

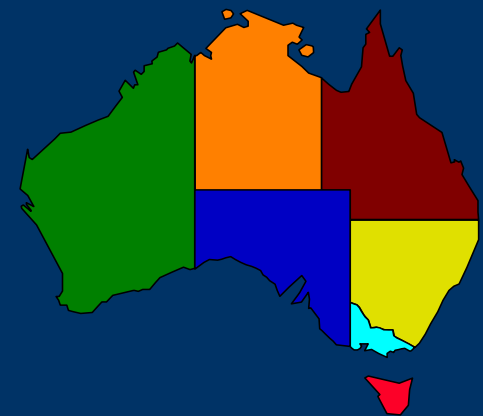


Quality of total plant cadmium analysis in Australia and overseas

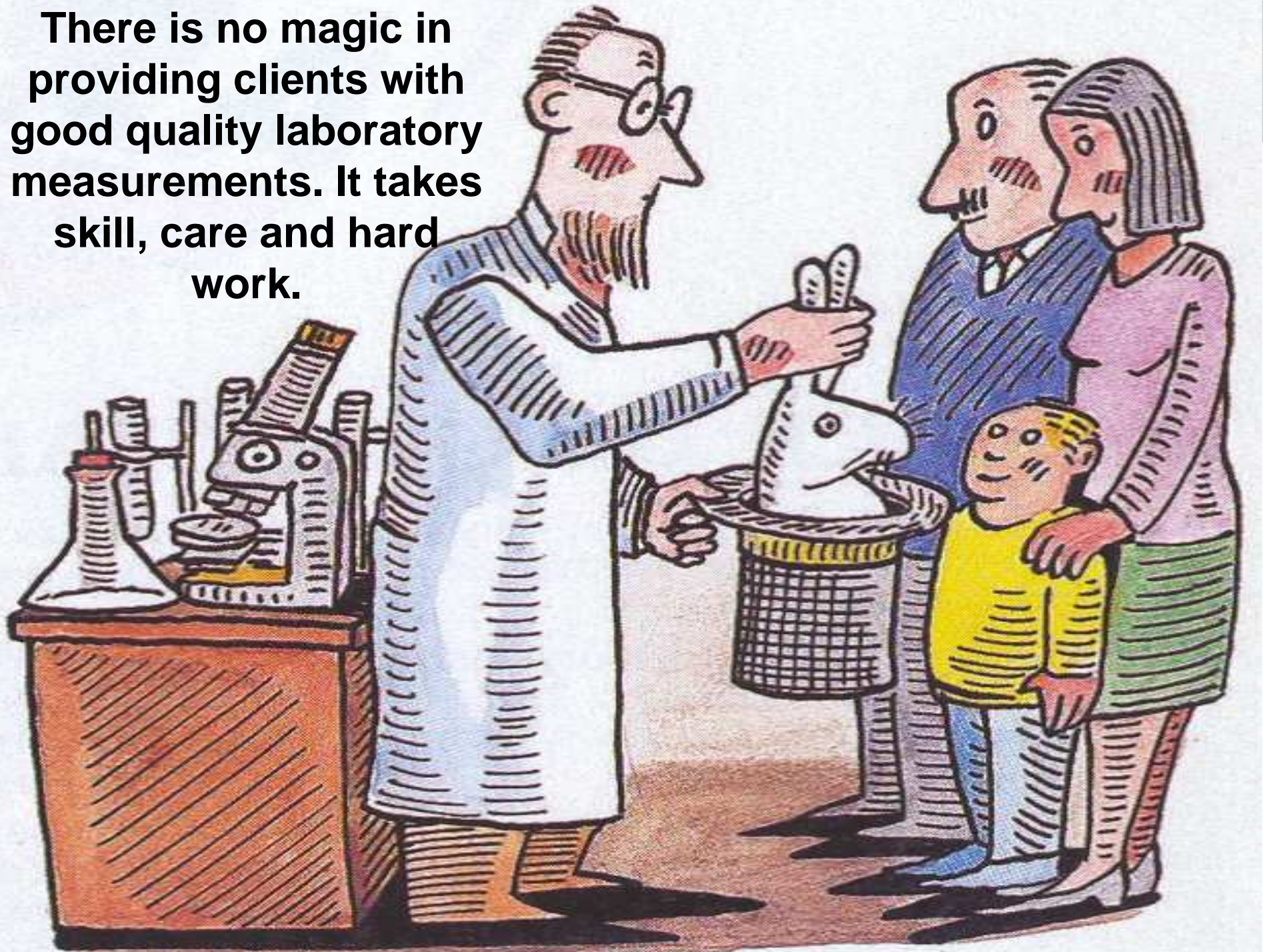


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NRW, Natural Resource Sciences, Qld

