Independent Testing & Adulterants

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Outline

- Rules & Testing
- Terpene Analysis
- Commercial Terpene Solutions
- Adulterants in Inhalable Products

From Rules to Data:
A laboratory prospective

CHEMHISTORY
QUALITY CONTROL LABORATORY

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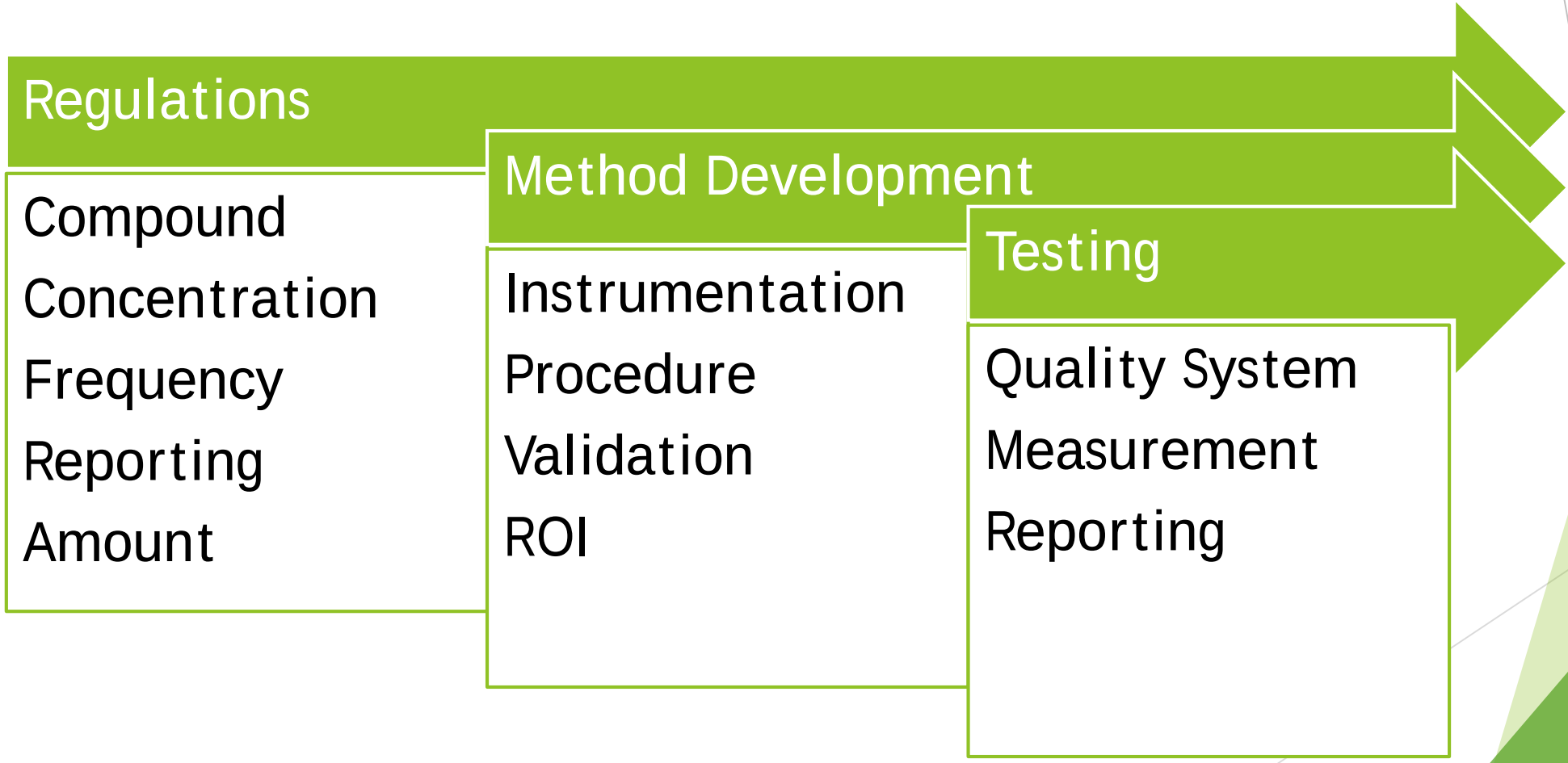

How to Quantify

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Targeted Testing

- Low to moderate cost
- Chemically isolate target compounds from sample
- Easy to automate
- Multiple detectors available

Untargeted Testing

- Moderate to high cost
- Chemically isolate class of compounds from sample
- Difficult to automate
- Time of flight mass spectrometers

