ASHDOWN SITE INVESTIGATION
L•I•M•I•T•E•D

GEOTECHNICAL
AND
ENVIRONMENTAL
ENGINEERS

Head Office
The Old Dairy
Swanborough Farm
Swanborough
Lewes
East Sussex
BN7 3PF

Telephone
0870 777 1574

Fascimile
0870 777 1577

Website
www.AshdownSI.co.uk

Email
xxxxxxx@xxxxxxxxx.xx.xx

Regional Office
Hertfordshire
(Contact via Head Office)

SHEEPCOTE VALLEY
WILSON AVENUE
BRIGHTON

ASSESSMENT OF SHORT TERM RISK FROM CONTAMINATED LAND

Report No. LW22250 November 2011

Report prepared for the benefit of:

Brighton & Hove City Council
Bartholomew House
Bartholomew Square
Brighton
BN1 1JP

SHEEPCOTE VALLEY
WILSON AVENUE
BRIGHTON

ASSESSMENT OF SHORT TERM RISK FROM CONTAMINATED LAND

Report No. LW22250 November 2011

Prepared By:	Prepared By:
	
Alex Minchell-Bewick BSc MSc DIC AIEMA	**Darren Beesley BSc MSc AIEMA**

SHEEPCOTE VALLEY
WILSON AVENUE
BRIGHTON

ASSESSMENT OF SHORT TERM RISK FROM CONTAMINATED LAND

TABLE OF CONTENTS

TABLES

APPENDICES

1. INTRODUCTION

It is understood that a group of travellers/van dwellers have moved on to the site at Sheepcote Valley, Brighton.

Ashdown Site Investigation Limited was commissioned to provide advice as to whether the potential for the land contamination previously identified on the site poses a risk to people currently living on the site.

The works were commissioned by Mr J Fortune of:

Brighton and Hove City Council
Bartholomew House
Bartholomew Square
Brighton
BN1 1JP

The instruction to proceed was received from the client during a meeting held on 14th November 2011.

2. SITE DETAILS

2.1 Site Description

The site comprises an irregular shaped plot of land within the Sheepcote Valley situated to the east of Wilson Avenue, Brighton, East Sussex, and is centred at the approximate Ordnance Survey national grid reference TQ 3400 0520.

The site is accessed via a single lane tarmacadam surfaced road off Wilson Avenue, which leads to a tarmacadam surfaced former car park area which slopes gently downwards to the south. The foundations of a former structure are present at the foot of the access road. To the east of the former car park area is a centrally located 2m to 3m high earth, grass covered embankment. The embankment runs north to south dividing the car park area from an area of unsurfaced ground previously used as a BMX track to the east. The BMX track area is generally level with man-made earth embankments forming jumps for the bikes.

To the south of the existing car park area the land is quite overgrown and continues to slope gently downwards towards the south. Evidence of fly tipped materials was recorded on this part of the site.

A number of smaller earth mounds/embankments are located across the Site, these were observed to be made up of soil but also to contain metal, rubble and other fly tipped materials.

North, east and south of the site the land is generally used for informal recreation purposes (dog walking etc). On the western side of Wilson Avenue, the land is mainly residential. Raised earth mounds and ground cover suggest potential infilling of land immediately to the north, east and south of the Site.

2.2 Previous Works

Previous investigations and assessments of the site have been carried out by Ashdown Site Investigation Ltd to which the reader is referred.

The previous reports are briefly summarised below:

- Combined Factual and Contamination Status Report, Ref: LW19147, dated July 2008. The assessment identified elevated concentrations of benzo(a)pyrene in relation to the generic residential soil screening values used and recommended a detailed risk assessment to determine if the concentrations would pose a significant risk to the proposed development of the site as a permanent site for travellers to live on.

- Factual Report and Detailed Quantitative Risk Assessment (DQRA) on the Ground Investigation, ref: LW20232, dated January 2010. The report assessed the potential risk to two categories of proposed end users; adult dog walkers using the site on a regular basis, and children using the outdoor BMX track. The DQRA modelled estimated exposure periods that

are shorter than those that would apply to a permanent occupier of the site. Other factors such as population demographics also served to reduce the risk from that pertaining to permanent residents. The report concluded that the concentrations of contamination recorded were unlikely to pose a significant risk to these users.

- Factual and Interpretative Report on the Ground Investigation, Ref: LW20014 2010, dated August 2010. The report presented a Detailed Quantitative Risk Assessment (DQRA) of the site based on input parameters pertaining to the situation where travellers may permanently reside on the site. The report identified four datasets; made ground to the west of the earth embankment, the soils of the earth embankment, shallow landfill soils to the east of the embankment and deeper landfill soils to the east of the embankment. The report concluded that all soils on site pose a potentially significant risk to a permanent residential site due to elevated concentrations of arsenic, lead and benzo(a)pyrene. Elevated concentrations of ground gases (methane and carbon dioxide) were also identified. On the basis of this assessment it was concluded that the site would not be suitable for a permanent residential use without some form of intervention by way of remediation works taking place. These would likely comprise the inclusion of protective measures within any structures on the site and provision of cover systems of clean soils in any soft landscaped areas effectively capping the existing ground on site to prevent exposure.

3. CURRENT ASSESSMENT

It is understood that there are currently around fifty caravans/vans illegally occupying the site, with the population comprising a mix adults and children.

At the time of preparing this report the vehicles were mainly parked on the hard standing area to the west of the embankment, but the people living on the site are understood to utilise much of the area described in section 2.1.

In the context of assessing risks to the current users from land contamination, there are three essential elements that need to be considered pertaining to any risk:

- A **contaminant source**– a substance that is in, on or under the land and has the potential to cause harm;
- A **receptor** – in general terms, something that could be adversely affected by a contaminant, such as people; and
- A **pathway** – a route or means by which a receptor can be exposed to, or affected by, a contaminant.

Each of these elements can exist independently. They create a risk only where they are linked together, so that a particular contaminant affects a particular receptor via one or more pathways (ingestion, inhalation etc). This kind of linked combination of source–pathway–receptor is described as a 'pollutant linkage' (Defra and Environment Agency, 2004).

3.1 Derivation of Site Specific Screening Values

As an assessment of the potential risk the contamination previously identified at the site may pose to the current occupants, Ashdown Site Investigation Ltd. has used the CLEA model (version 1.06) published by the Environment Agency to produce site specific screening values.

The CLEA (Contaminated Land Exposure Assessment model) model uses generic assumptions about the fate and transport of chemicals in the environment, and a generic conceptual model (for generic land use scenarios) for site conditions and human behaviour, to estimate child and adult exposures to soil contaminants for those living, working and/or playing on contaminated sites.

The software enables assessors to derive assessment criteria to assist in the evaluation of the risks posed to human health from chronic exposure to chemicals in soil in relation to land use. The Environment Agency uses the CLEA model to derive Soil Guideline Values for three generic land uses, with these being residential, allotments and commercial landuses.

Assumptions in the CLEA software apply to the derivation of generic assessment criteria (GAC), but also offer a useful starting point for the development of site-specific assessment criteria (SSAC).

Assessors can use the CLEA software to:

- Derive generic soil assessment criteria using generic assumptions about the characteristics of contaminants and people likely to be present on site;
- Derive site-specific soil assessment criteria by entering site specific data on the characteristics of contaminants and people likely to be present on site; and/or using a non-generic approach
- Assess whether measured concentrations of contaminants in soil (and where available, measured site concentrations for contaminants within soil air, ambient and indoor air, and fruits and vegetables) would present a potential risk to human health for a particular set of circumstances.

Accordingly, Ashdown Site Investigation Ltd has used the CLEA model to derive Site Specific Assessment Criteria. The approach taken has been to attempt to better reflect likely exposure scenarios present on site for a temporary occupier of the site resident typically 3 months per year. This approach is considered more appropriate than assessing risks to current users on site simply using generic residential uses available.

It is noted that any site specific screening values derived using CLEA will be protective of health and that an exceedence of a screening value for any given contaminant does not necessarily indicate that harm will be or is being caused to a receptor. Rather an exceedence suggests that a risk is present and highlights that action should be taken to reduce exposure or prevent exposure from occurring.

The following table summarises the assumptions made and model inputs used in developing the ‘current land use’ and deriving site specific screening criteria on which to base the assessment.

Table 1. CLEA Model settings

Variable	Value Assumed	Justification
Days exposure per year	90	A maximum three month stay per year is assumed.
Age Range	Various Age Classes (Age Class 1 to Age Class 6)	Assumed a worst case scenario of a child returning to the site for three months each year for the first six years of life.
Indoor and Outdoor Occupancy times per day	16 hours indoor 8 hours outdoor	Assumes that a child spends 8 hours per day outside of the caravan/van with the remainder of the time spent inside the caravan/van.
Soil to skin adherence factor outdoor	1 mg cm^{-2}	As per published residential land use.
Soil to skin adherence factor indoor	0.06 mg cm^{-2}	As per published residential land use.
Soil and dust ingestion rate	0.1 g day^{-1}	As per published residential land use.
Air Dispersion Factor at 0.8m and 1.6m	71 and 130, respectively.	Taken from Environment Agency published data provided for Southampton for a site of an area of 2ha published in SC050021/SR3 report.
Fraction of the site with hard cover	0.1 (10%)	An estimation of the proportion of the site with hardstanding (tarmacadam area to the west of the earth bund) compared with the total site area.
Default Receptor	Standard Female receptor	Height and Weight values for the age classes are as per those published in Environment Agency SC050021/Technical Review 1 report.
Building type	None/Bungalow (caravan/van)	It is considered that available values for building types for residential uses (terraced house etc) are not representative of likely exposure to dusts etc within caravans, vans and tents. However to model exposure the assessment has been run for both scenarios.

As mentioned in the table above, the CLEA framework does not include a standard caravan/van land use. To demonstrate the potential effects of indoor dust exposure (i.e. dusts that are brought back into an enclosed area), screening values have been calculated for the following scenarios; a site with no building present and one where a standard bungalow structure (closest model input to a caravan/van) is present for comparison (sensitivity analysis). This was undertaken because the screening values for some contaminants are significantly affected by the assumptions regarding concentrations within indoor dust and it was considered important to assess the sensitivity of the model input.

The table below shows the site specific screening values that have been calculated using the CLEA model using the inputs and assumptions as discussed above; for both scenarios of either no buildings present or bungalows (single storey buildings considered generally representative of caravans/vans) being present.

Table 2. Calculated screening values (Child Age 0 to 6 yrs)

Contaminant	Site Specific Screening Value - No Building on Site (mg/kg)	Site Specific Screening Values - Caravan/Van present on site (mg/kg)
Arsenic	119.74	118.01
Cadmium	68.89	34.80
Chromium	3417.52	879.26
Lead	790.32	717.60
Mercury (inorganic)	830.95	706.87
Nickel	701.92	177.01
Selenium	2007.81	1996.33
Naphthalene	585.17	9.39
Benzo(a)pyrene	1.63	1.24

As a caravan/van does not have any foundations below ground level the site specific screening values (SSSV) derived for a standard Bungalow are considered to be conservative (erring on the side of caution) for some contaminants. This is because the CLEA model includes vapour intrusion pathways through cracks in ground bearing floors amongst a number of pathways for contaminants to enter buildings. However the above comparison does give an indication of the weighting given to exposure of a receptor to indoor dust, which as can be seen in the table above has variable effect depending on the contaminant being considered. It is considered more appropriate to use the site specific screening values including for a building on site as this allows the assessment to include inhalation and ingestion of dust that is tracked back from site into the van/caravan.

Given the physical condition of the site, dust accumulation is considered likely to be greater than that of a “standard” residential setting. It is as such is considered more appropriate to use these screening values in the assessment of potential risk.

Another function of CLEA is that it allows an assessor to model risk to individual ages classes. CLEA has standard age classes of 1-17 which cover receptor ages from birth to retirement. It is assumed that the children on site will be the most vulnerable group. As such separate screening values for ‘Age Classes’ 1, 3 and 6 (ages 0-1yrs, 2-3yrs and 5-6yrs) were then calculated using the same land use parameters and assuming a caravan/van was present on the site. This process allows further sensitivity analysis to be undertaken to identify the most vulnerable aged receptor. The table below summarises the ages and site specific screening values calculated.

Table 3. Calculated Site Specific Screening Values by age class

Contaminant	Site Specific Screening Values age class 1 (mg/kg)	Site Specific Screening Values age class 3 (mg/kg)	Site Specific Screening Values age class 6 (mg/kg)
Arsenic	62.36	118.48	191.32
Cadmium	21.40	35.78	57.34
Chromium	580.37	883.47	1869.53
Lead	371.52	797.54	1416.55
Mercury (inorganic)	365.24	782.72	1231.48
Nickel	117.08	177.72	358.36
Selenium	722.57	2351.40	4027.42
Naphthalene	5.33	9.24	16.30
Benzo(a)pyrene	0.48	0.75	1.19

It can be seen that the age, and therefore bodyweight, of the receptor makes a significant difference to the calculated screening values.

It is noted that the model aggregates exposures over the assessment period. This is why the calculated screening values for a child present on site between the ages of 1 and 6 years lie somewhere in between those for a child present for just one year at the age of 0-1rs, 2-3yrs or 5-6yrs old.

From discussion with the client it understood that for this group of people on site that the youngest child present is a toddler. As such the screening values calculated for age class 3 (a child aged between 2yrs and 3yrs) is considered to be the most appropriate assessment criteria to use for the assessment contaminant concentrations recorded at the site.

The settings used within the CLEA model for this assessment are presented in Appendix A along with the chemical data parameters used.

3.2 Contamination Results Datasets

The three datasets of the contamination concentrations recorded on site used within the previous assessment report (report ref: LW20014 August 2010) have been compared with the site specific screening values. The datasets used in this assessment are as follows:

- **Dataset 1-** This includes shallow made ground samples (ground level to a depth of 1.0m) taken to the west of the earth embankment present on site.
- **Dataset 2-** This comprises shallow samples taken from the surface of the earth embankment to a depth of 0.30m.
- **Dataset 3-** This comprises shallow (ground level to 1.0m) land filled soils taken to the east of the earth embankment present on site.

Statistical analysis of the datasets has been undertaken in line with guidance set out in 'Comparing Soil Contamination Data with a Critical Concentration' report, published by the CIEH/ CL:AIRE (May 2008).

The CIEH/CL:AIRE guidance provides a framework for assessing measured contaminant concentrations on a site against user defined critical concentrations, in this instance, the calculated site specific screening values.

Generally, under a planning guidance situation the screening values would be compared with the 95th percentile upper confidence limit for the contaminant. This is a concentration below which the statistics indicate that 95% of all samples from your population would fall.

If a site was being assessed under Part 2a of the Environment Act to determine whether the site meets the criteria for 'contaminated land', which is land that may represent a "Significant Possibility of Significant Harm" (SPOSH), then the statistical analysis for any given contaminant would be carried out to determine (with sufficient confidence) whether 50% or more of samples taken from the population would contain concentrations above the relevant screening value, i.e. on the balance of probability there are contaminant concentrations above the screening value,

As stated previously, it is noted the screening values that have been calculated using CLEA will be levels that are protective of health and that exceeding a screening value even on the balance of probabilities does not automatically mean that 'SPOSH' is present. The CLEA model incorporate factors of safety applied to several of the key input parameters. It is further advised that there are no published values at which point elevated concentrations of contaminants represents 'SPOSH'. The CLEA Model incorporate factors of safety applied to several of the key input parameters. Where a level of a contaminant exceeds the site specific screening value by an order of magnitude (say 10 times), then this is broadly equivalent to the removal of one or more of the factors of safety built into the model. Consequently the level of contaminant can no longer be deemed protective of human health and by corollary the levels may be considered to constitute SPOSH, i.e. at a level where intervention to break the pollutant linkage would be justified.

The summary sheets providing results of the statistical analysis undertaken for each dataset are presented in Appendix B.

3.3 Comparison of datasets with screening values (planning scenario)

The following table summarises the 95th percentile upper confidence limit for the 3 data sets in comparison with the screening values calculated for age class 3.

Table 4. Upper confidence values for the different data sets

Contaminant	Upper confidence limits for Dataset 1 (mg/kg)	Upper confidence limits for Dataset 2 (mg/kg)	Upper confidence limits for Dataset 3 (mg/kg)	Site Specific Screening Values - age class 3 (mg/kg)
Arsenic	20.01	17.30	53.57	118.48
Cadmium	21.21	0.90	12.72	35.78
Chromium	54.26	18.85	36.92	883.47
Lead	1179.67	73.48	344.34	797.54
Mercury (inorganic)	0.69	0.25	0.25	782.72
Nickel	74.10	22.42	79.20	177.72
Selenium	2.81	1.05	2.94	2351.40
Naphthalene	0.26	0.09	0.96	9.24
Benzo(a)pyrene	8.84	3.62	50.05	0.75

It can be seen that for the majority of contaminants (with the exception of lead and benzo(a)pyrene), the concentration of 95% of the population of the three data sets lies well below the site specific calculated screening values.

It can therefore be considered that, with the exception of lead and benzo(a)pyrene, these contaminants would not pose a significant risk current (temporary) occupiers living on the site.

3.4 Assessment of significance

Benzo(a)pyrene is a known carcinogenic substance and commonly occurs as a by product of combustion.

Lead is known to have significant acute toxicity, though the methodology of how lead is absorbed within the body is complex and varies considerably depending on both the physical and chemical properties of the various lead compounds which exist and the physiology of the person consuming the lead.

It is noted that both lead and benzo(a)pyrene are commonly found in the urban environment at levels above the screening values derived by this assessment.

However, the levels recorded on site, particularly for benzo(a)pyrene are considered to be significantly elevated compared to typical background concentrations, particularly for dataset 3 (east of the embankment on the landfill soils).

Taking into consideration the factors of safety built into the model it is considered that the soils underlying the site are *unlikely* to pose a significant *acute* risk to people living on the site, provided they do not ingest significant quantities of the soil.

It is noted that at the concentrations recorded these soils would be considered unsuitable for use within a new housing development, indeed even when compared with screening values for a generic “commercial” development which does not allow for any exposure of contamination that is present to children, the concentrations of benzo(a)pyrene recorded within dataset 3 would be a cause for concern and indicate that intervention (by way of removal of pollutant linkages) would be needed,

Balance of Probabilities Test

The statistical assessment indicates that on the balance of probabilities the average concentration of lead in the populations as a whole lie below the screening value (i.e. less than 50%).