Canberra, 21 November, 2006



There is no magic in providing clients with good quality laboratory measurements. It takes skill, care and hard work.



The NCMC Strategy relies on good Cd measurement quality

- ↪ NCMC agreed laboratory measurement quality for total Cd in plant material warranted attention / action.
- ↪ ASPAC encouraged to include Cd in its plant interlaboratory proficiency programs from 2001
- ↪ Goal of NCMC: to publish a list of Cd proficient laboratories
- ↪ Compare Australian performance with others

AUSTRALASIAN
SOIL AND PLANT
ANALYSIS
COUNCIL



*PLANT PROFICIENCY TESTING
PROGRAM REPORT*

2002

Program co-ordinated and report compiled by:

Pat Johnstone, Bruce Shelley
and Matt Kitching

The ASPAC ILPPs of 2001 and 2002

2001

- ↪ 18 of 42 labs reported total plant Cd
- ↪ 18 to 41% of labs reported poor results across the 6 samples



2002

- ↪ 12 of 31 labs reported total plant Cd
- ↪ 8 to 18% of labs reported poor results across the 6 samples



Summary statistics for total plant Cd and related information from ASPAC ILPP

2001

Parameter	Sample					
	1 st	2 nd	3 rd	4 th	5 th	6 th
No of labs	18	17	17	17	17	17
Maximum (<i>mg Cd/kg</i>)	52.0	49.0	48.0	46.0	21.0	11.0
Median (<i>mg Cd/kg</i>)	0.98	0.137	0.095	0.014	0.085	0.005
Minimum (<i>mg Cd/kg</i>)	0.038	0.000	0.000	0.000	0.000	0.000
% robust CV	20.9	26	23.4	116	33.1	119
% of labs with outlier or straggler	27.8	35.3	41.2	17.6	35.3	17.6

Summary statistics for total plant Cd and related information from ASPAC ILPP (cont.)

2002

Parameter	Sample					
	1 st	2 nd	3 rd	4 th	5 th	6 th
No of labs	12	12	11	12	12	12
Maximum (<i>mg Cd/kg</i>)	0.499	0.310	0.645	1.12	0.659	0.709
Median (<i>mg Cd/kg</i>)	0.11	0.092	0.04	0.024	0.014	0.018
Minimum (<i>mg Cd/kg</i>)	0.074	0.053	0.012	0.008	0.004	0.002
% robust CV	26.8	29.8	66.7	75.7	79.4	82.4
% of labs with outlier or straggler	16.7	8.3	18.2	16.7	8.3	16.7

Revealing the Cd Proficient Australian Labs

- ↪ In 2001 – 2002, ASPAC had a strict (old-fashioned) confidentiality policy not to reveal the analytical performance of labs.
- ↪ In 2002, NCMC contacted participant labs. All **(10 labs)** who were Cd proficient **AGREED** to be included on a public list.
- ↪ This NCMC initiative was an Australian first
- ↪ ASPAC moved to change its proficiency programs and its confidentiality policy
- ↪ Members of ASPAC now agree that performance information should be published

Example summary statistics for total plant Cd from part of ASPAC's new ILPP, 2005-06

