Lead Poisoning Surveillance in Australia

Australia's National Health and Medical Research Council (NHMRC) has proven itself to be dysfunctional, inept and / or powerless in achieving anything in relation to lead poisoning surveillance in Australia, since the publication of the "Summary statement of the 115th session of the National Health and Medical Research Council, 2 June 1993, regarding revision of the 1987 (103rd session) guidelines for Lead in Australians". Although the Summary statement was printed in a booklet (*Lead Alert: A Guide for Health Professionals*) that was published and distributed in 1994 to every state and territory health department (and to every general practitioner) in Australia, eight years later, the simplest of the recommendations in the Summary statement have not been incorporated into Public Health regulations in South Australia (home of the world's largest lead smelter), Western Australia, the Northern Territory, Australian Capital Territory or Victoria.

The NHMRC June 1993 Summary statement includes the recommendation that:-

In relation to individual children (all ages) there should be a range of graduated responses depending on blood lead concentrations, commencing at 15 µg/dL (fifteen micrograms per deciliter) 0.72 µmol/L (0.72 micromoles per litre), as detailed in the table of action guidelines.[1]

In Queensland, Tasmania and New South Wales, the level of 15 micrograms per decilitre (15 µg/dL) has been incorporated into Public Health regulations as the trigger to bring about notification of the case of lead poisoning to the health department. The notifications in these three states therefore, and the results of community surveys, are the basis of Australia's lead poisoning surveillance system.

According to the *NSW Public Health Bulletin* "The National Notifiable Diseases Surveillance System (NNDSS) was established in 1990" and "coordinates the national surveillance of more than 60 communicable diseases or disease groups endorsed by the National Public Health Partnership. One can usually be guaranteed that once the term "communicable diseases" comes up, lead poisoning notifications will not appear (except in error) and this is certainly the case with NNDSS. Even though some of the 60 diseases are not notifiable in every state or territory and bodies (eg laboratory, GP) responsible for notifying vary from state to state, the disease notifications are web-published fortnightly at www.health.gov.au/pubhlth/cdi/cdifort.htm (including year to date totals) within 15 days of the end of the reporting period (fortnight). So, you would think that at least the state lead poisoning notifications would be reported including web-publication so that information would reach health professionals in a timely manner. Think again.

In Tasmania, although laboratories claim that they send blood lead notifications to the Director of Public Health and the Director has never stated that notifications are not received, they are not all published in the only vehicle which reports to local government on disease notifications - *Public Health Service Newsletter for Local Government.* In the period when dozens of notifiable blood lead levels have been reported to the Lead Advisory Service Australia by Tasmanians, only two lead poisoning notifications appear in the 8 issues of this newsletter that are web-published.

For 1998 and 1999 blood lead notifications in Queensland, an annual report was published in *House to House - The Newsletter of the Environmental Health Unit* but the only later or earlier data that LASA has been able to obtain came in a letter from the Health Minister and none of the notifications reports is web-published.

New South Wales has the best statistical breakdown of the annual notifications data (by Public Health Unit area, sex, age and month of onset), web-published some nine to 12 months after the end of the calendar year.

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This summary of the lead poisoning notifications data available in Australia highlights the desperate need for lead poisoning to be included in the National Notifiable Diseases Surveillance System.

For all the reasons stated on the website of the Australian Department of Health and Ageing - www.health.gov.au/pubhlth/cdi/pubs/surv_sys.htm - as to why communicable diseases surveillance is essential, surveillance of the non-communicable notifiable disease of lead poisoning is equally essential:

"State and local surveillance systems are crucial to the timely and effective detection and management of outbreaks and in assisting in the effective implementation of national policies. The national surveillance system combines some of the data collected from State and Territory-based systems to provide an overview at a national level. Specific functions of the national surveillance system include: detection and management of outbreaks affecting more than one jurisdiction; monitoring of the need for and impact of national control programs; guidance of national policy development; and resource allocation and description of the epidemiology of rare diseases for which there are only a few notifications in each jurisdiction."