For benzo(a)pyrene, the statistical assessment indicates that the concentrations recorded in both dataset 1 and dataset 3 are above the calculated site specific screening value.

The statistical analysis summary sheets are included in Appendix B.

Factors of Safety

If the calculated site specific screening value for benzo(a)pyrene is multiplied by 10 (i.e. 7.5mg/kg) then for dataset 1 (west of embankment)the statistical analysis indicates that there is sufficient confidence that the soils on that part of the site do not contain benzo(a)pyrene concentrations at 10 times the soil screening value.

For dataset 3 (shallow landfill soils on west of embankment) the statistical analysis indicates that whilst on the balance of probabilities the concentration of benzo(a)pyrene on this part of the site will below the 7.5mg/kg level that there is much less confidence in this statement. It is noted that the analysis identifies a 40% chance that the concentrations are above this value.

Taking the above in account, and assuming that the current occupiers do not vacate the site, it is considered that there could be some justification in the Council considering determination of the site as “contaminated land” under Part 2a of the Environmental Protection Act 1990, on the basis of a possibility of harm occurring.

4. CONCLUSIONS

As a carcinogenic substance there is no “safe” level of exposure to benzo(a)pyrene, as exposure at any level could increase the lifetime risk of contracting cancer. In managing risk from contaminants with no “safe” exposure level, the guidance produced by the Environment Agency advises that the ‘As Low As Reasonably Possible’ (ALARP) principle should apply.

Previous studies have confirmed that if the site was to be developed for a permanent residential use through the planning process, that the site would not be considered suitable for that use without remediation taking place.

The modelling undertaken in this assessment, assuming a more temporary residential use, indicates that there are concentrations of lead and benzo(a)pyrene present on site in excess of safe levels, and intervention (remediation) would be required should the site use be changed to permit a temporary residential use under a planning scenario.

When a factor of safety has been removed from the assessment criteria, the statistical analysis indicates that the soils at the site are not likely to pose a risk of harm or acute toxicity to people living on the site on a temporary basis. The concentrations of the key contaminant of concern (benzo(a)pyrene) to the west of the embankment are in the order of 10 times the maximum concentration normally permitted in soft landscaped areas on new residential developments. These values are set to ensure protection of health. The concentrations of benzo(a)pyrene on the east of the embankment are over 60 times this level.

These concentrations are such that it is considered that long term health effects could occur if an extended exposure takes place. It is noted however that the actual effect (if any), in a small population such as that temporarily occupying the site in consideration of acute exposures, would most probably be statistically undetectable.

Ashdown Site Investigation Limited
November 2011

APPENDIX A

CLEA Settings

Chemical Data Parameters

CLEA Software Version 1.06

Report generated 18/11/2011

Report title Unauthorised Travellers Site - Sheepcote Valley, Brighton

Created by AB at ASI Ltd.

BASIC SETTINGS

Land Use: Unauthorised Traveller Site - Sheepcote Valley

Building: No building

Receptor: Female (res) Start age class 1 End age class 6 Exposure Duration 6 years

Soil: Sandy clay loam

Exposure Pathways

Direct soil and dust ingestion	✓	Dermal contact with indoor dust	✓	Inhalation of indoor dust	✓
Consumption of homegrown produce	✖	Dermal contact with soil	✓	Inhalation of soil dust	✓
Soil attached to homegrown produce	✖			Inhalation of indoor vapour	✓
				Inhalation of outdoor vapour	✓

Land Use Unauthorised Traveller Site - Sheepcote Valley

Age Class	Exposure Frequencies (days yr^{-1})						Occupation Periods (hr day^{-1})		Soil to skin adherence factors (mg cm^{2})		Direct soil ingestion rate (g day^{-1})
	Direct soil ingestion	Consumption of homegrown produce	Dermal contact with indoor dust	Dermal contact with soil	Inhalation of dust and vapour, indoor	Inhalation of dust and vapour, outdoor	Indoors	Outdoors	Indoor	Outdoor	
1	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
2	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
3	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
4	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
5	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
6	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
7	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
8	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
9	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
10	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
11	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
12	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
13	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
14	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
15	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
16	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
17	90	0	90	90	90	90	16.0	8.0	0.06	0.30	0.05
18	90	0	90	90	90	90	16.0	8.0	0.06	0.30	0.05

Environment Agency

Receptor Female (res)

Age Class	Body weight (kg)	Body height (m)	Inhalation rate (m^3 day^{-1})	Max exposed skin factor: Indoor (m^2 m^{-2})	Max exposed skin factor: Outdoor (m^2 m^{-2})	Total skin area (m^2)	Consumption rates (g FW kg^{-1} BW day^{-1}): Green vegetables	Root vegetables	Tuber vegetables	Herbaceous fruit	Shrub fruit	Tree fruit
1	5.60	0.7	8.5	0.32	0.26	3.43E-01	7.12	10.69	16.03	1.83	2.23	3.82
2	9.80	0.8	13.3	0.33	0.26	4.84E-01	6.85	3.30	5.46	3.96	0.54	11.96
3	12.70	0.9	12.7	0.32	0.25	5.82E-01	6.85	3.30	5.46	3.96	0.54	11.96
4	15.10	0.9	12.2	0.35	0.28	6.36E-01	6.85	3.30	5.46	3.96	0.54	11.96
5	16.90	1.0	12.2	0.35	0.28	7.04E-01	3.74	1.77	3.38	1.85	0.16	4.26
6	19.70	1.1	12.2	0.33	0.26	7.94E-01	3.74	1.77	3.38	1.85	0.16	4.26
7	22.10	1.2	12.4	0.22	0.15	8.73E-01	3.74	1.77	3.38	1.85	0.16	4.26
8	25.30	1.2	12.4	0.22	0.15	9.36E-01	3.74	1.77	3.38	1.85	0.16	4.26
9	27.50	1.3	12.4	0.22	0.15	1.01E+00	3.74	1.77	3.38	1.85	0.16	4.26
10	31.40	1.3	12.4	0.22	0.15	1.08E+00	3.74	1.77	3.38	1.85	0.16	4.26
11	35.70	1.4	12.4	0.22	0.14	1.19E+00	3.74	1.77	3.38	1.85	0.16	4.26
12	41.30	1.4	13.4	0.22	0.14	1.29E+00	3.74	1.77	3.38	1.85	0.16	4.26
13	47.20	1.5	13.4	0.22	0.14	1.42E+00	3.74	1.77	3.38	1.85	0.16	4.26
14	51.20	1.6	13.4	0.22	0.14	1.52E+00	3.74	1.77	3.38	1.85	0.16	4.26
15	56.70	1.6	13.4	0.21	0.14	1.60E+00	3.74	1.77	3.38	1.85	0.16	4.26
16	59.00	1.6	13.4	0.21	0.14	1.63E+00	3.74	1.77	3.38	1.85	0.16	4.26
17	70.00	1.6	14.8	0.33	0.27	1.78E+00	2.94	1.40	1.79	1.61	0.22	2.97
18	70.90	1.6	12.0	0.33	0.27	1.80E+00	2.94	1.40	1.79	1.61	0.22	2.97

Building No building

Soil Sandy clay loam

Building footprint (m^2)	0.00E+00
Living space air exchange rate (hr^{-1})	0.00E+00
Living space height (above ground, m)	0.00E+00
Living space height (below ground, m)	0.00E+00
Pressure difference (soil to enclosed space, Pa)	0.00E+00
Foundation thickness (m)	0.00E+00
Floor crack area (cm^2)	0.00E+00
Dust loading factor (µg m^{-3})	0.00E+00

Porosity, Total (cm^3 cm^{-3})	5.30E-01
Porosity, Air-Filled (cm^3 cm^{-3})	1.60E-01
Porosity, Water-Filled (cm^3 cm^{-3})	3.70E-01
Residual soil water content (cm^3 cm^{-3})	1.50E-01
Saturated hydraulic conductivity (cm s^{-1})	2.37E-03
van Genuchten shape parameter *m* (dimensionless)	3.10E-01
Bulk density (g cm^{-3})	1.20E+00
Threshold value of wind speed at 10m (m s^{-1})	7.20E+00
Empirical function (F_x) for dust model (dimensionless)	1.22E+00
Ambient soil temperature (K)	2.83E+02
Soil pH	7.00E+00
Soil Organic Matter content (%)	1.00E+00
Fraction of organic carbon (g g^{-1})	5.80E-03
Effective total fluid saturation (unitless)	5.79E-01
Intrinsic soil permeability (cm^2)	3.16E-08
Relative soil air permeability (unitless)	5.78E-01
Effective air permeability (cm^2)	1.83E-08

Environment Agency

Soil - Vapour Model

Depth to top of source (no building) (cm)	0
Depth to top of source (beneath building) (cm)	50
Default soil gas ingress rate?	Yes
Soil gas ingress rate ($cm^3\ s^{-1}$)	0.00E+00
Building ventilation rate ($cm^3\ s^{-1}$)	0.00E+00
Averaging time surface emissions (yr)	6
Finite vapour source model?	No
Thickness of contaminated layer (cm)	200

Air Dispersion Model

Mean annual windspeed at 10m ($m\ s^{-1}$)	5.00
Air dispersion factor at height of 0.8m *	71.00
Air dispersion factor at height of 1.6m *	130.00
Fraction of site cover ($m^2\ m^{-2}$)	0.1

* Air dispersion factor in $g\ m^{-2}\ s^{-1}$ per $kg\ m^{-3}$

Soil - Plant Model

	Dry weight conversion factor	Homegrown fraction		Soil loading factor	Preparation correction factor
		Average	High		
	$g\ DW\ g^{-1}\ FW$	dimensionless		$g\ g^{-1}\ DW$	dimensionless
Green vegetables	0.096	0.05	0.33	1.00E-03	2.00E-01
Root vegetables	0.103	0.06	0.40	1.00E-03	1.00E+00
Tuber vegetables	0.210	0.02	0.13	1.00E-03	1.00E+00
Herbaceous fruit	0.058	0.06	0.40	1.00E-03	6.00E-01
Shrub fruit	0.166	0.09	0.60	1.00E-03	6.00E-01
Tree fruit	0.157	0.04	0.27	1.00E-03	6.00E-01

Gardener type None

CLEA Software Version 1.06

Report generated 16/11/2011

Report title Unauthorised Travellers Site - Sheepcote Valley, Brighton

Created by AB at ASI Ltd.

BASIC SETTINGS

Land Use Unauthorised Traveller Site - Sheepcote Valley

Building Bungalow
Receptor Female (res) Start age class 1 End age class 6 Exposure Duration 6 years
Soil Sandy clay loam

Exposure Pathways

Direct soil and dust ingestion	✓	Dermal contact with indoor dust	✓	Inhalation of indoor dust	✓
Consumption of homegrown produce	✖	Dermal contact with soil	✓	Inhalation of soil dust	✓
Soil attached to homegrown produce	✖			Inhalation of indoor vapour	✓
				Inhalation of outdoor vapour	✓

Land Use Unauthorised Traveller Site - Sheepcote Valley

Age Class	Exposure Frequencies (days yr^{-1})						Occupation Periods (hr day^{-1})		Soil to skin adherence factors (mg cm^2)		Direct soil ingestion rate (g day^{-1})
	Direct soil ingestion	Consumption of homegrown produce	Dermal contact with indoor dust	Dermal contact with soil	Inhalation of dust and vapour, indoor	Inhalation of dust and vapour, outdoor	Indoors	Outdoors	Indoor	Outdoor	
1	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
2	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
3	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
4	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
5	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
6	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
7	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
8	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
9	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
10	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
11	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
12	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
13	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
14	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
15	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
16	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
17	90	0	90	90	90	90	16.0	8.0	0.06	0.30	0.05
18	90	0	90	90	90	90	16.0	8.0	0.06	0.30	0.05

Receptor Female (res)

Age Class	Body weight (kg)	Body height (m)	Inhalation rate (m^3 day^{-1})	Max exposed skin factor: Indoor (m^2 m^{-2})	Max exposed skin factor: Outdoor (m^2 m^{-2})	Total skin area (m^2)	Consumption rates (g FW kg^{-1} BW day^{-1}): Green vegetables	Root vegetables	Tuber vegetables	Herbaceous fruit	Shrub fruit	Tree fruit
1	5.60	0.7	8.5	0.32	0.26	3.43E-01	7.12	10.69	16.03	1.83	2.23	3.82
2	9.80	0.8	13.3	0.33	0.26	4.84E-01	6.85	3.30	5.46	3.96	0.54	11.96
3	12.70	0.9	12.7	0.32	0.25	5.82E-01	6.85	3.30	5.46	3.96	0.54	11.96
4	15.10	0.9	12.2	0.35	0.28	6.36E-01	6.85	3.30	5.46	3.96	0.54	11.96
5	16.90	1.0	12.2	0.35	0.28	7.04E-01	3.74	1.77	3.38	1.85	0.16	4.26
6	19.70	1.1	12.2	0.33	0.26	7.94E-01	3.74	1.77	3.38	1.85	0.16	4.26
7	22.10	1.2	12.4	0.22	0.15	8.73E-01	3.74	1.77	3.38	1.85	0.16	4.26
8	25.30	1.2	12.4	0.22	0.15	9.36E-01	3.74	1.77	3.38	1.85	0.16	4.26
9	27.50	1.3	12.4	0.22	0.15	1.01E+00	3.74	1.77	3.38	1.85	0.16	4.26
10	31.40	1.3	12.4	0.22	0.15	1.08E+00	3.74	1.77	3.38	1.85	0.16	4.26
11	35.70	1.4	12.4	0.22	0.14	1.19E+00	3.74	1.77	3.38	1.85	0.16	4.26
12	41.30	1.4	13.4	0.22	0.14	1.29E+00	3.74	1.77	3.38	1.85	0.16	4.26
13	47.20	1.5	13.4	0.22	0.14	1.42E+00	3.74	1.77	3.38	1.85	0.16	4.26
14	51.20	1.6	13.4	0.22	0.14	1.52E+00	3.74	1.77	3.38	1.85	0.16	4.26
15	56.70	1.6	13.4	0.21	0.14	1.60E+00	3.74	1.77	3.38	1.85	0.16	4.26
16	59.00	1.6	13.4	0.21	0.14	1.63E+00	3.74	1.77	3.38	1.85	0.16	4.26
17	70.00	1.6	14.8	0.33	0.27	1.78E+00	2.94	1.40	1.79	1.61	0.22	2.97
18	70.90	1.6	12.0	0.33	0.27	1.80E+00	2.94	1.40	1.79	1.61	0.22	2.97

Building Bungalow

Soil Sandy clay loam

Building footprint (m^2)	7.80E+01
Living space air exchange rate (hr^{-1})	5.00E-01
Living space height (above ground, m)	2.40E+00
Living space height (below ground, m)	0.00E+00
Pressure difference (soil to enclosed space, Pa)	2.60E+00
Foundation thickness (m)	1.50E-01
Floor crack area (cm^2)	7.07E+02
Dust loading factor (µg m^{-3})	5.00E+01

Porosity, Total (cm^3 cm^{-3})	5.30E-01
Porosity, Air-Filled (cm^3 cm^{-3})	1.60E-01
Porosity, Water-Filled (cm^3 cm^{-3})	3.70E-01
Residual soil water content (cm^3 cm^{-3})	1.50E-01
Saturated hydraulic conductivity (cm s^{-1})	2.37E-03
van Genuchten shape parameter *m* (dimensionless)	3.10E-01
Bulk density (g cm^{-3})	1.20E+00
Threshold value of wind speed at 10m (m s^{-1})	7.20E+00
Empirical function (F_x) for dust model (dimensionless)	1.22E+00
Ambient soil temperature (K)	2.83E+02
Soil pH	7.00E+00
Soil Organic Matter content (%)	1.00E+00
Fraction of organic carbon (g g^{-1})	5.80E-03
Effective total fluid saturation (unitless)	5.79E-01
Intrinsic soil permeability (cm^2)	3.16E-08
Relative soil air permeability (unitless)	5.78E-01
Effective air permeability (cm^2)	1.83E-08

Environment Agency

Soil - Vapour Model

Depth to top of source (no building) (cm)	0
Depth to top of source (beneath building) (cm)	65
Default soil gas ingress rate?	Yes
Soil gas ingress rate ($cm^3\ s^{-1}$)	2.50E+01
Building ventilation rate ($cm^3\ s^{-1}$)	2.60E+04
Averaging time surface emissions (yr)	6
Finite vapour source model?	No
Thickness of contaminated layer (cm)	200

Air Dispersion Model

Mean annual windspeed at 10m ($m\ s^{-1}$)	5.00
Air dispersion factor at height of 0.8m *	71.00
Air dispersion factor at height of 1.6m *	130.00
Fraction of site cover ($m^2\ m^{-2}$)	0.1

* Air dispersion factor in $g\ m^{-2}\ s^{-1}$ per $kg\ m^{-3}$

Soil - Plant Model

	Dry weight conversion factor	Homegrown fraction		Soil loading factor	Preparation correction factor
		Average	High		
	$g\ DW\ g^{-1}\ FW$	dimensionless		$g\ g^{-1}\ DW$	dimensionless
Green vegetables	0.096	0.05	0.33	1.00E-03	2.00E-01
Root vegetables	0.103	0.06	0.40	1.00E-03	1.00E+00
Tuber vegetables	0.210	0.02	0.13	1.00E-03	1.00E+00
Herbaceous fruit	0.058	0.06	0.40	1.00E-03	6.00E-01
Shrub fruit	0.166	0.09	0.60	1.00E-03	6.00E-01
Tree fruit	0.157	0.04	0.27	1.00E-03	6.00E-01

Gardener type None

CLEA Software Version 1.06

Report generated 18/11/2011

Report title Unauthorised Travellers Site - Sheepcote Valley, Brighton

Created by AB at ASI Ltd.

