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## **METHAMPHETAMINE TESTING USING DISCRETE SAMPLES**

### **TECHNICAL NOTE**

Discrete samples are collected from single locations, and are sent to Analytica for testing. They can be tested using Individual Analysis, or Laboratory Composite Analysis. This Technical Note describes these options, and how to interpret the results from them.

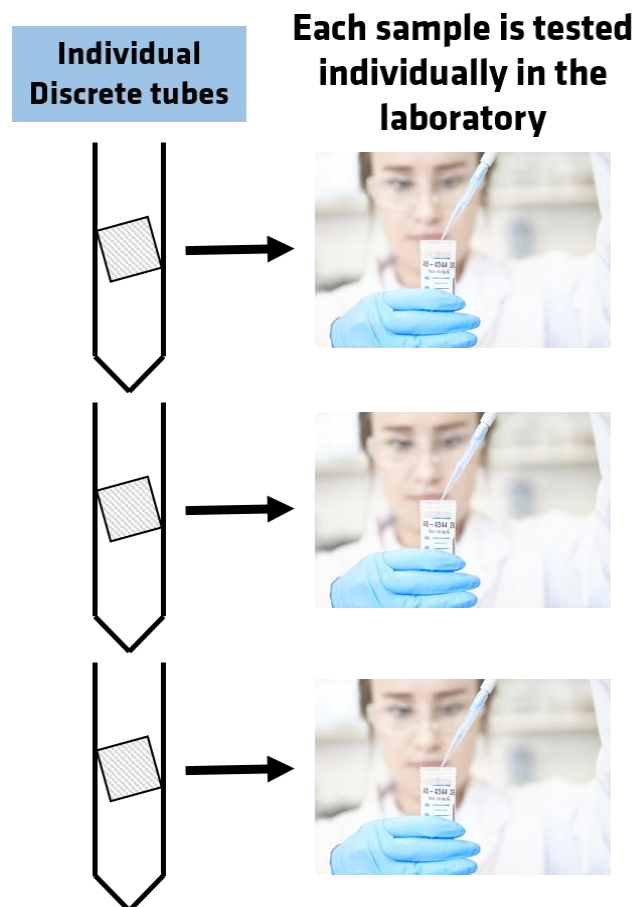
#### **Background**

'The New Zealand Standard for Testing and Decontamination of Methamphetamine-contaminated Properties' (NZS 8510) was published by Standards New Zealand in June 2017. Included in there is the option for suitably qualified samplers to collect Discrete samples from properties that can be used for screening or detailed analysis of the property.

Samplers are responsible for collecting samples that are compliant with NZS 8510.

#### **Individual Analysis**

An Individual Analysis occurs when each Discrete sample is tested individually by the lab, and a separate result is given for each sample.



## What results are given?

The report provided for Individual Analysis tells you the actual amount of methamphetamine, amphetamine, ephedrine and pseudoephedrine found in each sample. These can be directly compared with levels specified in NZS 8510.

An example of this is shown below. In this example the result for 'Sample 6' is 0.64 µg/sample, which is below the level of 1.5 µg specified in NZS 8510. The results for other samples range from 1.65 µg/sample to 6.99 µg/sample, and are above the level specified in NZS 8510.

### Results Summary

#### Methamphetamine and Related Compounds

##### Discrete Samples

Laboratory ID	Sample ID	Methamphetamine	Amphetamine	Ephedrine	Pseudoephedrine
		<i>Units</i> µg/sample	<i>Units</i> µg/sample	<i>Units</i> µg/sample	<i>Units</i> µg/sample
		<i>Reporting Limit</i>	0.02	0.02	0.02
XX-00001-1	Sample1	1.65	0.11	<0.02	0.06
XX-00001-2	Sample2	2.68	0.06	0.06	0.48
XX-00001-3	Sample3	2.68	0.13	0.03	0.19
XX-00001-4	Sample4	6.99	0.13	0.05	0.63
XX-00001-5	Sample5	3.50	0.11	0.04	0.34
XX-00001-6	Sample6	0.64	0.18	<0.02	0.08