HIC Lead Tests & Notifications in Australia

	1999			2000			2001		
	Tests	Notif'ns	Percent	Tests	Notif'ns	Percent	Tests	Notif'ns	Percent
NSW	4,686	*709	*15.1%*	4,221	*990	*23.5%*	4,269	*Not av.	*?*
QLD	2,858	**129	*4.5%*	2,568	**86	*3.3%*	2,920	**80	*2.7%*
VIC	1,313	No Reg.	*?*	1,235	No Reg.	*?*	1,534	No Reg.	*?*
WA	531	#Not av.	*?*	475	#Not av.	*?*	672	#Not av.	*?*
SA	326	No Reg.	*?*	407	No Reg.	*?*	794	No Reg.	*?*
TAS	281	##Not av.	*?*	226	## [!?] 0	*?*	270	## [!?] 2	*?*
ACT	168	No Reg.	*?*	148	No Reg.	*?*	172	No Reg.	*?*
NT	75	No Reg.	*?*	56	No Reg.	*?*	55	No Reg.	
TOTAL	10,238			9,336			10,686		

KEY:

Tests = the number of lead analyses in either blood or urine - Medicare Item No. 66665. Source: Health Insurance Commission (HIC) website - www.hic.gov.au/statistics/dyn_mbs/forms/mbs_tab4ag.shtml

Notif'ns = the number of notifications of excessive blood lead levels. Sources: *NSW Public Health Bulletin, Vol 12 No 9 p249 (2001); Letter to Nigel Gorman, Master Painters Association Qld, from the Hon Wendy Edmond, Minister for Health (18/4/02); Health & Human Services Tasmania, Notifiable Diseases 20/12/2000 - 29/11/2001, pp 9-11 from Vol 4/2001 of Public Health Service Newsletter for Local Government, Vol 4 December 2001.*

Percent = the number of blood lead notifications as a percentage of the number of [blood & urine] lead tests

* In Tasmania and NSW all blood lead levels equal to or greater than 15 µg/dL (micrograms per decilitre) are notifiable. Reference: Dept of Health, Tasmania, *Schedule 3 - Diseases to be Notified Under Regulation 4(3)(A) by a Person Superintending or in Charge of a Laboratory* (1995)*;* NSW Government, Public Health Act 1991 - Schedule 1 and Sect 16 - [Blood Lead Notifications] (1997).

** In Queensland, for persons known to be exposed to lead in their occupation, Queensland Health is required to be notified when the blood lead level exceeds 50 µg/dL. In the case of children and non-

occupationally exposed adults, notification is required if the blood lead level exceeds 15 µg/dL. [Reference: *Letter to Nigel Gorman, Master Painters Association Qld, from the Hon Wendy Edmond, Minister for Health (18/4/02)*] This means that the data given here likely grossly underestimates the number of cases where a blood lead level of 15 µg/dL was exceeded because occupationally caused levels between 15 and 50 µg/dL are not notifiable. The Queensland percentage figure therefore should not be compared to the NSW percentage figures, but rather it should be compared to Queensland data for other years.

Despite Western Australia's *Health (Notification Of Lead Poisoning) Regulations 1985* which requires a medical practitioner to notify the Executive Director, Public Health of any person who is or may be suffering from acute or chronic lead poisoning [though whether a particular blood lead level, for instance, over 40 µg/dL is a notifiable disease was not known for certain by Dr Kevin Buckett as of 20/10/00], and despite Patrick Le Map's promise of 9/05/01 that he would collate and send blood lead notification data since 1998, no data has been received as at 23/4/02.

[!?] Despite the 1995 regulation in Tasmania making lead poisoning (currently defined as a blood lead level over 15 µg/dL) a notifiable disease, and despite a 23/01/02 letter from Elizabeth O'Brien, Manager, Lead Advisory Service Australia (LASA), to the Hon Judith Jackson, Minister for Health, requesting all published data on notifications, and a promise from Dr Martin Bicevskis on 2/03/02 that more data would be provided, the unbelievably low figure of one notification for the period 20/12/2000 - 29/11/2001 was the only published figure provided to LASA by the Minister or department as of 23/4/02. A web-search on 28/4/02 located 8 web-published issues of *Public Health Service Newsletter for Local Government* which highlight an inability to add one and one to get two. Rather, a case of lead poisoning at Clarence in the South of Tasmania in the period 20/12/2000 to 27/2/2001 was forgotten while the only other reported case, in West Coast in the North West in the period 27/2/2001 to 14/6/2001 was reported as the only case in the near-annual period 20/12/2000 - 29/11/2001 published in the only newsletter hard copy provided to LASA. I have deemed it more likely that the Clarence case occurred in 2001 rather than in the last 11 days of 2000.