BASIC SETTINGS

Land Use Unauthorised Traveller Site - Sheepcote Valley

Building Bungalow
Receptor Female (res) Start age class 3 End age class 3 Exposure Duration 1 years
Soil Sandy clay loam

Exposure Pathways

Direct soil and dust ingestion	✓	Dermal contact with indoor dust	✓	Inhalation of indoor dust	✓
Consumption of homegrown produce	✖	Dermal contact with soil	✓	Inhalation of soil dust	✓
Soil attached to homegrown produce	✖			Inhalation of indoor vapour	✓
				Inhalation of outdoor vapour	✓

Land Use Unauthorised Traveller Site - Sheepcote Valley

Age Class	Exposure Frequencies (days yr^{-1})						Occupation Periods (hr day^{-1})		Soil to skin adherence factors (mg cm^{2})		Direct soil ingestion rate (g day^{-1})
	Direct soil ingestion	Consumption of homegrown produce	Dermal contact with indoor dust	Dermal contact with soil	Inhalation of dust and vapour, indoor	Inhalation of dust and vapour, outdoor	Indoors	Outdoors	Indoor	Outdoor	
1	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
2	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
3	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
4	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
5	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
6	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
7	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
8	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
9	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
10	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
11	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
12	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
13	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
14	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
15	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
16	90	0	90	90	90	90	16.0	8.0	0.06	1.00	0.10
17	90	0	90	90	90	90	16.0	8.0	0.06	0.30	0.05
18	90	0	90	90	90	90	16.0	8.0	0.06	0.30	0.05

Environment Agency

Receptor Female (res)

Age Class	Body weight (kg)	Body height (m)	Inhalation rate (m^3 day^{-1})	Max exposed skin factor: Indoor (m^2 m^{-2})	Max exposed skin factor: Outdoor (m^2 m^{-2})	Total skin area (m^2)	Consumption rates (g FW kg^{-1} BW day^{-1}): Green vegetables	Root vegetables	Tuber vegetables	Herbaceous fruit	Shrub fruit	Tree fruit
1	5.60	0.7	8.5	0.32	0.26	3.43E-01	7.12	10.69	16.03	1.83	2.23	3.82
2	9.80	0.8	13.3	0.33	0.26	4.84E-01	6.85	3.30	5.46	3.96	0.54	11.96
3	12.70	0.9	12.7	0.32	0.25	5.82E-01	6.85	3.30	5.46	3.96	0.54	11.96
4	15.10	0.9	12.2	0.35	0.28	6.36E-01	6.85	3.30	5.46	3.96	0.54	11.96
5	16.90	1.0	12.2	0.35	0.28	7.04E-01	3.74	1.77	3.38	1.85	0.16	4.26
6	19.70	1.1	12.2	0.33	0.26	7.94E-01	3.74	1.77	3.38	1.85	0.16	4.26
7	22.10	1.2	12.4	0.22	0.15	8.73E-01	3.74	1.77	3.38	1.85	0.16	4.26
8	25.30	1.2	12.4	0.22	0.15	9.36E-01	3.74	1.77	3.38	1.85	0.16	4.26
9	27.50	1.3	12.4	0.22	0.15	1.01E+00	3.74	1.77	3.38	1.85	0.16	4.26
10	31.40	1.3	12.4	0.22	0.15	1.08E+00	3.74	1.77	3.38	1.85	0.16	4.26
11	35.70	1.4	12.4	0.22	0.14	1.19E+00	3.74	1.77	3.38	1.85	0.16	4.26
12	41.30	1.4	13.4	0.22	0.14	1.29E+00	3.74	1.77	3.38	1.85	0.16	4.26
13	47.20	1.5	13.4	0.22	0.14	1.42E+00	3.74	1.77	3.38	1.85	0.16	4.26
14	51.20	1.6	13.4	0.22	0.14	1.52E+00	3.74	1.77	3.38	1.85	0.16	4.26
15	56.70	1.6	13.4	0.21	0.14	1.60E+00	3.74	1.77	3.38	1.85	0.16	4.26
16	59.00	1.6	13.4	0.21	0.14	1.63E+00	3.74	1.77	3.38	1.85	0.16	4.26
17	70.00	1.6	14.8	0.33	0.27	1.78E+00	2.94	1.40	1.79	1.61	0.22	2.97
18	70.90	1.6	12.0	0.33	0.27	1.80E+00	2.94	1.40	1.79	1.61	0.22	2.97

Building Bungalow

Soil Sandy clay loam

Building footprint (m^2)	7.80E+01
Living space air exchange rate (hr^{-1})	5.00E-01
Living space height (above ground, m)	2.40E+00
Living space height (below ground, m)	0.00E+00
Pressure difference (soil to enclosed space, Pa)	2.60E+00
Foundation thickness (m)	1.50E-01
Floor crack area (cm^2)	7.07E+02
Dust loading factor (µg m^{-3})	5.00E+01

Porosity, Total (cm^3 cm^{-3})	5.30E-01
Porosity, Air-Filled (cm^3 cm^{-3})	1.60E-01
Porosity, Water-Filled (cm^3 cm^{-3})	3.70E-01
Residual soil water content (cm^3 cm^{-3})	1.50E-01
Saturated hydraulic conductivity (cm s^{-1})	2.37E-03
van Genuchten shape parameter *m* (dimensionless)	3.10E-01
Bulk density (g cm^{-3})	1.20E+00
Threshold value of wind speed at 10m (m s^{-1})	7.20E+00
Empirical function (F_x) for dust model (dimensionless)	1.22E+00
Ambient soil temperature (K)	2.83E+02
Soil pH	7.00E+00
Soil Organic Matter content (%)	1.00E+00
Fraction of organic carbon (g g^{-1})	5.80E-03
Effective total fluid saturation (unitless)	5.79E-01
Intrinsic soil permeability (cm^2)	3.16E-08
Relative soil air permeability (unitless)	5.78E-01
Effective air permeability (cm^2)	1.83E-08

Environment Agency

Soil - Vapour Model

Depth to top of source (no building) (cm)	0
Depth to top of source (beneath building) (cm)	65
Default soil gas ingress rate?	Yes
Soil gas ingress rate ($cm^3\ s^{-1}$)	2.50E+01
Building ventilation rate ($cm^3\ s^{-1}$)	2.60E+04
Averaging time surface emissions (yr)	1
Finite vapour source model?	No
Thickness of contaminated layer (cm)	200

Air Dispersion Model

Mean annual windspeed at 10m ($m\ s^{-1}$)	5.00
Air dispersion factor at height of 0.8m *	71.00
Air dispersion factor at height of 1.6m *	130.00
Fraction of site cover ($m^2\ m^{-2}$)	0.1

* Air dispersion factor in $g\ m^{-2}\ s^{-1}$ per $kg\ m^{-3}$

Soil - Plant Model

	Dry weight conversion factor	Homegrown fraction		Soil loading factor	Preparation correction factor
		Average	High		
	$g\ DW\ g^{-1}\ FW$	dimensionless		$g\ g^{-1}\ DW$	dimensionless
Green vegetables	0.096	0.05	0.33	1.00E-03	2.00E-01
Root vegetables	0.103	0.06	0.40	1.00E-03	1.00E+00
Tuber vegetables	0.210	0.02	0.13	1.00E-03	1.00E+00
Herbaceous fruit	0.058	0.06	0.40	1.00E-03	6.00E-01
Shrub fruit	0.166	0.09	0.60	1.00E-03	6.00E-01
Tree fruit	0.157	0.04	0.27	1.00E-03	6.00E-01

Gardener type None

Chemical	Chemical Type	Oral HCV						Inhalation HCV					
		Type	µg kg^{-1} BW day^{-1}	Notes	Compare with oral exposure	Compare with dermal exposure	Compare with inhalation exposure	Type	µg kg^{-1} BW day^{-1}	Notes	Compare with oral exposure	Compare with dermal exposure	Compare with inhalation exposure
Arsenic	inorganic	ID	0.3	Environment Agency, 2009. Soil Guidance Values for arsenic in soil.	Yes	Yes	No	ID	0.002	Environment Agency, 2009. Soil Guidance Values for arsenic in soil.	No	No	Yes
Cadmium	inorganic	TDI	0.36	Environment Agency, 2009. Soil Guidance Values for cadmium in soil.	Yes	Yes	No	TDI	0.0014	Environment Agency, 2009. Soil Guidance Values for cadmium in soil.	No	No	Yes
Chromium (III)	inorganic	TDI	150	LQM/CIEH GAC 2nd Edition (2009)	Yes	Yes	No	TDI	0.03	LQM/CIEH GAC 2nd Edition (2009)	No	No	Yes
Lead	inorganic	TDI	3.57	Evaluation of certain food additives and contaminants (Fifty-third report of the Joint FAO/WHO Expert Committee on Food Additives). WHO Technical Report Series, No. 896, 2000.	Yes	Yes	No	TDI	0.071	EPAQS, 1998. Lead. Department of the Environment, Transport and the Regions. Expert Panel on Air Quality Standards. London: The Stationary Office. ISBN 0117534471	No	No	Yes
Mercury (Inorganic)	inorganic	TDI	2	Environment Agency, 2009. Soil Guidance Values for mercury in soil.	Yes	Yes	No	TDI	1	Environment Agency, 2009. Soil Guidance Values for mercury in soil.	No	No	Yes
Nickel	inorganic	TDI	12	Environment Agency, 2009. Soil Guidance Values for nickel in soil.	Yes	Yes	No	TDI	0.006	Environment Agency, 2009. Soil Guidance Values for nickel in soil.	No	No	Yes
Selenium	inorganic	TDI	6.4	Environment Agency, 2009. Soil Guidance Values for selenium in soil.	Yes	Yes	Yes	NR	0	No Inhalation HCV	No	No	No
Naphthalene	organic	TDI	20	TOX20	Yes	Yes	No	TDI	0.86	TOX20	No	No	Yes
Benzo(a)pyrene	organic	ID	0.02	LQM/CIEH GAC 2nd Edition (2009)	Yes	Yes	No	ID	0.00007	LQM/CIEH GAC 2nd Edition (2009)	No	No	Yes

Chemical	Chemical Type	Combine oral and inhalation AC	Oral MDI for Adults		Inhalation MDI for adults		Air-water partition coefficient (K_{aw})		Diffusion coefficient in air	
			µg day^{-1}	Notes	µg day^{-1}	Notes	cm^3 cm^{-3}	Notes (measured or calculated at 283K unless stated)	m^2 s^{-1}	Notes (measured or calculated at 283K unless stated)
Arsenic	inorganic	Yes	NR	index dose used	NR	index dose used	NR	Inorganic Chemical	NR	Inorganic Chemical
Cadmium	inorganic	Yes	13.4	Environment Agency, 2009. Soil Guidance Values for cadmium in soil.	0.02	Environment Agency, 2009. Soil Guidance Values for cadmium in soil.	NR	Inorganic Chemical	NR	Inorganic Chemical
Chromium (III)	inorganic	Yes	60.2	LQM/CIEH GAC 2nd Edition (2009)	0.27	LQM/CIEH GAC 2nd Edition (2009)	NR	0	NR	0
Lead	inorganic	Yes	31	Environment Agency, 2002. Contaminants in soil: Collation of toxicological data and intake values for humans - lead, TOX 6	2	Department of the Environment, Transport and the Regions. Air Quality Information Archive, http://www.aeat.co.uk/netcen/aqarchive/nonauto/pbdata.html	NR	Inorganic Chemical	NR	Inorganic Chemical
Mercury (Inorganic)	inorganic	Yes	0.06	Environment Agency, 2009. Soil Guidance Values for mercury in soil.	0.05	Environment Agency, 2009. Soil Guidance Values for mercury in soil.	NR	Inorganic Chemical	NR	Inorganic Chemical
Nickel	inorganic	Yes	130	Environment Agency, 2009. Soil Guidance Values for nickel in soil.	0.06	Environment Agency, 2009. Soil Guidance Values for nickel in soil.	NR	Inorganic Chemical	NR	Inorganic Chemical
Selenium	inorganic	Yes	35	Environment Agency, 2009. Soil Guidance Values for selenium in soil.	0.06	Environment Agency, 2009. Soil Guidance Values for selenium in soil.	NR	Inorganic Chemical	NR	Inorganic Chemical
Naphthalene	organic	Yes	7	TOX20	2.8	TOX20	0.00662	Environment Agency, 2008. Science Report - SC050021/SR7	0.00000652	LQM/CIEH GAC 2nd Edition (2009)
Benzo(a)pyrene	organic	Yes	NR	index dose used	NR	index dose used	0.00000176	Environment Agency, 2008. Science Report - SC050021/SR7	0.00000438	LQM/CIEH GAC 2nd Edition (2009)

Chemical	Chemical Type	Diffusion coefficient in water		Relative molecular mass		Vapour pressure		Water solubility		Organic carbon - water partition coefficient (K_{oc})	
		$m^2 s^{-1}$	Notes (measured or calculated at 283K unless stated)	$g\ mol^{-1}$	Notes	Pa	Notes (measured or calculated at 283K and standard pressure unless stated)	$mg\ L^{-1}$	Notes (measured or calculated at 283K unless stated)	Log ($cm^3\ g^{-1}$)	Notes
Arsenic	inorganic	NR	Inorganic Chemical	NR	Inorganic Chemical	NR	Inorganic Chemical	1250000	Environment Agency, 2009. Soil Guidance Values for arsenic in soil.	NR	Inorganic Chemical
Cadmium	inorganic	NR	Inorganic Chemical	NR	Inorganic Chemical	NR	Inorganic Chemical	1620000	Environment Agency, 2009. Soil Guidance Values for cadmium in soil.	NR	Inorganic Chemical
Chromium (III)	inorganic	NR	0	NR	0	NR	0	585000	LQM/CIEH GAC 2nd Edition (2009)	NR	LQM/CIEH GAC 2nd Edition (2009)
Lead	inorganic	NR	Inorganic Chemical	NR	Inorganic Chemical	NR	Inorganic Chemical	100000	0	NR	Inorganic Chemical
Mercury (Inorganic)	inorganic	NR	Inorganic Chemical	NR	Inorganic Chemical	NR	Inorganic Chemical	74000	Environment Agency, 2009. Soil Guidance Values for mercury in soil.	NR	Inorganic Chemical
Nickel	inorganic	NR	Inorganic Chemical	NR	Inorganic Chemical	NR	Inorganic Chemical	2500000	Environment Agency, 2009. Soil Guidance Values for nickel in soil.	NR	Inorganic Chemical
Selenium	inorganic	NR	Inorganic Chemical	NR	Inorganic Chemical	NR	Inorganic Chemical	2170000	Environment Agency, 2009. Soil Guidance Values for selenium in soil.	NR	Inorganic Chemical
Naphthalene	organic	5.16E-10	LQM/CIEH GAC 2nd Edition (2009)	128.17	LQM/CIEH GAC 2nd Edition (2009)	2.31	LQM/CIEH GAC 2nd Edition (2009)	19	LQM/CIEH GAC 2nd Edition (2009)	2.81	LQM/CIEH GAC 2nd Edition (2009)
Benzo(a)pyrene	organic	3.67E-10	LQM/CIEH GAC 2nd Edition (2009)	252.31	LQM/CIEH GAC 2nd Edition (2009)	0.00000002	LQM/CIEH GAC 2nd Edition (2009)	0.0038	LQM/CIEH GAC 2nd Edition (2009)	5.11	LQM/CIEH GAC 2nd Edition (2009)

Chemical	Chemical Type	Octanol - water partition coefficient (K_{ow})		Soil-water partition coefficient (K_d)		Dermal absorption fraction		Soil-plant availability correction	Root - shoot correction factor	Root - root store correction factor	Root - tuber correction factor	Root - fruit correction factor	Soil-to-plant concentration factor (green vegetables)		
		Log (dimensionless)	Notes	$cm^3 g^{-1}$	Notes	dimensionless	Notes	dimensionless	dimensonless	dimensonless	dimensonless	dimensonless	$mg g^{-1}$ plant (DW or FW basis) over mg g^{-1} DW soil	Type	Notes
Arsenic	inorganic	NR	Inorganic Chemical	500	Environment Agency, 2009. Soil Guidance Values for arsenic in soil.	0.03	Environment Agency, 2009. Soil Guidance Values for arsenic in soil.	5	0.5	0.5	0.5	0.5	0.00043	numeric fw	Environment Agency, 2009. Soil Guidance Values for arsenic in soil.
Cadmium	inorganic	NR	Inorganic Chemical	100	Environment Agency, 2009. Soil Guidance Values for cadmium in soil.	0.001	Environment Agency, 2009. Soil Guidance Values for cadmium in soil.	5	0.5	0.5	0.5	0.5	0.052	numeric fw	Environment Agency, 2009. Soil Guidance Values for cadmium in soil.
Chromium (III)	inorganic	NR	LQM/CIEH GAC 2nd Edition (2009)	4800	LQM/CIEH GAC 2nd Edition (2009)	0	LQM/CIEH GAC 2nd Edition (2009)	5	0.5	0.5	0.5	0.5	0.00003	numeric fw	LQM/CIEH GAC 2nd Edition (2009)
Lead	inorganic	NR	Inorganic Chemical	36000	RIVM report 711701 023, 2001. Technical evaluation of the Intervention Values for Soil/sediment and Groundwater	0	Environment Agency, 2009. Science Report Final SC050021/SR3	5	0.5	0.5	0.5	0.5	0	model	CLEA to estimate
Mercury (Inorganic)	inorganic	NR	Inorganic Chemical	500	Environment Agency, 2009. Soil Guidance Values for mercury in soil.	0	Environment Agency, 2009. Soil Guidance Values for mercury in soil.	5	0.5	0.5	0.5	0.5	0.0038	numeric fw	Environment Agency, 2009. Soil Guidance Values for mercury in soil.
Nickel	inorganic	NR	Inorganic Chemical	500	Environment Agency, 2009. Soil Guidance Values for nickel in soil.	0.005	Environment Agency, 2009. Soil Guidance Values for nickel in soil.	5	0.5	0.5	0.5	0.5	0.0038	numeric fw	Environment Agency, 2009. Soil Guidance Values for nickel in soil.
Selenium	inorganic	NR	Inorganic Chemical	50	Environment Agency, 2009. Soil Guidance Values for selenium in soil.	0	Environment Agency, 2009. Soil Guidance Values for selenium in soil.	50	0.5	0.5	0.5	0.5	0.0108	numeric fw	Environment Agency, 2009. Soil Guidance Values for selenium in soil.
Naphthalene	organic	3.34	LQM/CIEH GAC 2nd Edition (2009)	NR		0.13	LQM/CIEH GAC 2nd Edition (2009)	NR	NR	NR	NR	NR	0	model	CLEA to estimate
Benzo(a)pyrene	organic	6.18	LQM/CIEH GAC 2nd Edition (2009)	NR		0.13	LQM/CIEH GAC 2nd Edition (2009)	NR	NR	NR	NR	NR	0	model	CLEA to estimate

