171%) of the federal government's Lead Income for calendar year 1999 arising from an agreement of the Lead Roundtable meeting in 1993 has been given back to the community through Environment Australia's contribution to the Lead Advisory Service Australia during FY 1999-2000. Another important agreement from the Lead Roundtable was 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."

For FY 1999-2000, the only evidence remaining of a National Lead Abatement Strategy is the booklet (*"Lead Alert - 6 Step Guide to Painting Your Home*), the Australian Standards on Lead Paint Management, some funding of remediation and education programs in lead mining or smelter towns and LASA's funding. All other lead activities would appear to be funded by state or local governments *[or initiated by petrol companies]*. Whether the Lead Petrol Excise goes into general revenue and ends up going to the states for specific or general programs is not known to the present writer. It is clear that nowhere near the remaining lead income (after subtracting the LASA grant from EA (remainder is $87,918,131) or even after subtracting the NSW EPA grant as well (leaving $87,703,131)) is being spent on lead abatement nationally. Looking at the interstate equity issue, it can be seen that in FY 1999-2000, **NSW taxpayers contributed $52,953 to interstate call costs.** In addition to this, with only a 7% increase in LASA's annual budget (ie the $15,000 from EA), the staff handled an increase of 35.8% in the number of calls. The way that this was achieved was not only through increased efficiencies in database entering of calls to enable swift handling of send-out requests, but also by an enormous contribution by our dedicated staff in terms of labour donated to the cause of keeping the Lead Advisory Service functional. **The total monetary value of donated staff time was $10,223 in the 4th quarter, bringing donated staff time for the financial year to $42,835. Adding non-staff volunteer time gives a total value for volunteer time given to LASA of nearly $49,000.** Without this contribution from the community, the excellent level of service on lead-related matters delivered to the community by the Lead Advisory Service Australia would not be possible.

Complementing and enhancing government initiatives on lead

[The following are extracts from the 2nd Quarterly Report - written in January 2000]

On the first day of October 1999 CHOICE Magazine, prompted by information about lead core wick candles provided by a member of The LEAD Group's Technical Advisory Board, published two articles about lead, one a general article, the other on candles. This brought the federal government's ban on lead core wick candles to the attention of the well-informed buying public of Australia.

LASA would relish the opportunity to raise the issue of a leaded petrol phase-out with the 700 car clubs we have in our database already. If a media release or Q & A type factsheet on the issue was forthcoming from EA, it would be a simple matter for LAS to generate address labels and send the info out. Since the WA Government has phased out leaded petrol as of 1st January 2000, and Shell is preparing itself for the eventuality of supplying Lead Replacement Petrol in a number of other states, the promotion of lead petrol phase-out among car-club members

would be a timely event that is well worth consideration by EA, Shell and BP [all of whom have published colour pamphlets on the lead petrol phase-out since the above statement was written in January 2000].

Also in the 2nd Quarter, the LASA Manager, Elizabeth O'Brien was chosen by the Australian Conservation Foundation (ACF) representative on the Air Toxics Steering Group, to act as his proxy at the air toxics meeting in Canberra on 16th December 1999. *[Elizabeth is now a member of the Steering Group]*.

[To comment on the Air Toxics draft State of Knowledge Report on Air Toxics and Indoor Air Quality, go to the air toxics section of the Environment Australia website ***www.environment.gov.au/epg/airtoxics*** *]*

Call Subjects of Interstate Calls

[Just as an example, here is the analysis of the subjects of interstate calls taken from the 3rd Quarterly report (January to March 2000). The figures relate to a total of 352 interstate calls.]

Over all the states and territories, the call subjects discussed with interstate clients were (in order):- **lead poisoning** (a subject in **182 calls**, including support for the Lead Advisory Service Australia); **other subjects** (**162 calls**, including lead in water, demolition, legal issues, contaminated sites, the ban on lead shot in wetlands for duck-shooting in Victoria, etc), **paint** (**79 calls**), **environmental testing/sampling** (**71 calls**, eg the lack of availability of spot tests for checking lead in paint; an Australian Standard for lead assessments); **consumer products** (**66 calls,** eg candles with wicks that contain lead, the lack of availability of HEPA vacs); **service referral** (**57 calls**, including researching new referrals outside NSW); **air** (**51 calls**, including fireworks and support for a toxics info line)*; then, renovation; leaded petrol (phase-out); then, hobbies using lead, ceiling dust (as yet a less known issue than in NSW); lead workers; waste and lastly, lead poisoned pets.

** Note: the Priority Air Toxics Referral and Information Service Australia proposal was refused funding by Senator Hill in August 2000.*

PHOTO:

The Lead Advisory Service Australia Information Stall at the Parents, Babies and Children's Expo at Homebush, Sydney 19-21 May 2000.

Publications by both Environment Australia and the NSW Lead Reference Centre (LRC) and Health Department were distributed. A total of **17,985** information items were distributed, **13,625** of which were LRC Lead Safe items by the NSW Environment Protection Authority (EPA) [even though the NSW EPA did not regard the stall as worthy of funding]. ν

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