No Reg. = no regulations exist in the state or territory to make any particular blood lead level (or a medical practitioner's opinion that a patient is or may be suffering from lead poisoning) a notifiable disease.

Not av. = data not available. Unfortunately, the HIC web-published data on blood (and urine) lead tests only begins in November 1998. If older data was obtainable, comparisons could be made between notifications as a percentage of tests in at least NSW for the years 1997 (713 notifications) and 1998 (880 notifications) & Queensland for the years 1995 to 1997 (411 notifications for the 3 year period) and 1998 (138 notifications).

Government reporting mechanisms on blood lead notifications, by state

Apart from the above-mentioned difficulty that occupationally caused blood lead levels between 15 and 50 µg/dL are not notifiable in Queensland, the most useful lead poisoning notification reports in terms of identifying sources are from Queensland for the years 1998 and 1999. Not only was the data collected, noting age, sex and occupation (if relevant) and published annually, but an attempt was made to identify the source/s of the lead poisoning in each case and these sources were commented on with a possible view to prevention of further cases.

In NSW, as mentioned above, there is an age and sex breakdown of the notified cases within a year of the end of a reporting year but apparently no attempt is made to identify sources as no report on same has been located. However, the notifications data is available by Area Health Service area in the *NSW Public Health Bulletin* (published about 10 times per year) which is how the Health Minister can track that high rates of notifiable blood lead levels continue to occur in areas with lead or copper mining or smelting in NSW. Unfortunately, the Chief Health Officer's report (which is web-published) has never reported notified blood

lead levels in NSW, just a graph of Broken Hill blood lead levels, as though that was the only area in NSW with a lead poisoning problem. He would do well to heed the words of Environment Minister Allan (below).

In Tasmania, the Health Minister Judith Jackson claims that "it is incorrect to state that the previous Director of Public Health, Dr Mark Jacobs, failed in his duty to 'provide a council with a report on the occurrence of … any notifiable disease within its municipal area'." Yet, Ms Jackson provided evidence of insufficient reports (one case only) of lead poisoning notifications to a council to even account for the dozens of notifications reported to the Lead Advisory Service Australia by just one of our client families. I later found a second case in the web-published *Public Health Service Newsletter for Local Government*.

The only other state government with web-published blood lead notifications data or studies which include data on blood lead levels above 15 ug/dL is New South Wales. This constitutes an amazing dearth of web-published information on this topic considering how many health professionals now rely so heavily on the internet as their source of information. You can subscribe to an email group that receives an announcement about the web-publication of the most recent *NSW Public Health Bulletin* at www.health.nsw.gov.au/public-health/phb. An HTML version of the "Reports of Notifiable Conditions Received" only appears on the website from August 2001 onwards [Ref: www.health.nsw.gov.au/public-health/phb/oct01html/commdis.html] although PDF versions of all such earlier reports are available. The first blood lead notifications (for December 1996) were published in a table of "Infectious Diseases" in *Public Health Bulletin Vol 9 Nos 1&2, Jan-Feb 1997*.

The worst oversight of all is that data on the number of cases where the blood lead level exceeds the Australian goal (for every Australian to be below 10 µg/dL) is not collected or published anywhere. Publication of data is one obvious way to raise awareness and increase lead in blood testing rates. US surveillance by the Centers for Disease Control actually reports on the numbers of children with blood lead levels above 10 µg/dL. For example, of 1,256,907 blood lead tests on children under 6 years of age in 19 selected states in 1998, 7.6% were equal to or above 10 µg/dL and 2.7% were equal to or above 15 µg/dL.