Chemical	Chemical Type	Soil-to-plant concentration factor (root vegetables)			Soil-to-plant concentration factor (tuber vegetables)			Soil-to-plant concentration factor (herbaceous fruit)			Soil-to-plant concentration factor (shrub fruit)			Soil-to-plant concentration factor (tree fruit)			Soil-to-dust transport factor ($g\ g^{-1}$ DW)	Sub-surface soil to indoor air correction factor (Dimensionless)
		mg g^{-1} plant (DW or FW basis) over mg g^{-1} DW soil	Type	Notes	mg g^{-1} plant (DW or FW basis) over mg g^{-1} DW soil	Type	Notes	mg g^{-1} plant (DW or FW basis) over mg g^{-1} DW soil	Type	Notes	mg g^{-1} plant (DW or FW basis) over mg g^{-1} DW soil	Type	Notes	mg g^{-1} plant (DW or FW basis) over mg g^{-1} DW soil	Type	Notes		
Arsenic	inorganic	0.0004	numeric fw	Environment Agency, 2009. Soil Guidance Values for arsenic in soil.	0.00023	numeric fw	Environment Agency, 2009. Soil Guidance Values for arsenic in soil.	0.00033	numeric fw	Environment Agency, 2009. Soil Guidance Values for arsenic in soil.	0.0002	numeric fw	Environment Agency, 2009. Soil Guidance Values for arsenic in soil.	0.0011	numeric fw	Environment Agency, 2009. Soil Guidance Values for arsenic in soil.	0.5	1
Cadmium	inorganic	0.029	numeric fw	Environment Agency, 2009. Soil Guidance Values for cadmium in soil.	0.031	numeric fw	Environment Agency, 2009. Soil Guidance Values for cadmium in soil.	0.016	numeric fw	Environment Agency, 2009. Soil Guidance Values for cadmium in soil.	0.0031	numeric fw	Environment Agency, 2009. Soil Guidance Values for cadmium in soil.	0.0014	numeric fw	Environment Agency, 2009. Soil Guidance Values for cadmium in soil.	0.5	1
Chromium (III)	inorganic	0.00003	numeric fw	LQM/CIEH GAC 2nd Edition (2009)	0.00003	numeric fw	LQM/CIEH GAC 2nd Edition (2009)	0.00003	numeric fw	LQM/CIEH GAC 2nd Edition (2009)	0.00003	numeric fw	LQM/CIEH GAC 2nd Edition (2009)	0.00003	numeric fw	LQM/CIEH GAC 2nd Edition (2009)	0.5	1
Lead	inorganic	0	model	CLEA to estimate	0	model	CLEA to estimate	0	model	CLEA to estimate	0	model	CLEA to estimate	0	model	CLEA to estimate	0.5	1
Mercury (Inorganic)	inorganic	0.0069	numeric fw	Environment Agency, 2009. Soil Guidance Values for mercury in soil.	0.0043	numeric fw	Environment Agency, 2009. Soil Guidance Values for mercury in soil.	0.001	numeric fw	Environment Agency, 2009. Soil Guidance Values for mercury in soil.	0.0011	numeric fw	Environment Agency, 2009. Soil Guidance Values for mercury in soil.	0.001	numeric fw	Environment Agency, 2009. Soil Guidance Values for mercury in soil.	0.5	1
Nickel	inorganic	4.3E-10	numeric fw	Environment Agency, 2009. Soil Guidance Values for nickel in soil.	0.0019	numeric fw	Environment Agency, 2009. Soil Guidance Values for nickel in soil.	0.0025	numeric fw	Environment Agency, 2009. Soil Guidance Values for nickel in soil.	0.0025	numeric fw	Environment Agency, 2009. Soil Guidance Values for nickel in soil.	0.0034	numeric fw	Environment Agency, 2009. Soil Guidance Values for nickel in soil.	0.5	1
Selenium	inorganic	0.00364	numeric fw	Environment Agency, 2009. Soil Guidance Values for selenium in soil.	0.00083	numeric fw	Environment Agency, 2009. Soil Guidance Values for selenium in soil.	0.00271	numeric fw	Environment Agency, 2009. Soil Guidance Values for selenium in soil.	0.003	numeric fw	Environment Agency, 2009. Soil Guidance Values for selenium in soil.	0.003	numeric fw	Environment Agency, 2009. Soil Guidance Values for selenium in soil.	0.5	1
Naphthalene	organic	0	model	CLEA to estimate	0	model	CLEA to estimate	0	model	CLEA to estimate	0	model	CLEA to estimate	0	model	CLEA to estimate	0.5	1
Benzo(a)pyrene	organic	0	model	CLEA to estimate	0	model	CLEA to estimate	0	model	CLEA to estimate	0	model	CLEA to estimate	0	model	CLEA to estimate	0.5	1

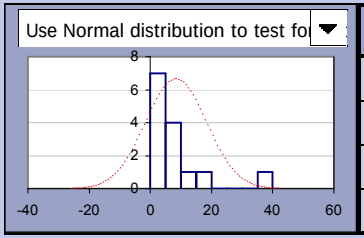
APPENDIX B

Statistical Analysis Summary Sheets

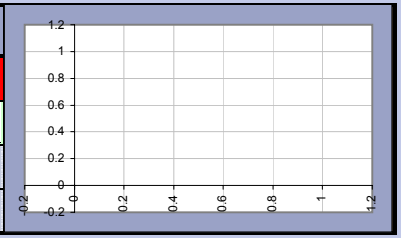
Test Results

Client/client ref:
Project ref: Sheepcote Valley
Site ref: LW22250
Data description: Data set 1 - West of the Embankr
Date: 18-Nov-2011
User details: AB

Dataset:	Arsenic (mg/kg)
Sample mean, $\overline{X}$(mg/kg)	8.4103
Sample standard deviation, s	9.9611
Sample size, n	14
Critical concentration, Cc (mg/kg)	118.48



Outliers & non-detects	
Outliers present?	YES
Significance level	5%
Outliers removed?	0
Non-detects	7

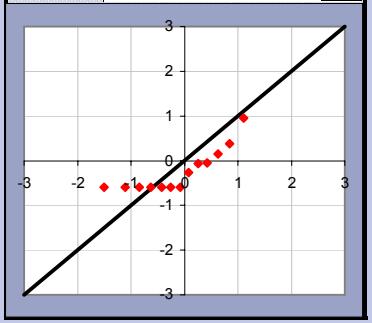


Normality test

Significance level: 5%

Non-normal distribution

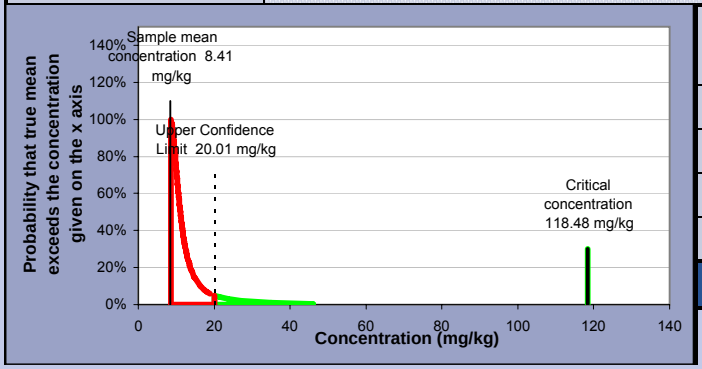
Use: Auto: Chebychev



Test scenario:

Planning: is true mean lower than critical concentration (μ < Cc)?

Null hypothesis:	The true mean concentration is equal to or greater than the critical concentration: μ≥ Cc
Alternative hypothesis:	The true mean concentration is less than the critical concentration: μ < Cc



Evidence against Null hypothesis:	**100%**
Base decision on:	evidence level
Evidence level required:	**95%**
Balance of probability?	N/A
Reject Null Hypothesis?	Yes

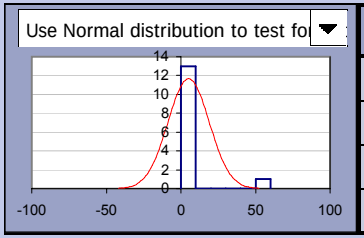
μ < Cc (re this dataset)

Back to data | Back to summary | Go to outlier test | Go to normality test

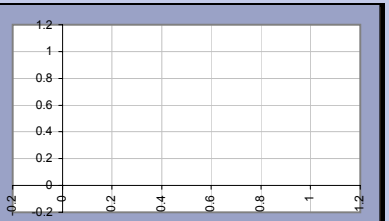
Test Results

Client/client ref:
Project ref: Sheepcote Valley
Site ref: LW22250
Data description: Data set 1 - West of the Embankr
Date: 18-Nov-2011
User details: AB

Dataset:	Cadmium (mg/kg)
Sample mean, $\overline{X}$(mg/kg)	5.1519
Sample standard deviation, s	13.785
Sample size, n	14
Critical concentration, Cc (mg/kg)	35.778



Outliers & non-detects	
Outliers present?	YES
Significance level	5%
Outliers removed?	0
Non-detects	1

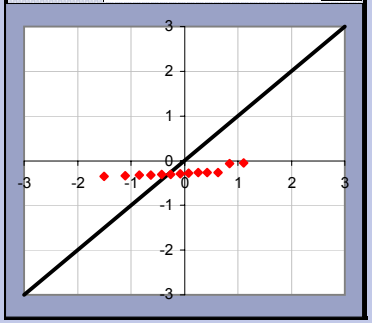


Normality test

Significance level: 5%

Non-normal distribution

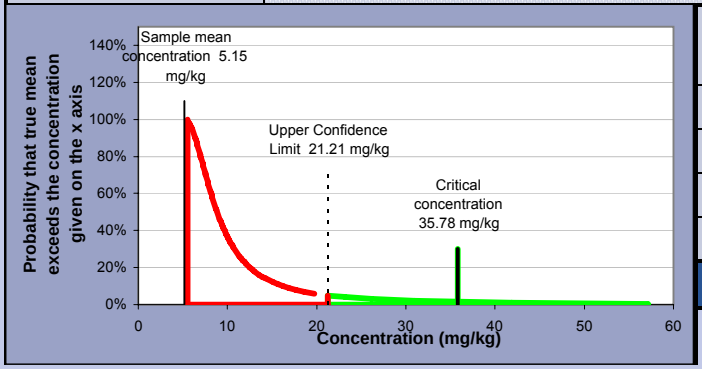
Use: Auto: Chebychev



Test scenario:

Planning: is true mean lower than critical concentration (μ < Cc)?

Null hypothesis:	The true mean concentration is equal to or greater than the critical concentration: μ≥ Cc
Alternative hypothesis:	The true mean concentration is less than the critical concentration: μ < Cc



Evidence against Null hypothesis:	**99%**
Base decision on:	evidence level
Evidence level required:	**95%**
Balance of probability?	N/A
Reject Null Hypothesis?	Yes

μ < Cc (re this dataset)

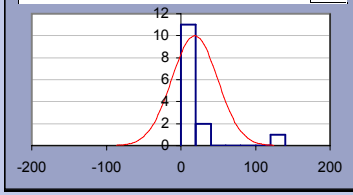
Back to data | Back to summary | Go to outlier test | Go to normality test

Test Results

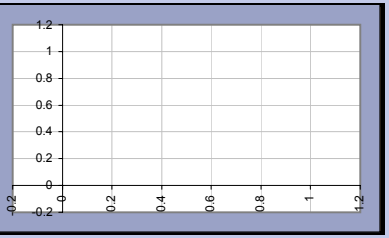
Client/client ref:
Project ref: Sheepcote Valley
Site ref: LW22250
Data description: Data set 1 - West of the Embankr
Date: 18-Nov-2011
User details: AB

Dataset:	Chromium (mg/kg)
Sample mean, $\overline{X}$(mg/kg)	18.519
Sample standard deviation, s	30.677
Sample size, n	14
Critical concentration, Cc (mg/kg)	883.47

Use Normal distribution to test fo



Outliers & non-detects	
Outliers present?	YES
Significance level	5%
Outliers removed?	0
Non-detects	0

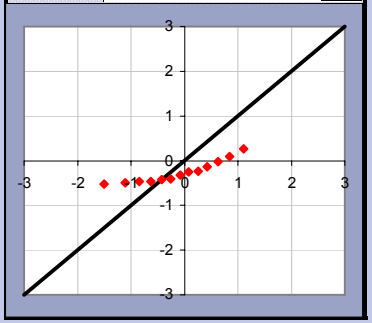


Normality test

Significance level: 5%

Non-normal distribution

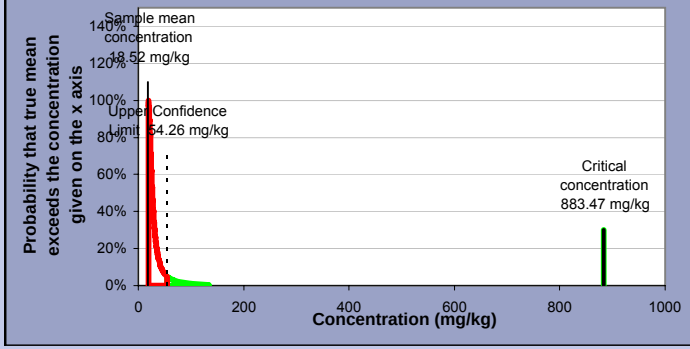
Use: Auto: Chebychev



Test scenario:

Planning: is true mean lower than critical concentration (μ < Cc)?

Null hypothesis:	The true mean concentration is equal to or greater than the critical concentration: μ≥ Cc
Alternative hypothesis:	The true mean concentration is less than the critical concentration: μ < Cc



Evidence against Null hypothesis:	100%
Base decision on:	evidence level
Evidence level required:	95%
Balance of probability?	N/A
Reject Null Hypothesis?	Yes

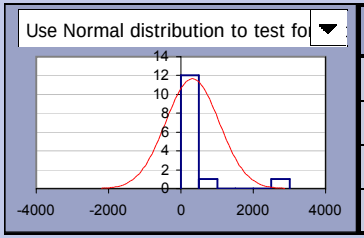
μ < Cc (re this dataset)

Back to data | Back to summary | Go to outlier test | Go to normality test

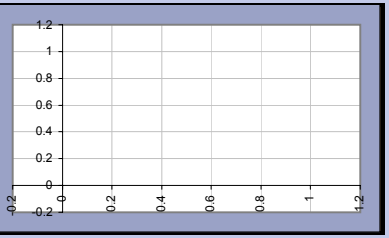
Test Results

Client/client ref:
Project ref: Sheepcote Valley
Site ref: LW22250
Data description: Data set 1 - West of the Embankr
Date: 18-Nov-2011
User details: AB

Dataset:	Lead (mg/kg)
Sample mean, $\overline{X}$(mg/kg)	319.93
Sample standard deviation, s	738
Sample size, n	14
Critical concentration, Cc (mg/kg)	797.54



Outliers & non-detects	
Outliers present?	YES
Significance level	5%
Outliers removed?	0
Non-detects	0

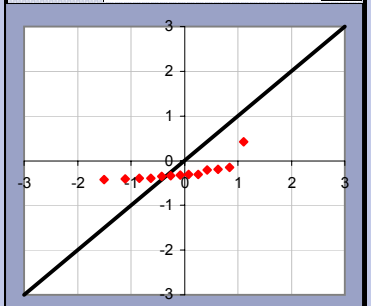


Normality test

Significance level: 5%

Non-normal distribution

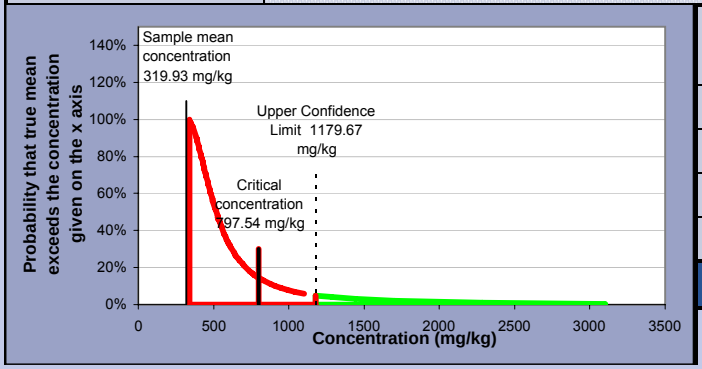
Use: Auto: Chebychev



Test scenario:

Planning: is true mean lower than critical concentration (μ < Cc)?

Null hypothesis:	The true mean concentration is equal to or greater than the critical concentration: μ≥ Cc
Alternative hypothesis:	The true mean concentration is less than the critical concentration: μ < Cc



Evidence against Null hypothesis:	**85%**
Base decision on:	evidence level
Evidence level required:	**95%**
Balance of probability?	N/A
Reject Null Hypothesis?	No

Not enough evidence

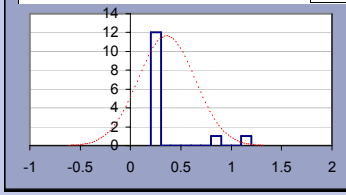
Back to data | Back to summary | Go to outlier test | Go to normality test

Test Results

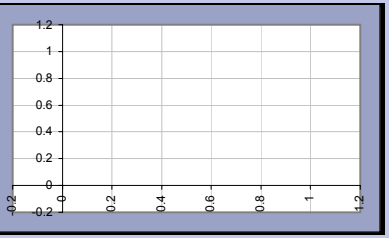
Client/client ref:
Project ref: Sheepcote Valley
Site ref: LW22250
Data description: Data set 1 - West of the Embankr
Date: 18-Nov-2011
User details: AB

Dataset:	Mercury (mg/kg)
Sample mean, $\overline{X}$(mg/kg)	0.3582
Sample standard deviation, s	0.282
Sample size, n	14
Critical concentration, Cc (mg/kg)	782.72

Use Normal distribution to test fo



Outliers & non-detects	
Outliers present?	YES
Significance level	5%
Outliers removed?	0
Non-detects	12

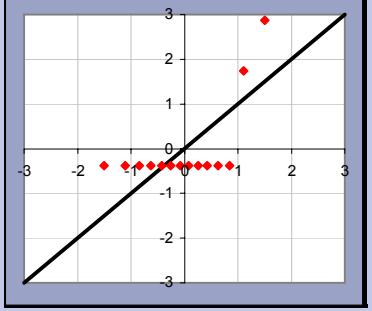


Normality test

Significance level: 5%

Non-normal distribution

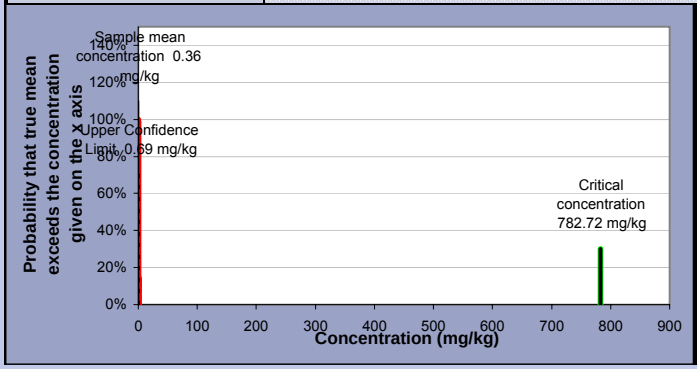
Use: Auto: Chebychev



Test scenario:

Planning: is true mean lower than critical concentration (μ < Cc)?