Typical GC Chromatography

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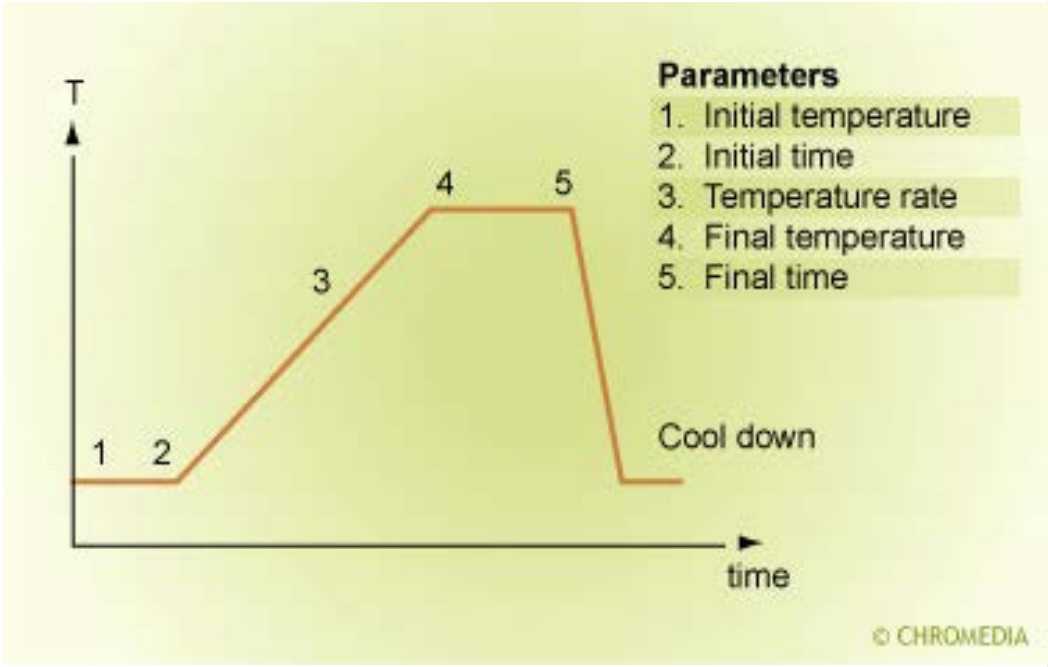