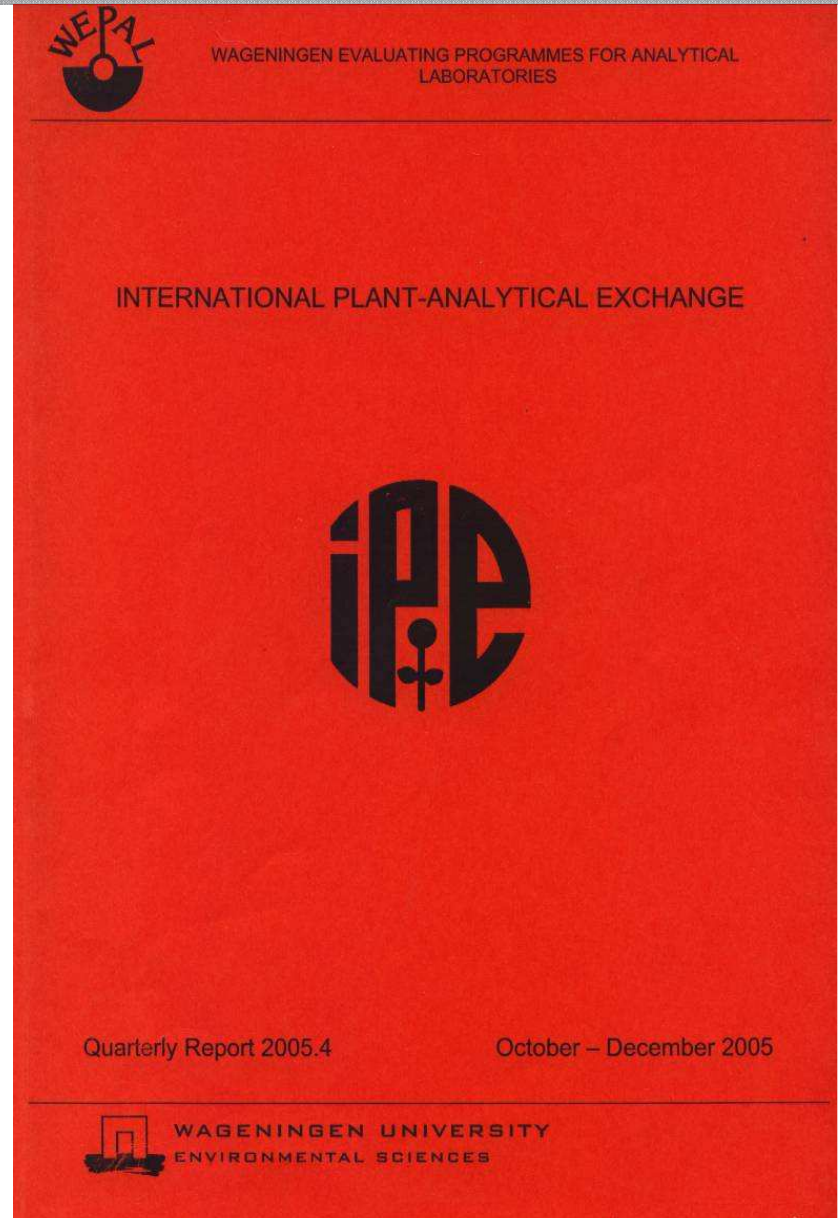
Parameter	Sample			
	ASP21	ASP22	ASP23	ASP24
No of labs	11	10	11	11
Maximum (<i>mg Cd/kg</i>)	283.7	17.1	190.8	64.8
Median (<i>mg Cd/kg</i>)	0.365	0.0215	0.275	0.073
Minimum (<i>mg Cd/kg</i>)	0.298	0.007	0.0678	0.055
Median , after removal of outliers (<i>mg Cd/kg</i>)	0.363	0.011	0.275	0.064
% robust CV (final)	18.81	26.96	15.1	12.74
% of labs with outlier or straggler	9.1	50.0	18.2	36.4

From 0 to 50% of laboratories accrued demerit points for Cd in one or more of the 12 samples used in 2005-06 by ASPAC.

International Plant Cd Comparisons

WEPAL: Oct-Dec 2005

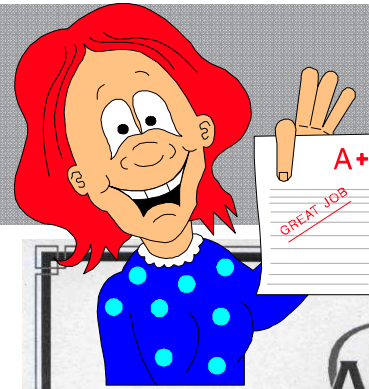
- 57 labs provided total Cd data; up to 137 labs supplied data for other tests
- A few Australian labs participated
- 43 to 54 data sets were processed for Cd across 4 samples
- From 13.3 to 16.7% of labs accrued demerit points