Null hypothesis:	The true mean concentration is equal to or greater than the critical concentration: μ≥ Cc
Alternative hypothesis:	The true mean concentration is less than the critical concentration: μ < Cc



Evidence against Null hypothesis:	**100%**
Base decision on:	evidence level
Evidence level required:	**95%**
Balance of probability?	N/A
Reject Null Hypothesis?	Yes

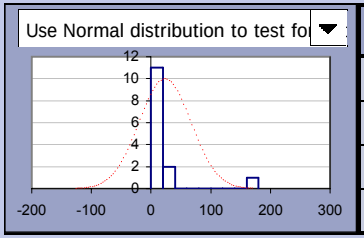
μ < Cc (re this dataset)

Back to data | Back to summary | Go to outlier test | Go to normality test

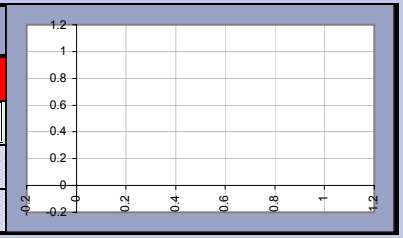
Test Results

Client/client ref:
Project ref: Sheepcote Valley
Site ref: LW22250
Data description: Data set 1 - West of the Embankr
Date: 18-Nov-2011
User details: AB

Dataset:	Nickel (mg/kg)
Sample mean, $\overline{X}$(mg/kg)	23.412
Sample standard deviation, s	43.509
Sample size, n	14
Critical concentration, Cc (mg/kg)	177.72



Outliers & non-detects	
Outliers present?	YES
Significance level	5%
Outliers removed?	0
Non-detects	0

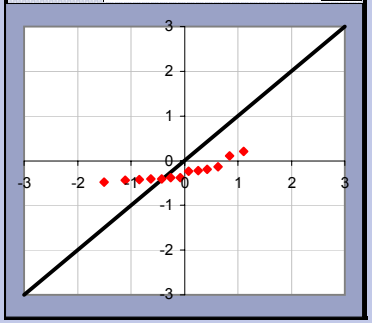


Normality test

Significance level: 5%

Non-normal distribution

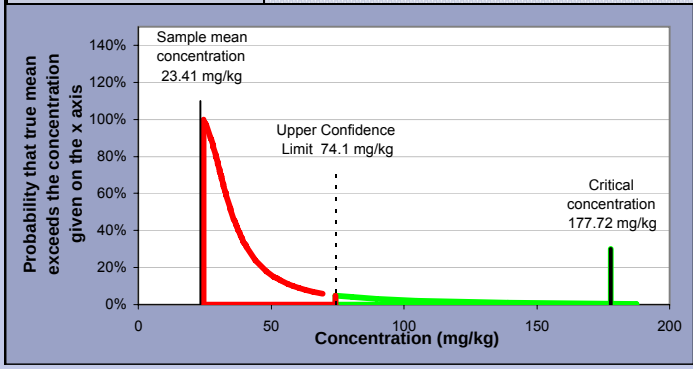
Use: Auto: Chebychev



Test scenario:

Planning: is true mean lower than critical concentration (μ < Cc)?

Null hypothesis:	The true mean concentration is equal to or greater than the critical concentration: μ≥ Cc
Alternative hypothesis:	The true mean concentration is less than the critical concentration: μ < Cc



Evidence against Null hypothesis:	**99%**
Base decision on:	evidence level
Evidence level required:	**95%**
Balance of probability?	N/A
Reject Null Hypothesis?	Yes

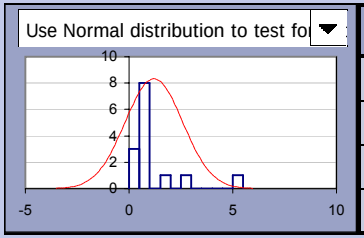
μ < Cc (re this dataset)

Back to data | Back to summary | Go to outlier test | Go to normality test

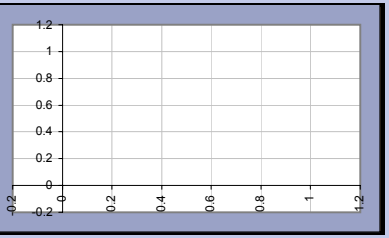
Test Results

Client/client ref:
Project ref: Sheepcote Valley
Site ref: LW22250
Data description: Data set 1 - West of the Embankr
Date: 18-Nov-2011
User details: AB

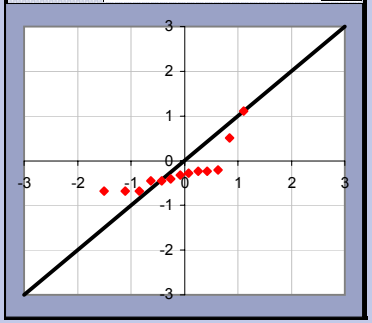
Dataset:	Selenium (mg/kg)
Sample mean, $\overline{X}$(mg/kg)	1.1989
Sample standard deviation, s	1.3839
Sample size, n	14
Critical concentration, Cc (mg/kg)	2351.4



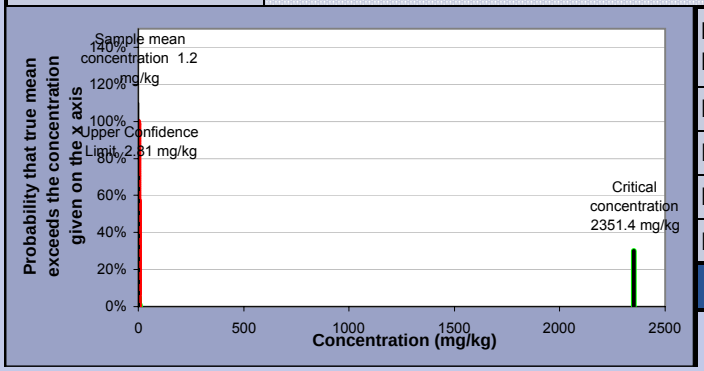
Outliers & non-detects	
Outliers present?	YES
Significance level	5%
Outliers removed?	0
Non-detects	3



Normality test	
Significance level:	5%
Non-normal distribution	
Use:	Auto: Chebychev



Test scenario:	Planning: is true mean lower than critical concentration (μ < Cc)?
Null hypothesis:	The true mean concentration is equal to or greater than the critical concentration: μ≥ Cc
Alternative hypothesis:	The true mean concentration is less than the critical concentration: μ < Cc



Evidence against Null hypothesis:	100%
Base decision on:	evidence level
Evidence level required:	95%
Balance of probability?	N/A
Reject Null Hypothesis?	Yes

μ < Cc (re this dataset)

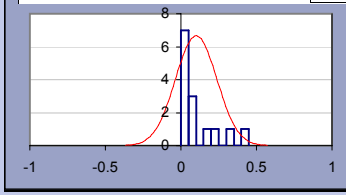
Back to data | Back to summary | Go to outlier test | Go to normality test

Test Results

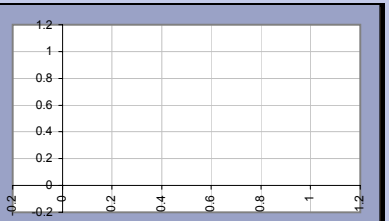
Client/client ref:
Project ref: Sheepcote Valley
Site ref: LW22250
Data description: Data set 1 - West of the Embankr
Date: 18-Nov-2011
User details: AB

Dataset:	Naphthalene (mg/kg)
Sample mean, $\overline{X}$(mg/kg)	0.101
Sample standard deviation, s	0.1366
Sample size, n	14
Critical concentration, Cc (mg/kg)	9.2354

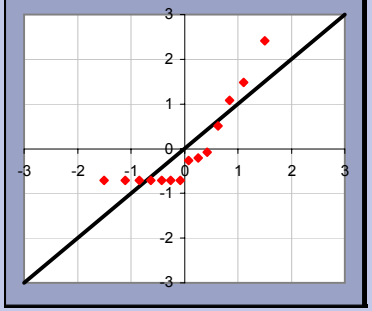
Use Normal distribution to test fo



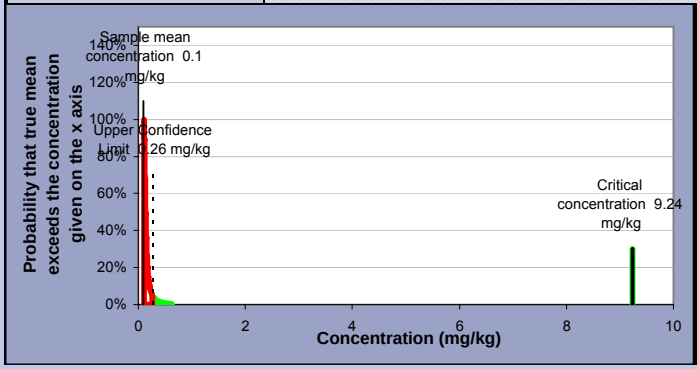
Outliers & non-detects	
Outliers present?	YES
Significance level	5%
Outliers removed?	0
Non-detects	7



Normality test	
Significance level:	5%
Non-normal distribution	
Use:	Auto: Chebychev



Test scenario:	Planning: is true mean lower than critical concentration (μ < Cc)?
Null hypothesis:	The true mean concentration is equal to or greater than the critical concentration: μ≥ Cc
Alternative hypothesis:	The true mean concentration is less than the critical concentration: μ < Cc



Evidence against Null hypothesis:	100%
Base decision on:	evidence level
Evidence level required:	95%
Balance of probability?	N/A
Reject Null Hypothesis?	Yes

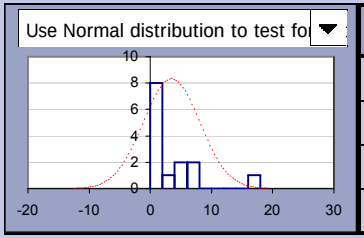
μ < Cc (re this dataset)

Back to data | Back to summary | Go to outlier test | Go to normality test

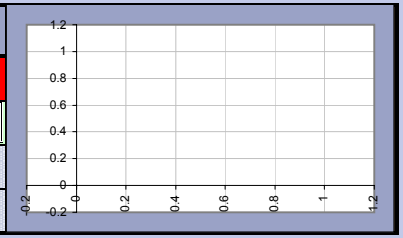
Test Results

Client/client ref:
Project ref: Sheepcote Valley
Site ref: LW22250
Data description: Data set 1 - West of the Embankr
Date: 18-Nov-2011
User details: AB

Dataset:	Benzo(a)pyrene (mg/kg)
Sample mean, $\overline{X}$(mg/kg)	3.4705
Sample standard deviation, s	4.6083
Sample size, n	14
Critical concentration, Cc (mg/kg)	0.7532



Outliers & non-detects	
Outliers present?	YES
Significance level	5%
Outliers removed?	0
Non-detects	1

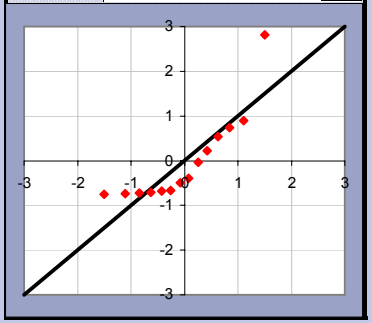


Normality test

Significance level: 5%

Non-normal distribution

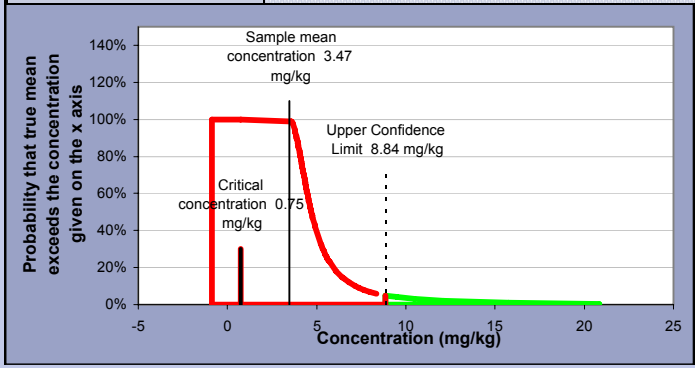
Use: Auto: Chebychev



Test scenario:

Planning: is true mean lower than critical concentration (μ < Cc)?

Null hypothesis:	The true mean concentration is equal to or greater than the critical concentration: μ≥ Cc
Alternative hypothesis:	The true mean concentration is less than the critical concentration: μ < Cc



Evidence against Null hypothesis:	**0%**
Base decision on:	evidence level
Evidence level required:	**95%**
Balance of probability?	N/A
Reject Null Hypothesis?	No

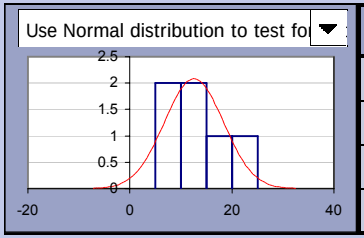
μ ≥ Cc

Back to data | Back to summary | Go to outlier test | Go to normality test

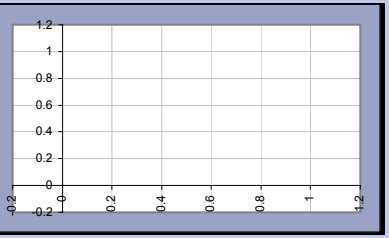
Test Results

Client/client ref:
Project ref: Sheepcote Valley
Site ref: LW22250
Data description: Data set 2 - Embankment Soils
Date: 18-Nov-2011
User details: AB

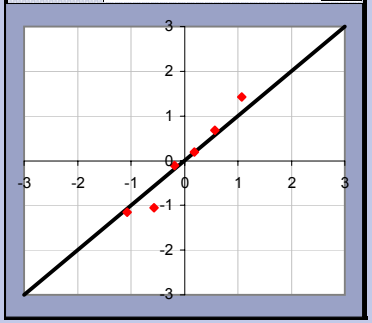
Dataset:	Arsenic (mg/kg)
Sample mean, $\overline{X}$(mg/kg)	12.555
Sample standard deviation, s	5.7736
Sample size, n	6
Critical concentration, Cc (mg/kg)	118.48



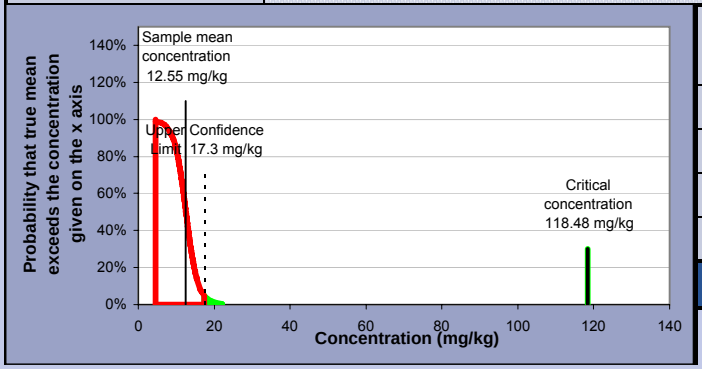
Outliers & non-detects	
Outliers present?	NO
Significance level	5%
Outliers removed?	0
Non-detects	0



Normality test	
Significance level:	5%
Normal distribution	
Use:	Auto: One-sample t-test



Test scenario:	Planning: is true mean lower than critical concentration (μ < Cc)?
Null hypothesis:	The true mean concentration is equal to or greater than the critical concentration: μ≥ Cc
Alternative hypothesis:	The true mean concentration is less than the critical concentration: μ < Cc



Evidence against Null hypothesis:	**100%**
Base decision on:	evidence level
Evidence level required:	**95%**
Balance of probability?	N/A
Reject Null Hypothesis?	Yes

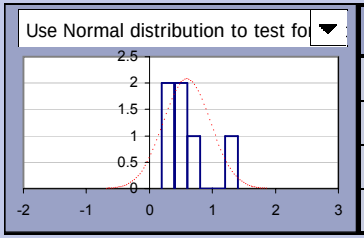
μ < Cc (re this dataset)

Back to data | **Back to summary** | **Go to outlier test** | **Go to normality test**

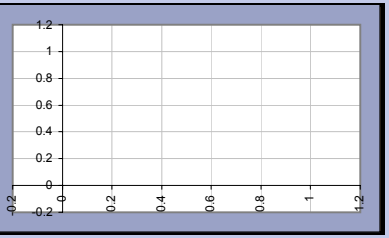
Test Results

Client/client ref:
Project ref: Sheepcote Valley
Site ref: LW22250
Data description: Data set 2 - Embankment Soils
Date: 18-Nov-2011
User details: AB

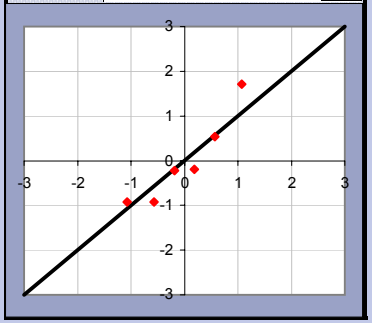
Dataset:	Cadmium (mg/kg)
Sample mean, $\overline{X}$(mg/kg)	0.5946
Sample standard deviation, s	0.3745
Sample size, n	6
Critical concentration, Cc (mg/kg)	35.778



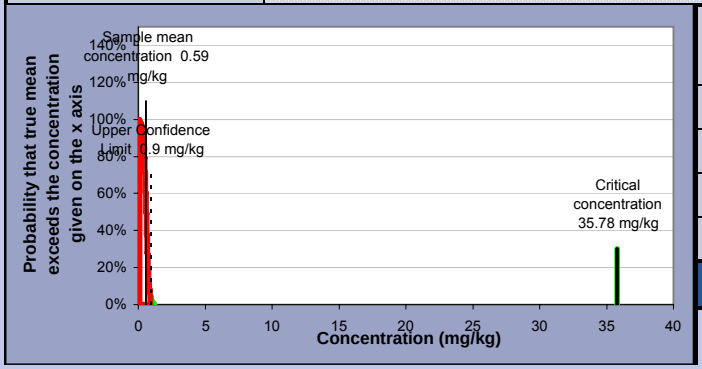
Outliers & non-detects	
Outliers present?	NO
Significance level	5%
Outliers removed?	0
Non-detects	2