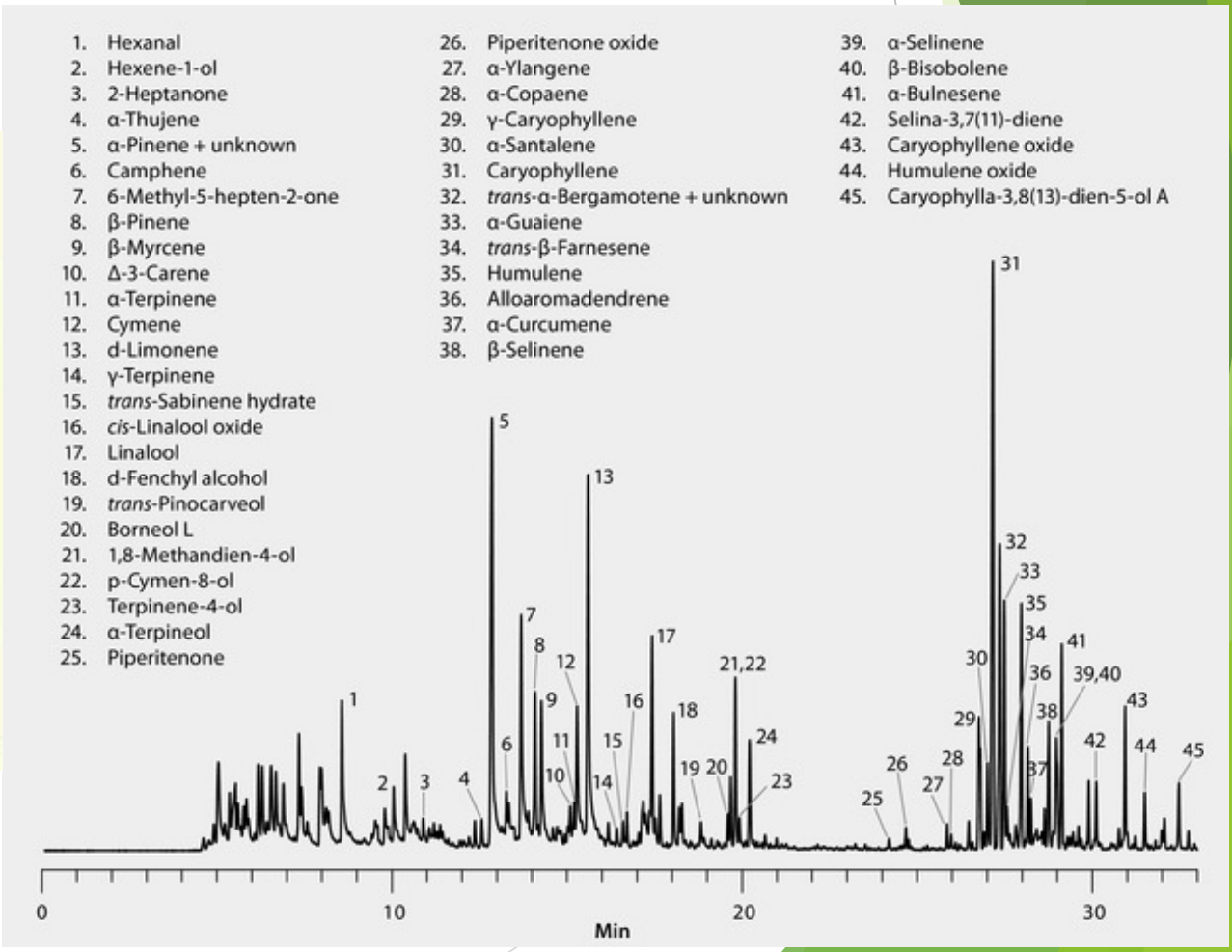
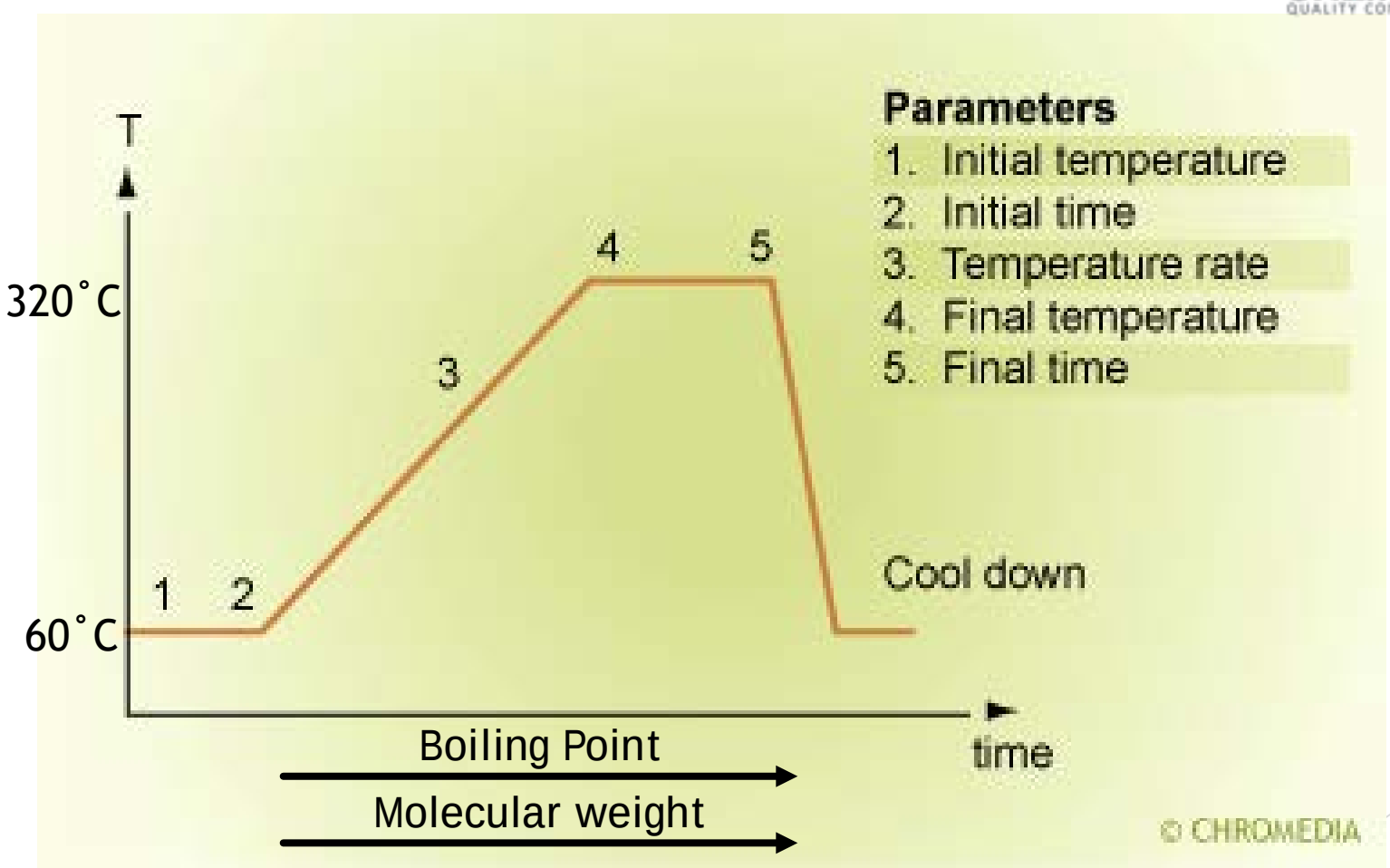