Evidence that the rate of testing & therefore notifications is far less than the rate of exposure

In 1996, the Australian Institute of Health and Welfare published the National Survey of Lead in Children which found that 7.3% of 1-4 year olds tested had a blood lead level equal to or exceeding the national goal (to be below 10 ug/dL) and 1.3% had a level equal to or exceeding the notifiable level of 15 ug/dL. These results were used to estimate that some 75,000 1-4 year olds would exceed the national goal (if tested) and, by extension, nearly 17,500 1-4 year olds would have a notifiable level (if tested). The only data from anywhere in Australia on notifiable blood lead levels in children by state for 1996, comes from the letter from the Queensland Health Minister which states that in the three year period 1995 to 1997, 114 children (upper age limit not stated) had a notifiable blood lead level. Lets call this 38 children of all ages per year and divide it by half to obtain a generous estimate of the number of 1-4 year olds found to have a notifiable blood lead level in Queensland in 1996, that is 19 children. On the basis of the population (all ages) of Queensland as a proportion of the total Australian population in 1996 ie 3,354,675 as a proportion of 18,284,373, or 0.183, the number of Queensland 1-4 year olds estimated to have a notifiable blood lead level is 3,211 children. Thus we can predict that for each of the 19 children located in Queensland, there existed another 168 children aged 1-4 years who were never blood lead tested.

What do we know about where & to whom lead poisoning occurs in NSW?

The data in the following tables was obtained from the NSW Health Department website by the arduous process of printing the relevant pages from PDF versions of the *NSW Public Health Bulletin* and re-typing

the data into the tables. The HTML versions of the most recent bulletins were deemed useless due to table formatting problems and a print quality no better than a poor fax.

The most recent year for which every month of blood lead notifications is available as well as a breakdown of the annual data by public health unit area, month of onset and age and sex, is 2000. This is also the only year for which the rate of notifications per 100,000 head of population within each Public Health Unit Area has been published (see table overleaf).

Of the four years for which the age and sex of cases of lead poisoning are given as a breakdown of the NSW annual data - 1997 to 2000 - HIC lead tests data is available only for 1999 and 2000 (see table below).

Lead tests & notifications in NSW by age and sex in 1999 and 2000

	0-4 YRS		5-24 YRS		25-44 YRS		45-64 YRS		>= 65 YRS		TOTAL	
	M	F	M	F	M	F	M	F	M	F	M	F
1999 tests	253	195	511	239	1,090	744	897	392	228	137	2,979	1,707
1999 notifns	62	31	78	8	326	15	168	7	13	1	647	62
1999 percent	*24.5*	*15.9*	*15.3*	*3.34*	*29.9*	*2.02*	*18.7*	*1.79*	*5.70*	*0.72*	*21.7*	*3.63*
2000 tests	218	135	466	282	981	592	1,340	370	219	114	2,728	1,493
2000 notifns	37	20	124	8	511	14	238	12	24	0	934	54
2000 percent	*17.0*	*14.8*	*26.6*	*2.84*	*52.1*	*2.37*	*17.7*	*3.24*	*11.0*	-	*34.2*	*3.62*

KEY:

M = male, F = Female.
Tests = the number of lead analyses in either blood or urine - Medicare Item No. 66665. Source: Health Insurance Commission (HIC) website - www.hic.gov.au/statistics/dyn_mbs/forms/mbs_tab4ag.shtml
Notifns = the number of notifications of blood lead levels equal to or greater than 15 µg/dL
Percent = the number of blood lead notifications as a percentage of the number of blood & urine lead tests.

What do we know about the sources & pathways of lead poisoning in NSW?

Due to the blood lead notifications in NSW being treated as though lead poisoning was an infectious disease and only analysed by month of onset, age and sex and Public Health Unit area, very little has been published in the *NSW Public Health Bulletin* about the sources of lead poisoning in particular cases. It's almost as though, cases are never followed up and sources are never determined. It is fairly safe to say that the statement made by the NSW Minister for the Environment, Ms Pam Allan, in the *NSW Public Health Bulletin Vol 8 Nos 8-9 Aug-Sep 1997* remains a well-educated guess as to sources of lead poisoning in NSW today:

Ms Allan said lead hazards are an issue ... right across NSW - wherever older housing still has paint with high lead levels. 'Lead stays in the environment in ceiling and house dust particles, in the soils and in the many products which are made with lead. It's not just an issue confined to areas which have well known lead hazards such as Broken Hill and Port Kembla,' she said."