Normality test	
Significance level:	5%
Normal distribution	
Use:	Auto: One-sample t-test



Test scenario:	Planning: is true mean lower than critical concentration (μ < Cc)?
Null hypothesis:	The true mean concentration is equal to or greater than the critical concentration: μ≥ Cc
Alternative hypothesis:	The true mean concentration is less than the critical concentration: μ < Cc



Evidence against Null hypothesis:	**100%**
Base decision on:	evidence level
Evidence level required:	**95%**
Balance of probability?	N/A
Reject Null Hypothesis?	Yes

μ < Cc (re this dataset)

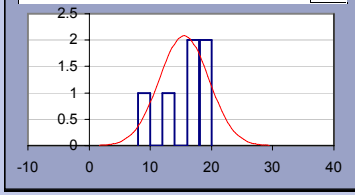
Back to data | Back to summary | Go to outlier test | Go to normality test

Test Results

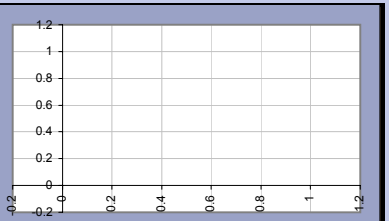
Client/client ref:
Project ref: Sheepcote Valley
Site ref: LW22250
Data description: Data set 2 - Embankment Soils
Date: 18-Nov-2011
User details: AB

Dataset:	Chromium (mg/kg)
Sample mean, $\overline{X}$(mg/kg)	15.523
Sample standard deviation, s	4.0429
Sample size, n	6
Critical concentration, Cc (mg/kg)	883.47

Use Normal distribution to test fo



Outliers & non-detects	
Outliers present?	NO
Significance level	5%
Outliers removed?	0
Non-detects	0

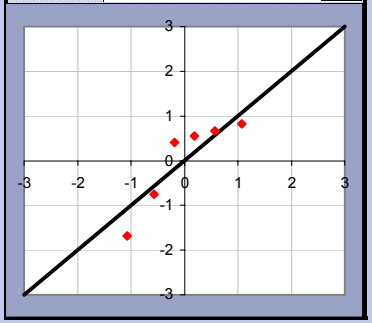


Normality test

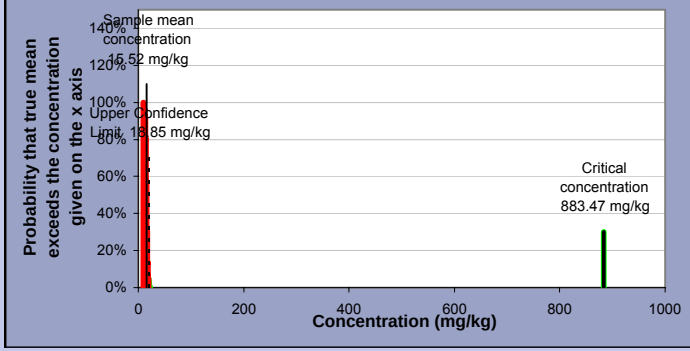
Significance level: 5%

Normal distribution

Use: Auto: One-sample t-test



Test scenario:	Planning: is true mean lower than critical concentration (μ < Cc)?
Null hypothesis:	The true mean concentration is equal to or greater than the critical concentration: μ≥ Cc
Alternative hypothesis:	The true mean concentration is less than the critical concentration: μ < Cc



Evidence against Null hypothesis:	**100%**
Base decision on:	evidence level
Evidence level required:	**95%**
Balance of probability?	N/A
Reject Null Hypothesis?	Yes

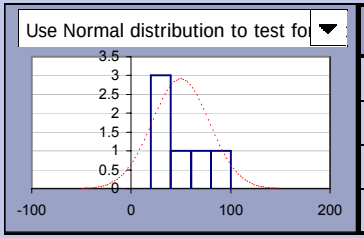
μ < Cc (re this dataset)

Back to data | Back to summary | Go to outlier test | Go to normality test

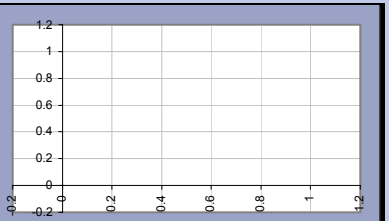
Test Results

Client/client ref:
Project ref: Sheepcote Valley
Site ref: LW22250
Data description: Data set 2 - Embankment Soils
Date: 18-Nov-2011
User details: AB

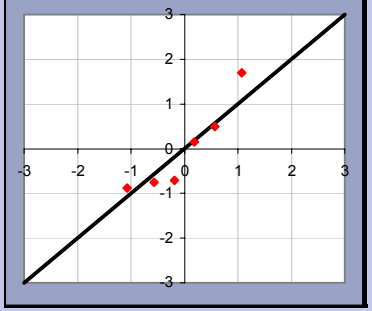
Dataset:	Lead (mg/kg)
Sample mean, $\overline{X}$(mg/kg)	49.811
Sample standard deviation, s	28.769
Sample size, n	6
Critical concentration, Cc (mg/kg)	797.54



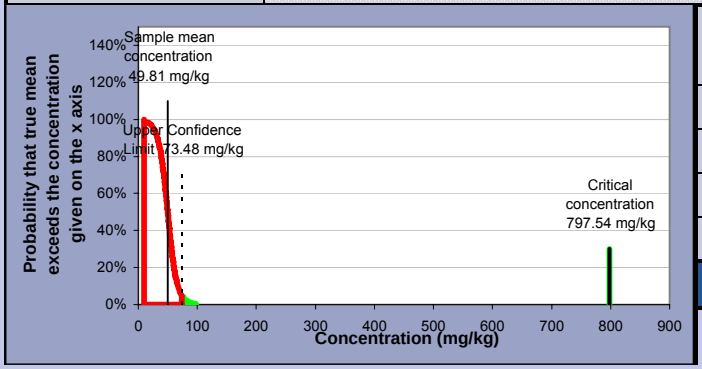
Outliers & non-detects	
Outliers present?	NO
Significance level	5%
Outliers removed?	0
Non-detects	0



Normality test	
Significance level:	5%
Normal distribution	
Use:	Auto: One-sample t-test



Test scenario:	Planning: is true mean lower than critical concentration (μ < Cc)?
Null hypothesis:	The true mean concentration is equal to or greater than the critical concentration: μ≥ Cc
Alternative hypothesis:	The true mean concentration is less than the critical concentration: μ < Cc



Evidence against Null hypothesis:	**100%**
Base decision on:	evidence level
Evidence level required:	**95%**
Balance of probability?	N/A
Reject Null Hypothesis?	Yes

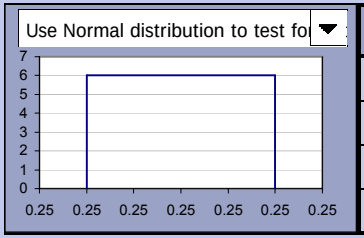
μ < Cc (re this dataset)

Back to data | Back to summary | Go to outlier test | Go to normality test

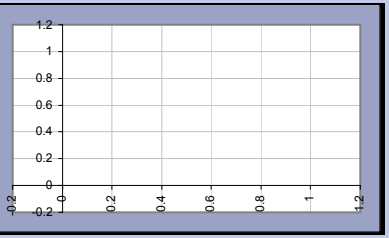
Test Results

Client/client ref:
Project ref: Sheepcote Valley
Site ref: LW22250
Data description: Data set 2 - Embankment Soils
Date: 18-Nov-2011
User details: AB

Dataset:	Mercury (mg/kg)
Sample mean, $\overline{X}$(mg/kg)	0.25
Sample standard deviation, s	0
Sample size, n	6
Critical concentration, Cc (mg/kg)	782.72



Outliers & non-detects	
Outliers present?	NO
Significance level	5%
Outliers removed?	0
Non-detects	6

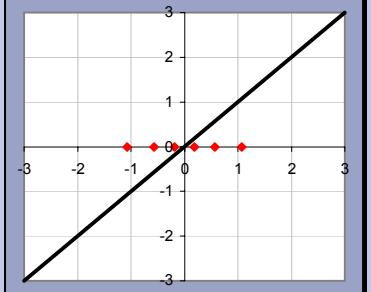


Normality test

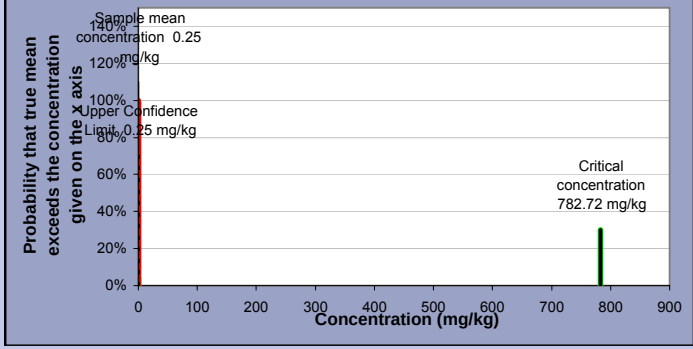
Significance level: 5%

Single value distribution

Use: Auto: Chebychev



Test scenario:	Planning: is true mean lower than critical concentration (μ < Cc)?
Null hypothesis:	The true mean concentration is equal to or greater than the critical concentration: μ≥ Cc
Alternative hypothesis:	The true mean concentration is less than the critical concentration: μ < Cc



Evidence against Null hypothesis:	**100%**
Base decision on:	evidence level
Evidence level required:	**95%**
Balance of probability?	N/A
Reject Null Hypothesis?	Yes

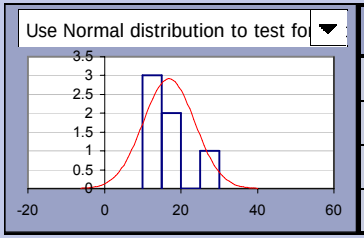
μ < Cc (re this dataset)

Back to data | Back to summary | Go to outlier test | Go to normality test

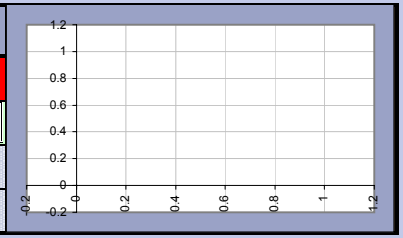
Test Results

Client/client ref:
Project ref: Sheepcote Valley
Site ref: LW22250
Data description: Data set 2 - Embankment Soils
Date: 18-Nov-2011
User details: AB

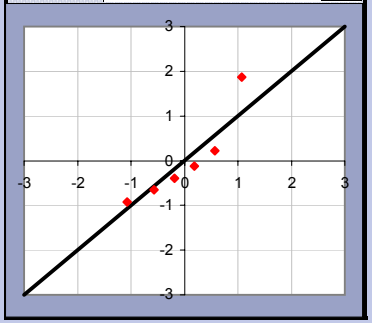
Dataset:	Nickel (mg/kg)
Sample mean, $\overline{X}$(mg/kg)	16.882
Sample standard deviation, s	6.7268
Sample size, n	6
Critical concentration, Cc (mg/kg)	177.72



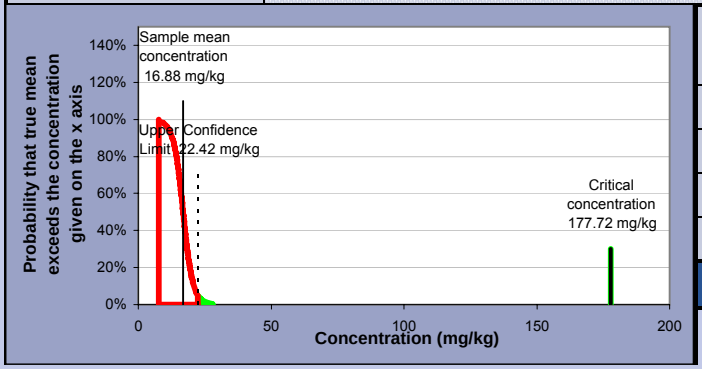
Outliers & non-detects	
Outliers present?	YES
Significance level	5%
Outliers removed?	0
Non-detects	0



Normality test	
Significance level:	5%
Normal distribution	
Use:	Auto: One-sample t-test



Test scenario:	Planning: is true mean lower than critical concentration (μ < Cc)?
Null hypothesis:	The true mean concentration is equal to or greater than the critical concentration: μ≥ Cc
Alternative hypothesis:	The true mean concentration is less than the critical concentration: μ < Cc



Evidence against Null hypothesis:	**100%**
Base decision on:	evidence level
Evidence level required:	**95%**
Balance of probability?	N/A
Reject Null Hypothesis?	Yes

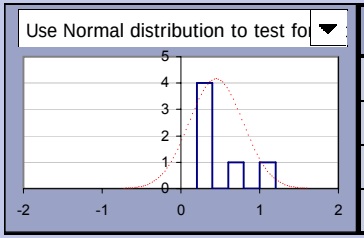
μ < Cc (re this dataset)

Back to data | Back to summary | Go to outlier test | Go to normality test

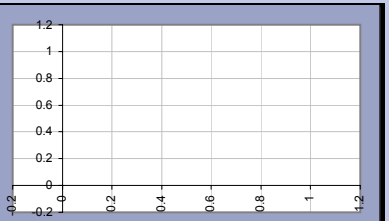
Test Results

Client/client ref:
Project ref: Sheepcote Valley
Site ref: LW22250
Data description: Data set 2 - Embankment Soils
Date: 18-Nov-2011
User details: AB

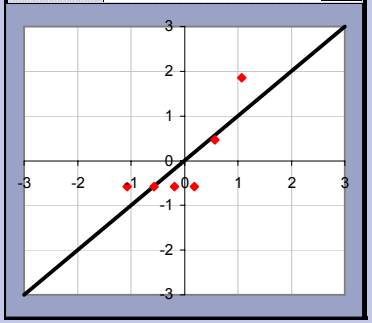
Dataset:	Selenium (mg/kg)
Sample mean, $\overline{X}$(mg/kg)	0.4471
Sample standard deviation, s	0.3403
Sample size, n	6
Critical concentration, Cc (mg/kg)	2351.4



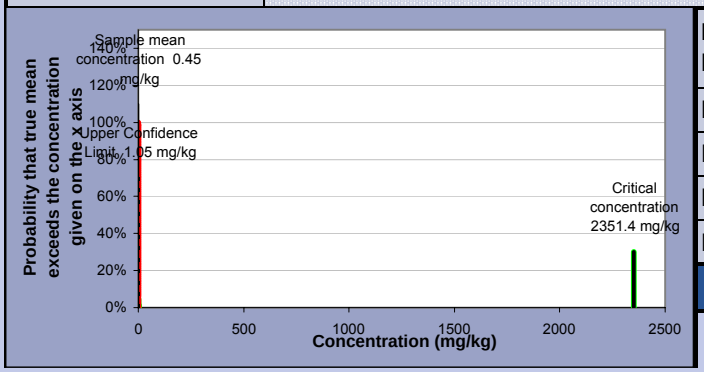
Outliers & non-detects	
Outliers present?	YES
Significance level	5%
Outliers removed?	0
Non-detects	4



Normality test	
Significance level:	5%
Non-normal distribution	
Use:	Auto: Chebychev



Test scenario:	Planning: is true mean lower than critical concentration (μ < Cc)?
Null hypothesis:	The true mean concentration is equal to or greater than the critical concentration: μ≥ Cc
Alternative hypothesis:	The true mean concentration is less than the critical concentration: μ < Cc



Evidence against Null hypothesis:	**100%**
Base decision on:	evidence level
Evidence level required:	**95%**
Balance of probability?	N/A
Reject Null Hypothesis?	Yes

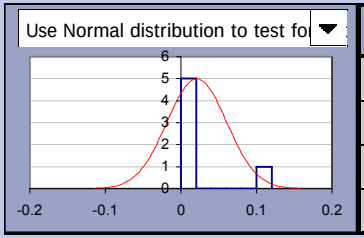
μ < Cc (re this dataset)

Back to data | Back to summary | Go to outlier test | Go to normality test

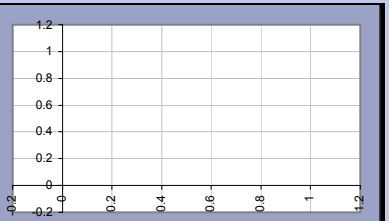
Test Results

Client/client ref:
Project ref: Sheepcote Valley
Site ref: LW22250
Data description: Data set 2 - Embankment Soils
Date: 18-Nov-2011
User details: AB

Dataset:	Naphthalene (mg/kg)
Sample mean, $\overline{X}$(mg/kg)	0.0211
Sample standard deviation, s	0.0394
Sample size, n	6
Critical concentration, Cc (mg/kg)	9.2354



Outliers & non-detects	
Outliers present?	YES
Significance level	5%
Outliers removed?	0
Non-detects	5

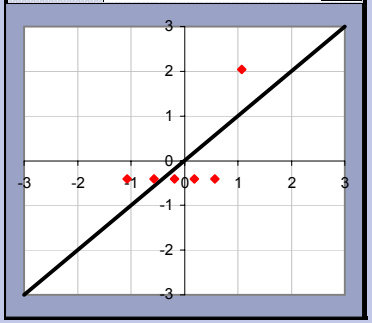


Normality test

Significance level: 5%

Non-normal distribution

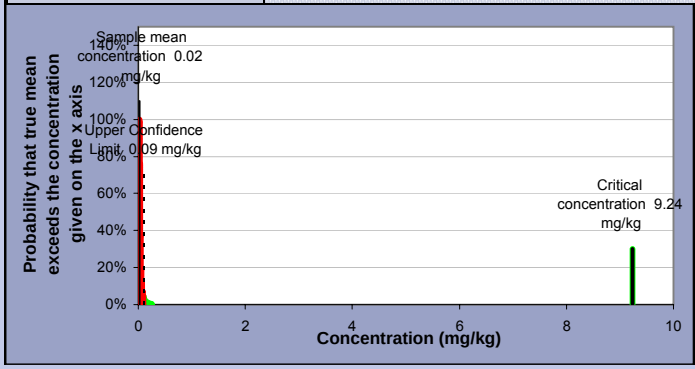
Use: Auto: Chebychev



Test scenario:

Planning: is true mean lower than critical concentration (μ < Cc)?