Trends


T
320˚C
60˚C
1
2
3
4
5
Parameters
1. Initial temperature
2. Initial time
3. Temperature rate
4. Final temperature
5. Final time
Cool down
time
Boiling Point
Molecular weight
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Typical Flavored Distillate Data

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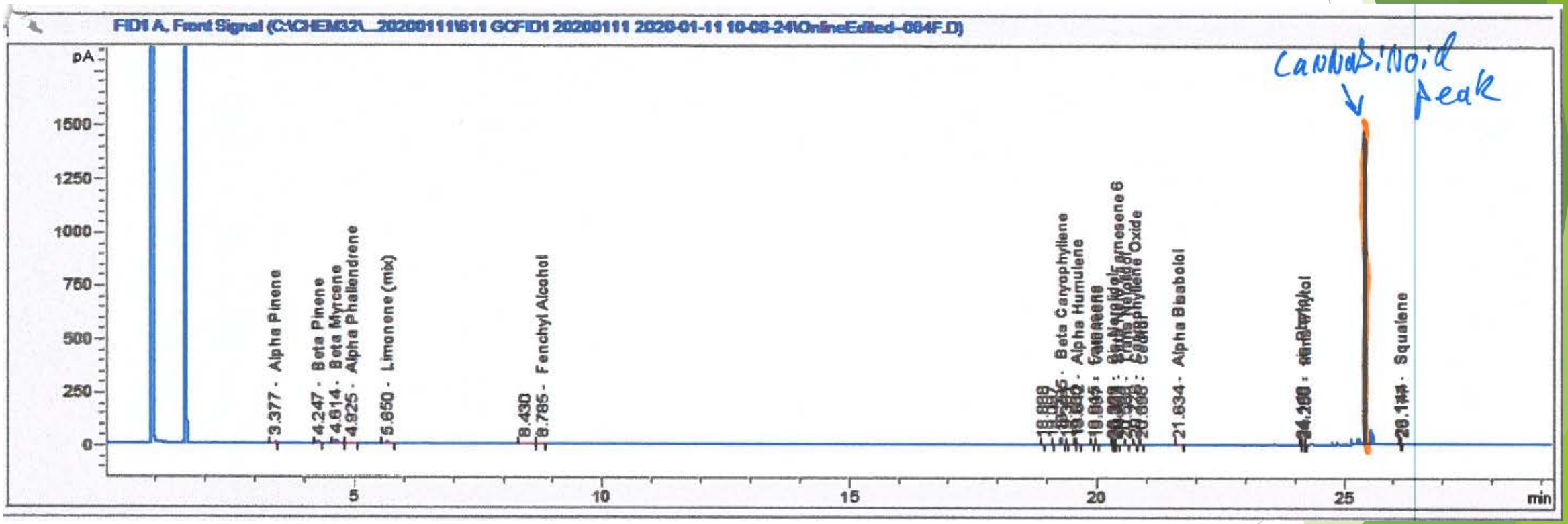