Summary statistics for total plant Cd WEPAL, 2005

Parameter	WEPAL Sample			
	167	166	168	100
No of labs processed	54	45	53	43
Maximum (initial)	0.583	< 0.500	0.596	< 0.500
Median (initial)	0.460	0.075	0.449	0.082
Minimum (initial)	0.291	0.050	0.090	0.0008
Lab count after removal of outliers	45	39	45	36
Median , after removal of outliers	0.463	0.075	0.450	0.083
% of labs with outlier or straggler	16.7	13.3	15.1	16.3

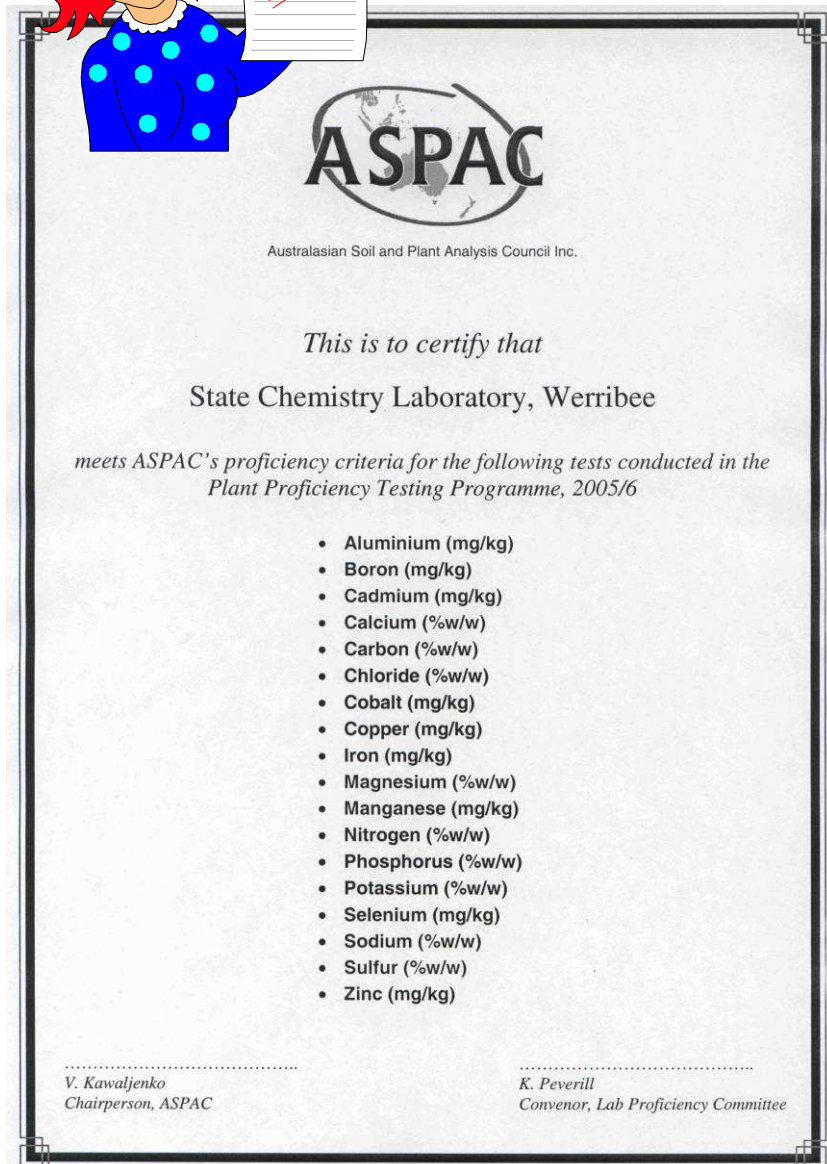
Conclusions



↳ ASPAC will publish proficiency status on its Web & does issue certificates; WEPAL identifies sub-performance in its reports

↳ ASPAC and WEPAL ILPPs reveal need to upgrade lab performance for Cd **BUT who PAYS**

↳ Costs involved in including Cd in ASPAC-IPPs “carried” by ASPAC, labs and volunteers.



Acknowledgements



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