Null hypothesis:	The true mean concentration is equal to or greater than the critical concentration: μ≥ Cc
Alternative hypothesis:	The true mean concentration is less than the critical concentration: μ < Cc



Evidence against Null hypothesis:	100%
Base decision on:	evidence level
Evidence level required:	95%
Balance of probability?	N/A
Reject Null Hypothesis?	Yes

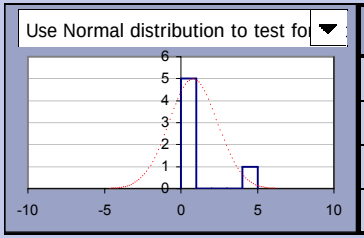
μ < Cc (re this dataset)

Back to data | Back to summary | Go to outlier test | Go to normality test

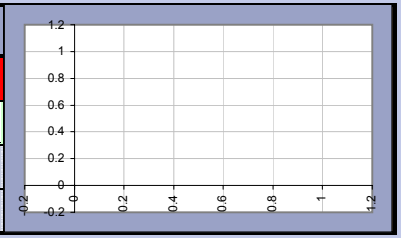
Test Results

Client/client ref:
Project ref: Sheepcote Valley
Site ref: LW22250
Data description: Data set 2 - Embankment Soils
Date: 18-Nov-2011
User details: AB

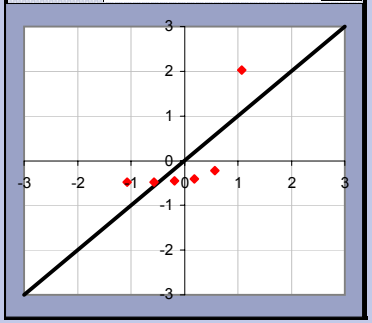
Dataset:	Benzo(a)pyrene (mg/kg)
Sample mean, $\overline{X}$(mg/kg)	0.7992
Sample standard deviation, s	1.5832
Sample size, n	6
Critical concentration, Cc (mg/kg)	0.7532



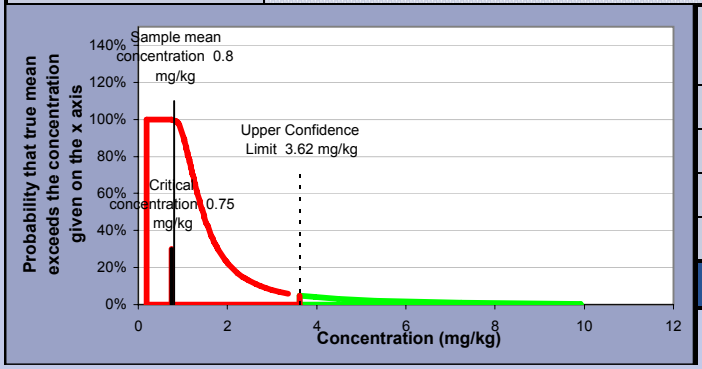
Outliers & non-detects	
Outliers present?	YES
Significance level	5%
Outliers removed?	0
Non-detects	0



Normality test	
Significance level:	5%
Non-normal distribution	
Use:	Auto: Chebychev



Test scenario:	Planning: is true mean lower than critical concentration (μ < Cc)?
Null hypothesis:	The true mean concentration is equal to or greater than the critical concentration: μ≥ Cc
Alternative hypothesis:	The true mean concentration is less than the critical concentration: μ < Cc



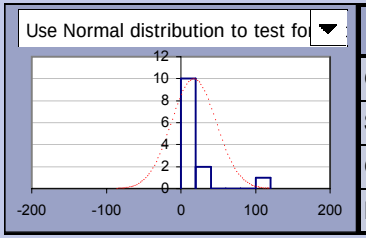
Evidence against Null hypothesis:	0%
Base decision on:	evidence level
Evidence level required:	95%
Balance of probability?	N/A
Reject Null Hypothesis?	No
μ ≥ Cc	

Back to data | Back to summary | Go to outlier test | Go to normality test

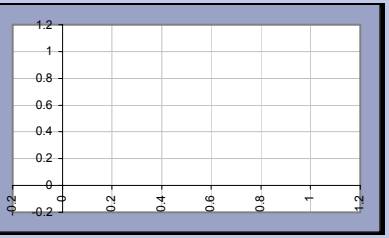
Test Results

Client/client ref:
Site ref: LW22250
Date: 18-Nov-2011
Project ref: Sheepcote Valley
Data description: Data set 3 - East of Embankment
User details: AB

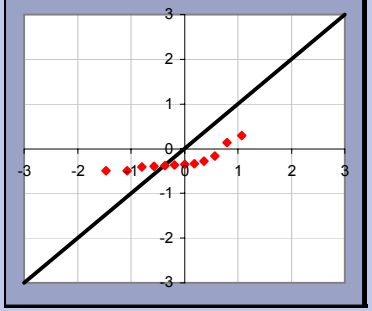
Dataset:	Arsenic (mg/kg)
Sample mean, $\overline{X}$(mg/kg)	17.371
Sample standard deviation, s	29.941
Sample size, n	13
Critical concentration, Cc (mg/kg)	118.48



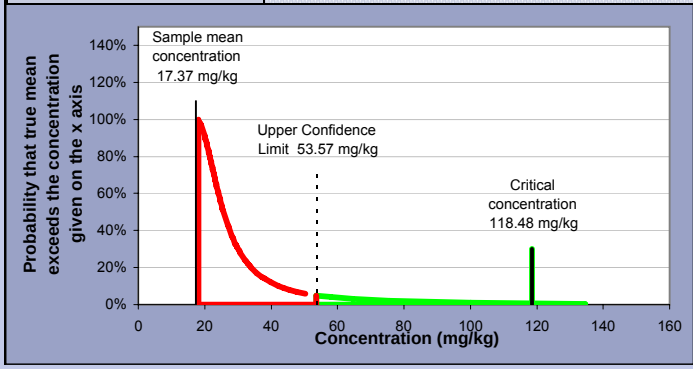
Outliers & non-detects	
Outliers present?	YES
Significance level	5%
Outliers removed?	0
Non-detects	2



Normality test	
Significance level:	5%
Non-normal distribution	
Use:	Auto: Chebychev



Test scenario:	Planning: is true mean lower than critical concentration (μ < Cc)?
Null hypothesis:	The true mean concentration is equal to or greater than the critical concentration: μ≥ Cc
Alternative hypothesis:	The true mean concentration is less than the critical concentration: μ < Cc



Evidence against Null hypothesis:	**99%**
Base decision on:	evidence level
Evidence level required:	**95%**
Balance of probability?	N/A
Reject Null Hypothesis?	Yes

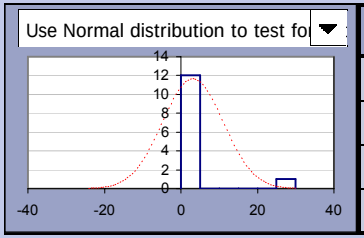
μ < Cc (re this dataset)

Back to data | Back to summary | Go to outlier test | Go to normality test

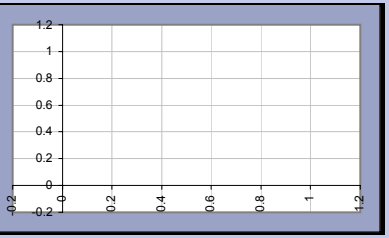
Test Results

Client/client ref:
Project ref: Sheepcote Valley
Site ref: LW22250
Data description: Data set 3 - East of Embankment
Date: 18-Nov-2011
User details: AB

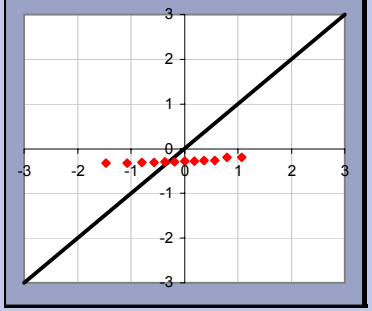
Dataset:	Cadmium (mg/kg)
Sample mean, $\overline{X}$(mg/kg)	3.13
Sample standard deviation, s	7.9299
Sample size, n	13
Critical concentration, Cc (mg/kg)	35.778



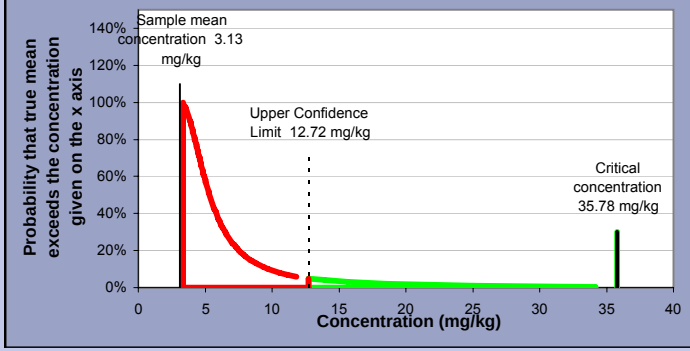
Outliers & non-detects	
Outliers present?	YES
Significance level	5%
Outliers removed?	0
Non-detects	0



Normality test	
Significance level:	5%
Non-normal distribution	
Use:	Auto: Chebychev



Test scenario:	Planning: is true mean lower than critical concentration (μ < Cc)?
Null hypothesis:	The true mean concentration is equal to or greater than the critical concentration: μ≥ Cc
Alternative hypothesis:	The true mean concentration is less than the critical concentration: μ < Cc



Evidence against Null hypothesis:	**100%**
Base decision on:	evidence level
Evidence level required:	**95%**
Balance of probability?	N/A
Reject Null Hypothesis?	Yes

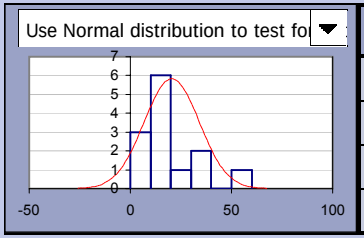
μ < Cc (re this dataset)

Back to data | Back to summary | Go to outlier test | Go to normality test

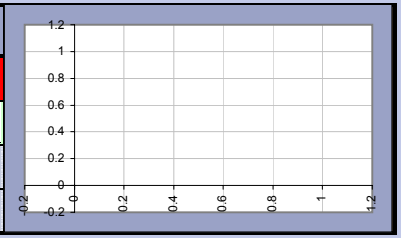
Test Results

Client/client ref:
Site ref: LW22250
Date: 18-Nov-2011
Project ref: Sheepcote Valley
Data description: Data set 3 - East of Embankment
User details: AB

Dataset:	Chromium (mg/kg)
Sample mean, $\overline{X}$(mg/kg)	20.466
Sample standard deviation, s	13.613
Sample size, n	13
Critical concentration, Cc (mg/kg)	883.47



Outliers & non-detects	
Outliers present?	YES
Significance level	5%
Outliers removed?	0
Non-detects	0

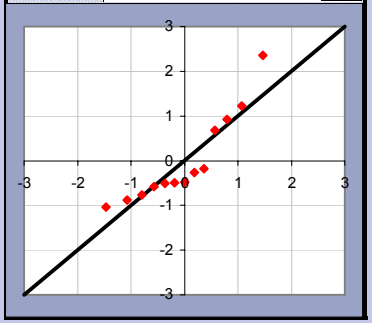


Normality test

Significance level: 5%

Non-normal distribution

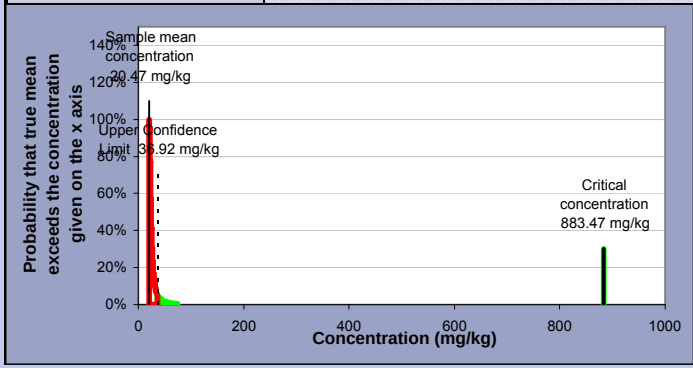
Use: Auto: Chebychev



Test scenario:

Planning: is true mean lower than critical concentration (μ < Cc)?

Null hypothesis:	The true mean concentration is equal to or greater than the critical concentration: μ≥ Cc
Alternative hypothesis:	The true mean concentration is less than the critical concentration: μ < Cc



Evidence against Null hypothesis:	100%
Base decision on:	evidence level
Evidence level required:	95%
Balance of probability?	N/A
Reject Null Hypothesis?	Yes

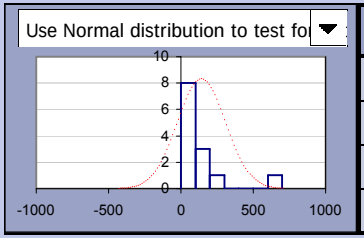
μ < Cc (re this dataset)

Back to data | Back to summary | Go to outlier test | Go to normality test

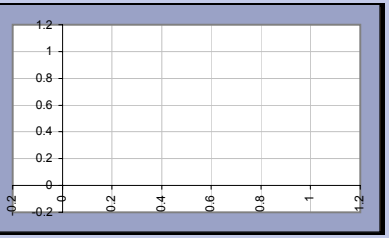
Test Results

Client/client ref:
Site ref: LW22250
Date: 18-Nov-2011
Project ref: Sheepcote Valley
Data description: Data set 3 - East of Embankment
User details: AB

Dataset:	Lead (mg/kg)
Sample mean, $\overline{X}$(mg/kg)	143.64
Sample standard deviation, s	166.01
Sample size, n	13
Critical concentration, Cc (mg/kg)	797.54



Outliers & non-detects	
Outliers present?	YES
Significance level	5%
Outliers removed?	0
Non-detects	0

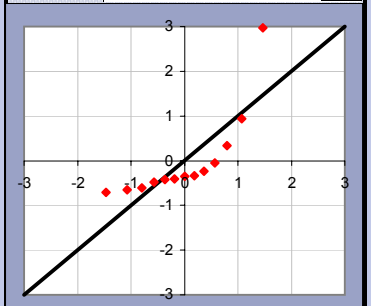


Normality test

Significance level: 5%

Non-normal distribution

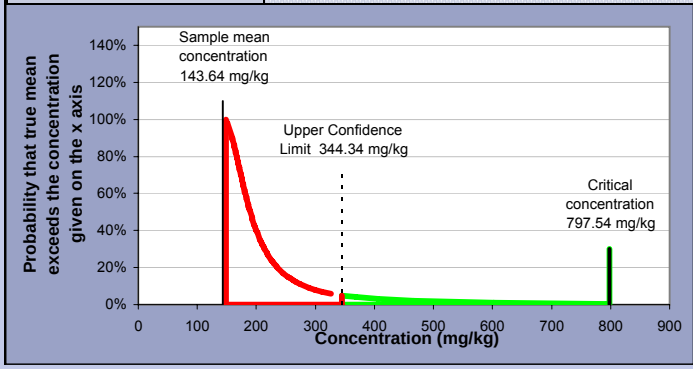
Use: Auto: Chebychev



Test scenario:

Planning: is true mean lower than critical concentration (μ < Cc)?

Null hypothesis:	The true mean concentration is equal to or greater than the critical concentration: μ≥ Cc
Alternative hypothesis:	The true mean concentration is less than the critical concentration: μ < Cc



Evidence against Null hypothesis:	**100%**
Base decision on:	evidence level
Evidence level required:	95%
Balance of probability?	N/A
Reject Null Hypothesis?	Yes

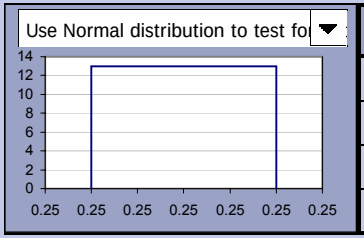
μ < Cc (re this dataset)

Back to data | Back to summary | Go to outlier test | Go to normality test

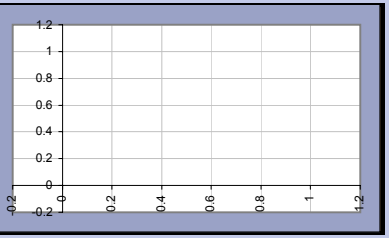
Test Results

Client/client ref:
Site ref: LW22250
Date: 18-Nov-2011
Project ref: Sheepcote Valley
Data description: Data set 3 - East of Embankment
User details: AB

Dataset:	Mercury (mg/kg)
Sample mean, $\overline{X}$(mg/kg)	0.25
Sample standard deviation, s	0
Sample size, n	13
Critical concentration, Cc (mg/kg)	782.72



Outliers & non-detects	
Outliers present?	NO
Significance level	5%
Outliers removed?	0
Non-detects	13

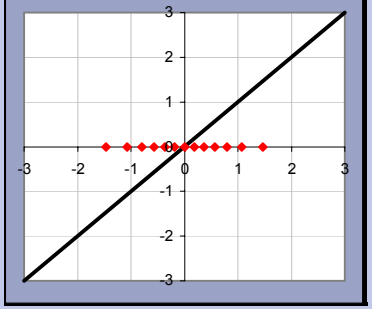


Normality test

Significance level: 5%

Single value distribution

Use: Auto: Chebychev

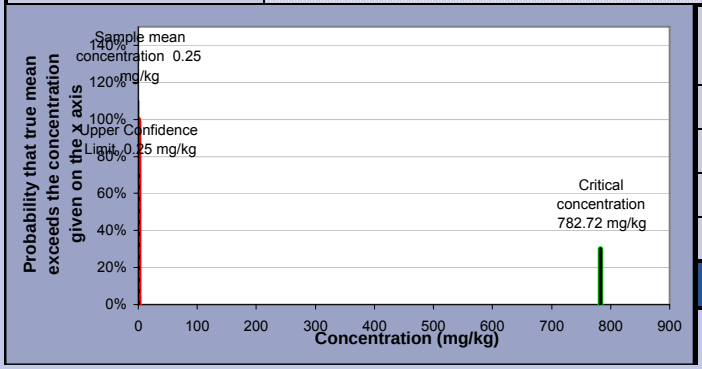


Test scenario:

Planning: is true mean lower than critical concentration (μ < Cc)?

