Geo & Hydro – K8 Ltd

Excellence in Environmental Engineering

Arsenic Survey using an XRF analyser

Rapid, Inexpensive and Extensive

Drs. Ben Keet, Senior Contaminated Land Auditor. "Ben is probably New Zealand's most experienced contaminated land practitioner" Howard Ellis, Sr. Advisor MfE

- **Rapid** — the XRF analyser can detect the presence and concentration of heavy metal contamination (in particular lead and arsenic) in 20 seconds, equivalent to 400 tests a day.
- **Inexpensive** — with an experienced operator many more samples can be taken *in-situ* without the reliance on expensive and time consuming lab analysis.
- **Extensive** — since contamination can be highly variable with a XRF analyzer one can delineate accurately the extent of the contamination within hours.

Arsenic survey options and costs see below

"the XRF analyser can greatly reduce sampling and analysis costs for indicating the extent of contamination." Ministry for the Environment., MfE[1]

Providing solutions and services for:

- Schools and homeowners
- Councils
- Consultants
- Planners and Engineers

Source: JE Duncan[2]

You can contact Ben on: 021 117 1148
or send your queries to ben@benkeet.com
For background info: www.benkeet.com

Using the XRF analyser - What support do we offer you?

Here at Geo & Hydro - K8 Ltd we have devised a supportive and cost effective approach where the XRF analyser will in a couple of hours;

Test 1	**Play Areas**	find quickly whether there are high levels of arsenic (or other heavy metal contamination) in your play areas.
Test 2	**Vege Garden**	detailed analysis at various depths of your vege garden will quickly ascertain the possibility of contamination.
Test 3	**House dust**	another route for exposure is the presence of heavy metals in house dust.
Drs Ben Keet		will discuss with you various remediation (rectifying) techniques. Ben has over 25 years experience in contamination and his approach is pragmatic and cost effective.

The versatility of the XRF analyser?

The XRF analyser can greatly reduce site assessment costs by analysing for heavy metal contamination in many different situations. Here are just a few of the different locations where the XRF has recently been used;

Subdivisions of horticultural land, farm tips, wool sheds, shearing quarters, orchards, glass houses, spray sheds, lead paint on and around older houses, contaminated lake bottoms and stream beds, metal workshops, electroplating or powder coating, garages, mines, timber treatment yards, storage of CCA timber, fence line assessment, brickworks with glazing activities, porcelain and paint factories and battery manufacturers.

Mine tailings and Sheep dips—What are the advantages of using an XRF?

Arsenic is the main contaminant found near mines and sheep-dip sites. Often the location of the old mines and dips are poorly known but using an XRF analyser a wide suspect area can be searched rapidly, carrying out up to 400 soil analysis on a single day.

GPS coordinates can be recorded with the analysis data, so quality records are available for future use. As analysis is done on the spot, iterative ?? searching becomes a reality. Large areas can be cleared as contaminated or not in a minimum time.

Drs. Ben Keet

Drs Keet has managed hundreds of environmental site assessment projects in over 10 countries since 1987. He has been responsible for the assessment of oil terminals in all ports of New Zealand, investigated timber treatment yards, gasworks, service stations, meat factories, orchards, sheep-dips, farms and subdivisions in New Zealand. He managed the remediation of a major kerosene spill at Sydney Airport and was director of the environmental audit team during the handover of Luxembourg airport.He has trained many remediation engineers in Europe, held workshops for the United Nations and contributed since 2003 to WasteMINZ's annual conferences. He is an Accredited Contaminated Land Auditor and was an editor for MfE sheep dip guidelines. [1]

[1] = http://www.mfe.govt.nz/publications/hazardous/risks-former-sheep-dip-sites-ov06/html/page17.html

[2] = JE Duncan, Practical Points of Sheep Dipping, Bulletin No. 181, Dept of Agriculture. Courtesy of the National Library of NZ

Arsenic survey options

We offer 2 types of assessment services:

A	You send us the sample(s)	This gives you a rapid insight in Arsenic concentration at a low cost. We e-mail you the results within 3 working days of receiving the samples.
B	We do the analysis at your property	This provides you with better insight of contaminant levels, their distribution and we can talk about what to do about them. (no travel cost if more than 10 applicants)

Group A

A1 $ 30
You send us 1 sample (1/2 a cup in plastic bag in a padded envelope. Note you can take just 1 sample from where your kids play or from the veggie garden or mix several samples together. If the result is low you know it is low everywhere, however if high you need to test individual samples to know where the contamination is located. More samples in same shipment $ 10.– per analysis. Try to exclude pebbles and vegetation.

A2 $ 70
Send us use the fine dust from your vacuum cleaner bag (use kitchen colander to sieve the contents). Send sample (1/2 a cup in plastic bag in a padded envelope). We sieve it further down to 75 micron and analyse the different fractions. The results include arsenic and lead, often present in house dust (more info in conference papers section on this site) and both very dangerous for small children.

Group B

B1 $ 200
We come to your property and will sample and analyse the soil on the spot using a highly accurate XRF analyser. We will delineate areas with high arsenic, discuss remediation options. Time limit is 1 hour.

B2 $ 350
We come to your property and will sample and analyse the soil on the spot using a highly accurate XRF analyser. We will delineate areas with high arsenic and discuss remediation options. We will look at some other contaminants such a lead, if you like also inside your house (advisable if this was built before 1985). Time limit is 2 hours.