## What are the advantages of Individual Analysis of Discrete samples?

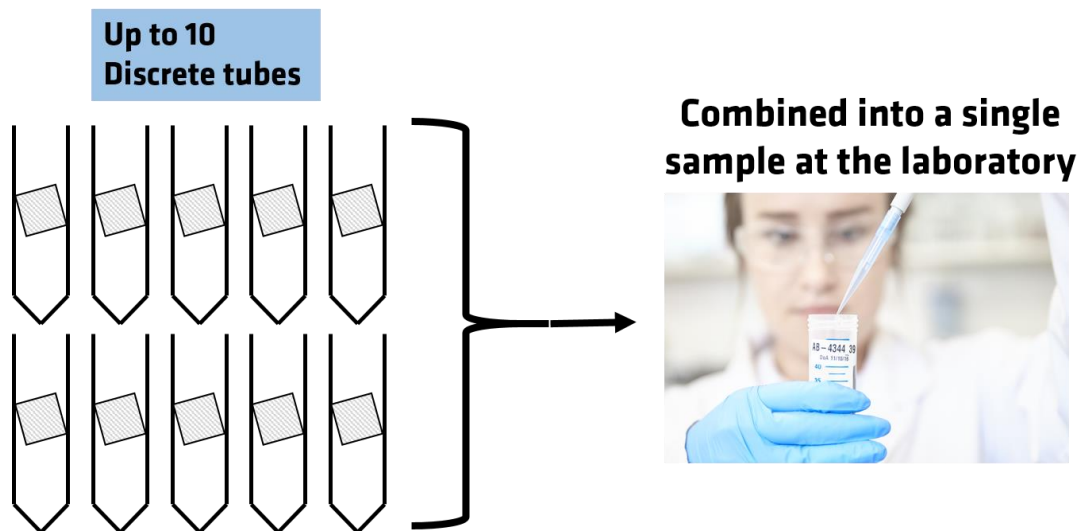
- The report provides a result for each individual sample (i.e. a result for each individual location). This result is directly comparable with NZS 8510, and can be used to make decisions about any further action required for the areas that have been sampled.

## What are the disadvantages of Individual Analysis of Discrete samples?

- Individual testing requires each sample to be analysed, which increases the cost of the testing compared with screening options such as a Laboratory Composite or Field Composite Analysis.

## Laboratory Composite Analysis

Laboratory Composite Analysis sees Discrete samples being prepared individually, but a sub-sample of up to 10 samples are combined together to form a single composite sample that is run on the laboratory instrument.



### What results are given?

The report provided for Laboratory Composite testing tells you the level of methamphetamine, amphetamine, ephedrine and pseudoephedrine found in the composite sample. This result is the average of all the samples included in the composite sample, and cannot be directly compared with NZS 8510.

An example of this is shown below.

### Results Summary

#### Methamphetamine and Related Compounds

##### Lab Composite of Discrete Samples

Laboratory ID	Sample ID	Samples in Composite	Methamphetamine	Amphetamine	Ephedrine	Pseudoephedrine
	<i>Units Reporting Limit</i>	-	µg/sample 0.02	µg/sample 0.02	µg/sample 0.02	µg/sample 0.02
XX-00002-1	Sample1					
XX-00002-2	Sample2					
XX-00002-3	Sample3					
XX-00002-4	Sample4					
XX-00002-5	Sample5					
XX-00002-6	Sample6					
XX-00002-7	Sample7					
XX-00002-8	Sample8					
XX-00002-9	Sample9					
XX-00002-10	Sample10					
XX-00002-11	10 Sample Composite (XX-00002 #1-10)	10	2.25	0.11	0.03	0.26

In this example, 10 Discrete samples were submitted to the laboratory for Laboratory Composite testing. The result of 2.25 µg of methamphetamine in the sample is the average of the 10 samples – but we can't work out the levels of individual samples without asking the laboratory to analyse them separately. Analytica retains the original Discrete samples for three weeks after initial testing, and these can be tested individually on request.

A Theoretical Maximum Level is also displayed on the Laboratory Composite report (see below). This value is calculated from the composite result, by multiplying the composite result (2.25 µg in this example) by the number of samples included in the composite (10 in this example). The Theoretical Maximum Level is a 'worst case scenario' – if just one of the Discrete samples included in the composite had all of the contamination, and all other samples had no contamination.

**Theoretical Maximum Levels**

Laboratory ID	Sample ID	Samples in Composite	Theoretical Max Methamphetamine	Theoretical Max Amphetamine	Theoretical Max Ephedrine	Theoretical Max Pseudoephedrine
	<i>Units Reporting Limit</i>	-	µg/sample 0.02	µg/sample 0.02	µg/sample 0.02	µg/sample 0.02
XX-00002-11	10 Sample Composite (XX-00002 #1-10)	10	22.52	1.10	0.27	2.61

In this example, the Theoretical Maximum Level is 22.52 µg/sample. This is well above the NZS 8510 threshold of 1.5 µg, meaning that it is possible that one or more of the samples contain methamphetamine at a level above the NZS 8510 threshold. The only way of knowing which of the samples is high is to request Individual Analysis of the samples.

**What are the advantages of Laboratory Composite testing?**

- Separate samples are available from individual locations, and can be used to carry out Individual Analysis in future without needing a return visit to the property.
- It is much cheaper to test a group of samples using a Laboratory Composite Analysis than to test each sample individually. This allows for a cost effective up-front screening test of a property.
- Samples are held for three weeks after testing, and can be tested individually if required during that time.

**What are the disadvantages of Laboratory Composite testing?**

- This type of testing does not initially give you a result per individual sample. Since the result is an average of all the samples included in the composite, a Theoretical Maximum Level must be used to see if there is a risk of any one of the samples having a high level of methamphetamine.
- As such, the test is useful for confirming that a property is not contaminated (if the Theoretical Maximum Level is below 1.5 µg/sample) but cannot be used to investigate levels of contamination without further Individual Analysis.

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