Null hypothesis: The true mean concentration is equal to or greater than the critical concentration: μ≥ Cc

Alternative hypothesis: The true mean concentration is less than the critical concentration: μ < Cc



Evidence against Null hypothesis:	100%
Base decision on:	evidence level
Evidence level required:	95%
Balance of probability?	N/A
Reject Null Hypothesis?	Yes

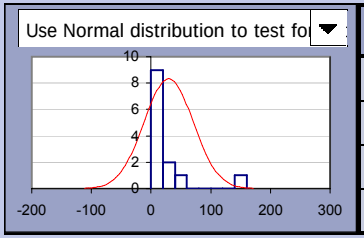
μ < Cc (re this dataset)

Back to data | Back to summary | Go to outlier test | Go to normality test

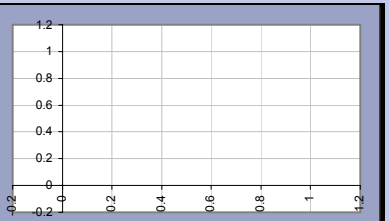
Test Results

Client/client ref:
Project ref: Sheepcote Valley
Site ref: LW22250
Data description: Data set 3 - East of Embankment
Date: 18-Nov-2011
User details: AB

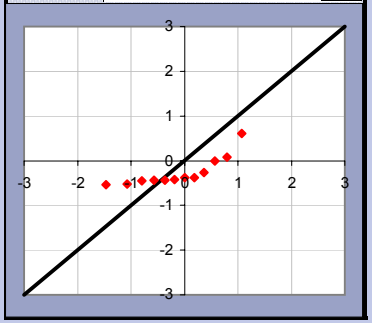
Dataset:	Nickel (mg/kg)
Sample mean, $\overline{X}$(mg/kg)	29.444
Sample standard deviation, s	41.153
Sample size, n	13
Critical concentration, Cc (mg/kg)	177.72



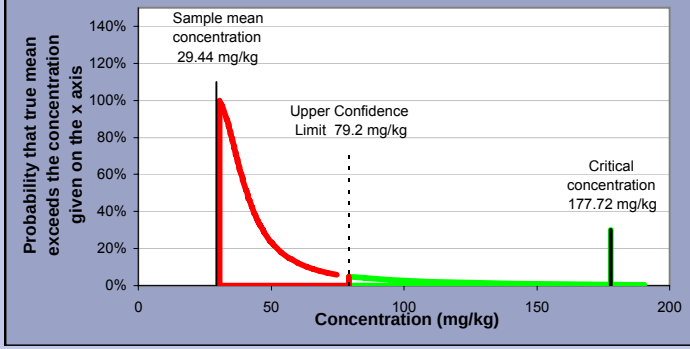
Outliers & non-detects	
Outliers present?	YES
Significance level	5%
Outliers removed?	0
Non-detects	0



Normality test	
Significance level:	5%
Non-normal distribution	
Use:	Auto: Chebychev



Test scenario:	Planning: is true mean lower than critical concentration (μ < Cc)?
Null hypothesis:	The true mean concentration is equal to or greater than the critical concentration: μ≥ Cc
Alternative hypothesis:	The true mean concentration is less than the critical concentration: μ < Cc



Evidence against Null hypothesis:	**99%**
Base decision on:	evidence level
Evidence level required:	**95%**
Balance of probability?	N/A
Reject Null Hypothesis?	Yes

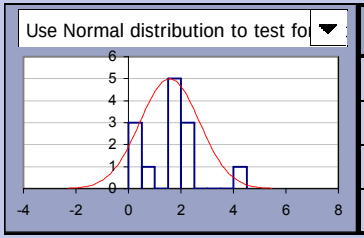
μ < Cc (re this dataset)

Back to data | Back to summary | Go to outlier test | Go to normality test

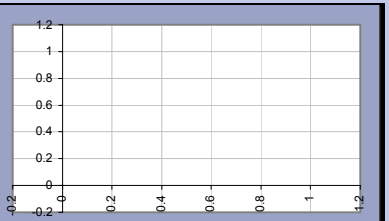
Test Results

Client/client ref:
Site ref: LW22250
Date: 18-Nov-2011
Project ref: Sheepcote Valley
Data description: Data set 3 - East of Embankment
User details: AB

Dataset:	Selenium (mg/kg)
Sample mean, $\overline{X}$(mg/kg)	1.5745
Sample standard deviation, s	1.1329
Sample size, n	13
Critical concentration, Cc (mg/kg)	2351.4



Outliers & non-detects	
Outliers present?	YES
Significance level	5%
Outliers removed?	0
Non-detects	3

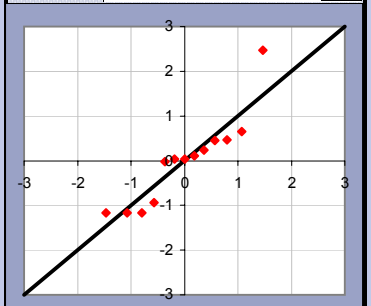


Normality test

Significance level: 5%

Non-normal distribution

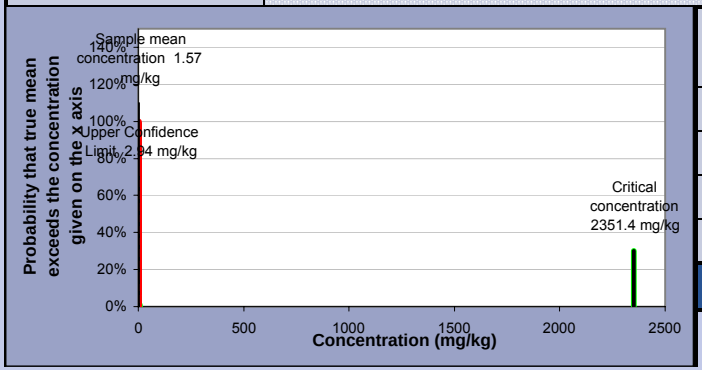
Use: Auto: Chebychev



Test scenario:

Planning: is true mean lower than critical concentration (μ < Cc)?

Null hypothesis:	The true mean concentration is equal to or greater than the critical concentration: μ≥ Cc
Alternative hypothesis:	The true mean concentration is less than the critical concentration: μ < Cc



Evidence against Null hypothesis:	**100%**
Base decision on:	evidence level
Evidence level required:	**95%**
Balance of probability?	N/A
Reject Null Hypothesis?	Yes

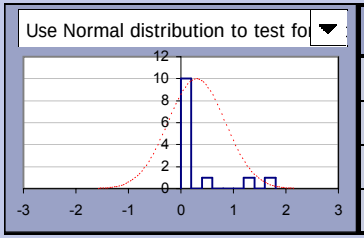
μ < Cc (re this dataset)

Back to data | Back to summary | Go to outlier test | Go to normality test

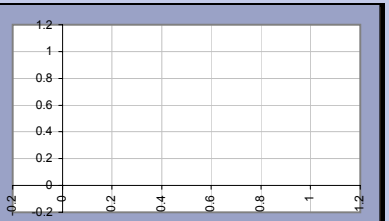
Test Results

Client/client ref:
Project ref: Sheepcote Valley
Site ref: LW22250
Data description: Data set 3 - East of Embankment
Date: 18-Nov-2011
User details: AB

Dataset:	Naphthalene (mg/kg)
Sample mean, $\overline{X}$(mg/kg)	0.2996
Sample standard deviation, s	0.5449
Sample size, n	13
Critical concentration, Cc (mg/kg)	9.2354



Outliers & non-detects	
Outliers present?	YES
Significance level	5%
Outliers removed?	0
Non-detects	5

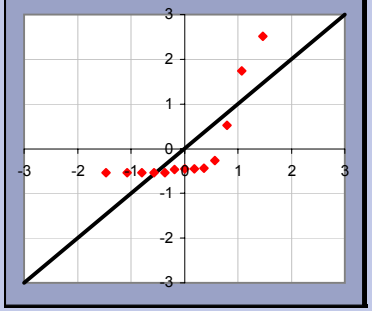


Normality test

Significance level: 5%

Non-normal distribution

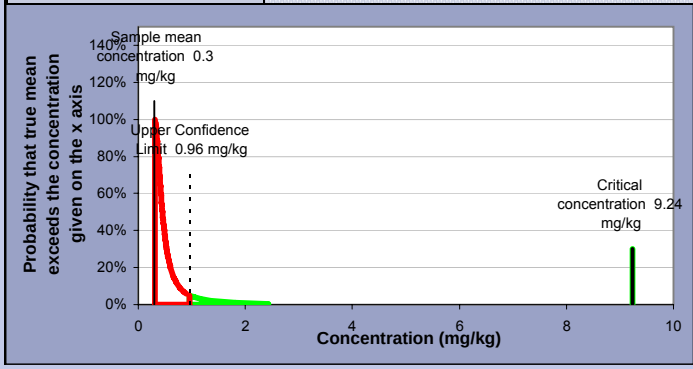
Use: Auto: Chebychev



Test scenario:

Planning: is true mean lower than critical concentration (μ < Cc)?

Null hypothesis:	The true mean concentration is equal to or greater than the critical concentration: μ≥ Cc
Alternative hypothesis:	The true mean concentration is less than the critical concentration: μ < Cc



Evidence against Null hypothesis:	**100%**
Base decision on:	evidence level
Evidence level required:	95%
Balance of probability?	N/A
Reject Null Hypothesis?	Yes

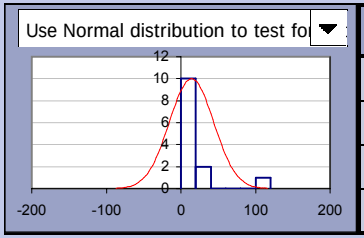
μ < Cc (re this dataset)

Back to data | Back to summary | Go to outlier test | Go to normality test

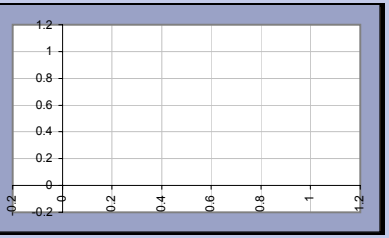
Test Results

Client/client ref:
Project ref: Sheepcote Valley
Site ref: LW22250
Data description: Data set 3 - East of Embankment
Date: 18-Nov-2011
User details: AB

Dataset:	Benzo(a)pyrene (mg/kg)
Sample mean, $\overline{X}$(mg/kg)	14.218
Sample standard deviation, s	29.641
Sample size, n	13
Critical concentration, Cc (mg/kg)	0.7532



Outliers & non-detects	
Outliers present?	YES
Significance level	5%
Outliers removed?	0
Non-detects	0

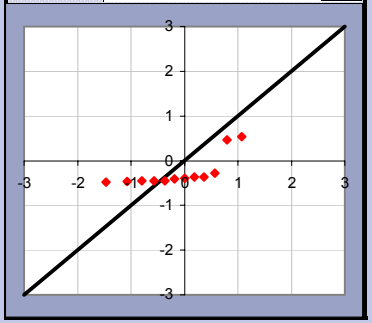


Normality test

Significance level: 5%

Non-normal distribution

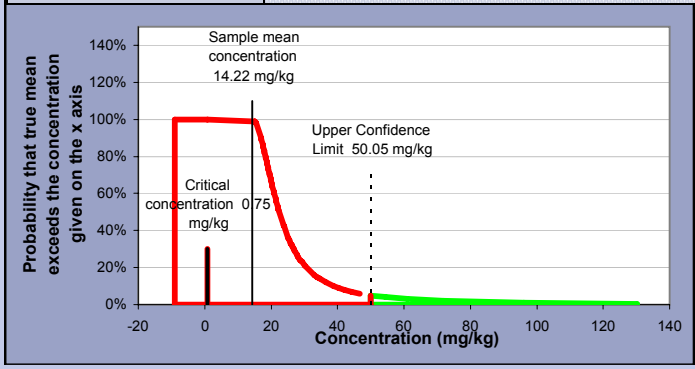
Use: Auto: Chebychev



Test scenario:

Planning: is true mean lower than critical concentration (μ < Cc)?

Null hypothesis:	The true mean concentration is equal to or greater than the critical concentration: μ≥ Cc
Alternative hypothesis:	The true mean concentration is less than the critical concentration: μ < Cc



Evidence against Null hypothesis:	**0%**
Base decision on:	evidence level
Evidence level required:	**95%**
Balance of probability?	N/A
Reject Null Hypothesis?	No

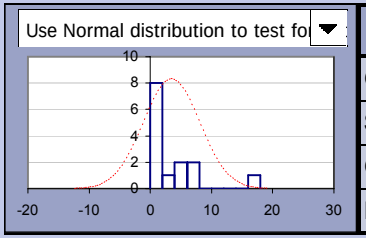
μ ≥ Cc

Back to data | Back to summary | Go to outlier test | Go to normality test

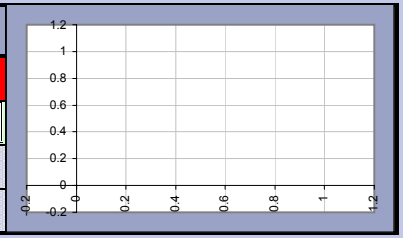
Test Results

Client/client ref:
Project ref: Sheepcote Valley
Site ref: LW22250
Data description: Data set 1 - West of the Embankr
Date: 18-Nov-2011
User details: AB

Dataset:	Benzo(a)pyrene (mg/kg)
Sample mean, $\overline{X}$(mg/kg)	3.4705
Sample standard deviation, s	4.6083
Sample size, n	14
Critical concentration, Cc (mg/kg)	7.5



Outliers & non-detects	
Outliers present?	YES
Significance level	5%
Outliers removed?	0
Non-detects	1

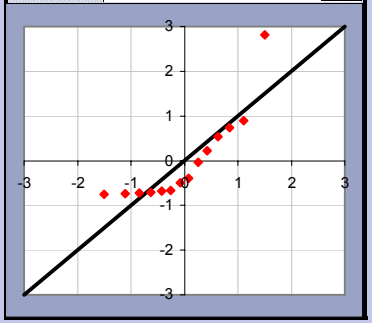


Normality test

Significance level: 5%

Non-normal distribution

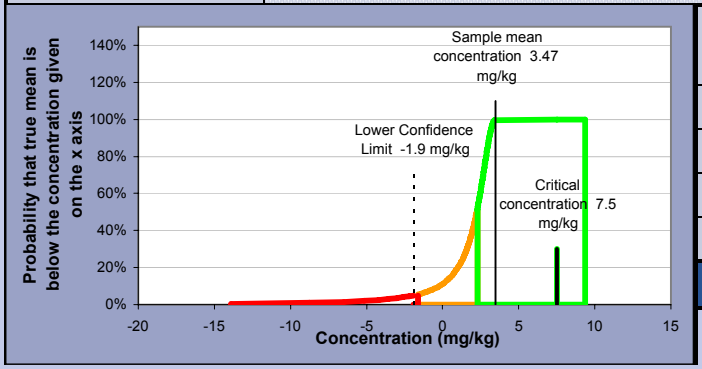
Use: Auto: Chebychev



Test scenario:

Part 2A: is true mean higher than critical concentration (μ > Cc)?

Null hypothesis:	The true mean concentration is equal to or less than the critical concentration: μ≤ Cc
Alternative hypothesis:	The true mean concentration is greater than the critical concentration: μ > Cc



Evidence against Null hypothesis:	upper bound	0%
	lower bound	0%
Base decision on:	lower bound	
Evidence level required:		95%
Balance of probability?		51%
Reject Null Hypothesis?		No

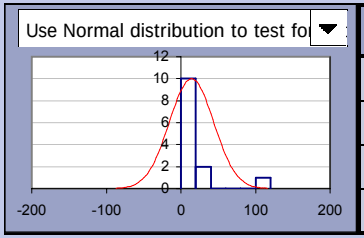
μ ≤ Cc

Back to data | Back to summary | Go to outlier test | Go to normality test

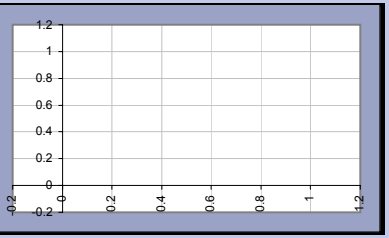
Test Results

Client/client ref:
Project ref: Sheepcote Valley
Site ref: LW22250
Data description: Data set 3 - East of Embankment
Date: 18-Nov-2011
User details: AB

Dataset:	Benzo(a)pyrene (mg/kg)
Sample mean, $\overline{X}$(mg/kg)	14.218
Sample standard deviation, s	29.641
Sample size, n	13
Critical concentration, Cc (mg/kg)	7.5



Outliers & non-detects	
Outliers present?	YES
Significance level	5%
Outliers removed?	0
Non-detects	0

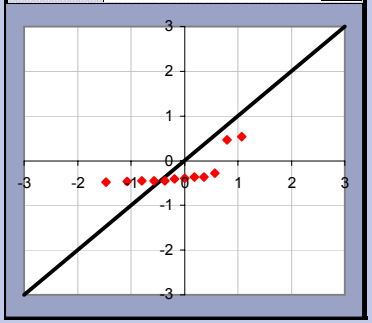


Normality test

Significance level: 5%

Non-normal distribution

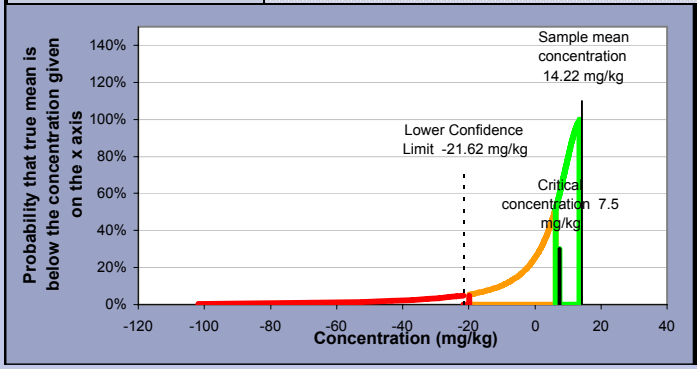
Use: Auto: Chebychev



Test scenario:

Part 2A: is true mean higher than critical concentration (μ > Cc)?

Null hypothesis:	The true mean concentration is equal to or less than the critical concentration: μ≤ Cc
Alternative hypothesis:	The true mean concentration is greater than the critical concentration: μ > Cc



Evidence against Null hypothesis:	upper bound	79%
	lower bound	40%
Base decision on:	lower bound	
Evidence level required:		95%
Balance of probability?		51%
Reject Null Hypothesis?		No

μ ≤ Cc

Back to data | Back to summary | Go to outlier test | Go to normality test