Blood Lead Notifications in NSW in 2000 by Public Health Unit area¶

2000	CSA	NSA	WSA	WEN	SWS	CCA	HUN	ILL	SES	NRA	MNC	NEA	MAC	MWA	FWA	GMA	SA	CHS/ NOS	MTH TTL	YTD TTL
Jan	1	2	0	1	10	0	3	3	1	4	1	0	1	1	0	0	0	NR	28	28
Feb	1	3	0	2	10	0	6	3	7	0	0	0	2	0	10	0	0	NR	44	73
Mar	5	0	0	0	7	0	24	3	3	1	1	0	0	1	0	1	1	NR	47	124
Apr	2	2	0	2	0	0	5	1	1	1	2	0	0	0	23	1	0	NR	40	248
May	7	1	0	2	13	0	138	1	3	0	0	0	0	0	1	1	0	NR	167	421
Jun	2	7	0	0	25	4	11	2	7	2	1	2	2	0	0	2	1	0	68	670
Jul	9	2	2	14	0	0	2	2	2	0	0	0	2	0	0	1	0	0	36	758
Aug	3	0	0	1	15	0	4	0	2	1	0	0	1	0	29	0	1	0	57	730
Sep	0	4	0	0	9	1	5	3	1	0	1	1	0	0	3	0	0	0	28	766
Oct	0	2	0	5	1	0	2	1	2	0	0	1	2	1	40	0	1	0	58	872
Nov	2	1	0	4	5	0	3	3	5	1	0	0	1	0	0	0	1	0	26	924
Dec	0	0	0	1	0	0	2	0	4	1	1	0	1	0	22	0	1	0	33	966
Total	32	23	100	30	143	5	441	18	36	11	7	4	12	1	112	6	5	4	990	990
Rate	6.5	3.0	14.6	9.5	18.2	1.7	81.9	5.2	4.7	4.2	2.7	2.3	11.6	0.6	231.0	2.3	2.7	-	15.3	15.3

KEY:

The population of each Public Health Unit area estimates 2000 are in brackets - these were used to calculate the rate per 100,000 population in the last line.

CSA = Central Sydney Area (492,554)
NSA = Northern Sydney Area (775,844)
WSA = Western Sydney Area (685,350)
WEN = Wentworth Area (314,257)
SWS = South Western Sydney Area (785,124)
CCA = Central Coast Area (292,303)
HUN = Hunter Area (538,678)
ILL = Illawarra Area (347,404)
SES = South Eastern Sydney Area (770,097)
NRA = Northern Rivers Area (262,774)
MNC = Mid North Coast Area (261,316)
NEA = New England Area (174,650)
MAC = Macquarie Area (103,506)
MWA = Mid Western Area (167,262)
FWA = Far West Area (48,478)
GMA = Greater Murray Area (257,940)
SA = Southern Area (184,082)
NSW Total population (6,463,426)
CHS = Corrections Health Service / NOS = Not Otherwise Specified

Both the MTH TTL [= Monthly Total] and the YTD TTL [= Year to Date Total] include cases with unknown postcodes. All figures have been accurately re-typed. All inconsistencies in the data and totals exist in the original *NSW Public Health Bulletin* reports. When reported by month of onset in the annual report, the monthly totals were similarly inconsistent with the area figures, that is Jan = 77, Feb = 79, Mar = 174, Apr = 79, May = 92, Jun = 109, Jul = 60, Aug = 49, Sep = 54, Oct = 84, Nov = 79, Dec = 54. Although the yearly total agrees with the yearly total given in other tables in the annual report, it is not the actual total of either the monthly reports carefully copied from the *Bulletins* into the table above or the figures for the month of onset in the annual report.

References (not yet done!): 1 Alperstein, Dr Garth; Taylor, Dr Roscoe; & Vimpani, Professor Graham, *Lead Alert: A Guide for Health Professionals,* Commonweath Environment Protection Agency (CEPA), Canberra 1994.