Myrcene Terpene Solution

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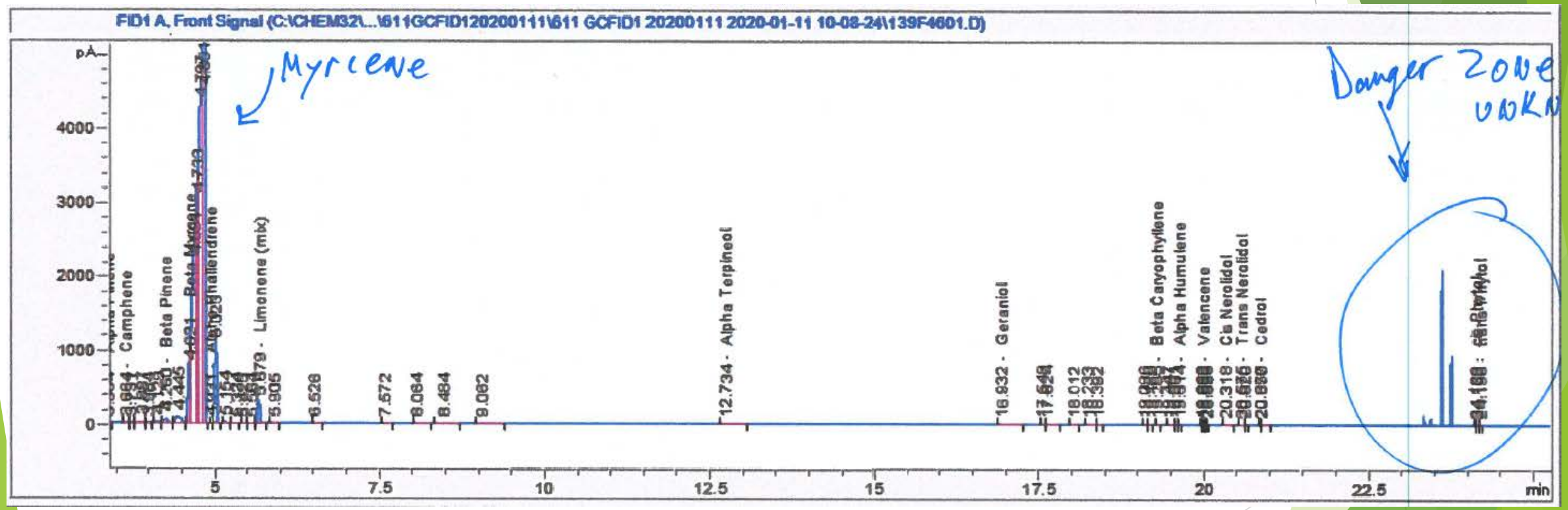

Fruity Pebbles Terpene Solution

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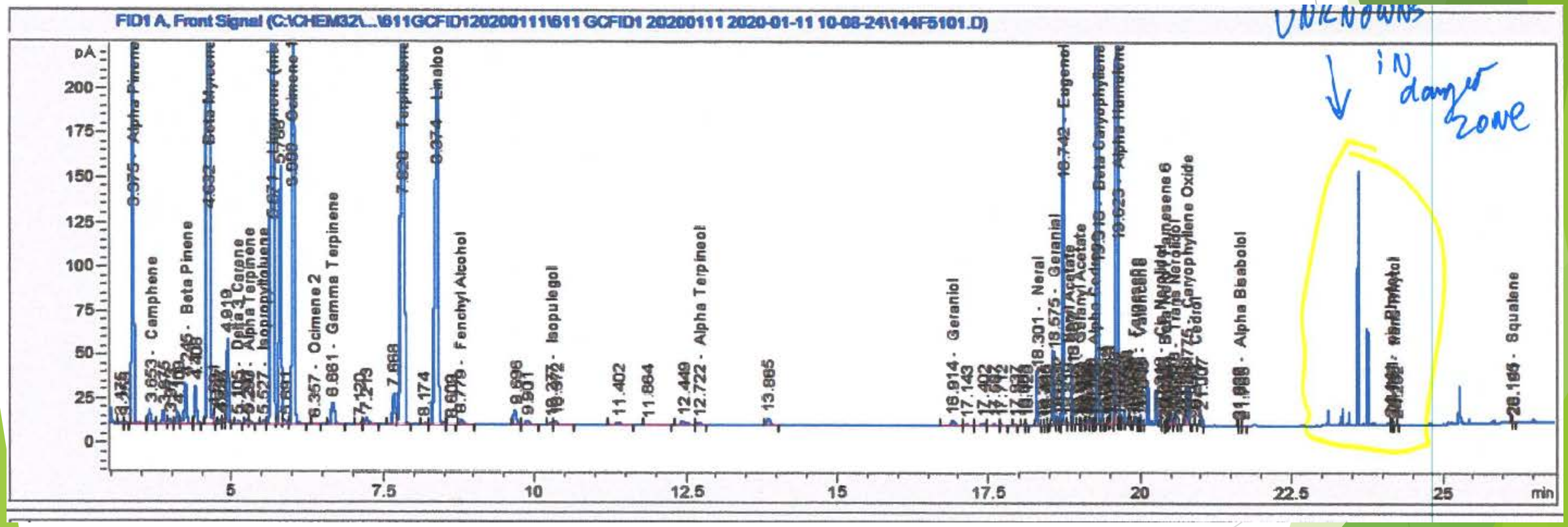

Geraniol Terpene Solution

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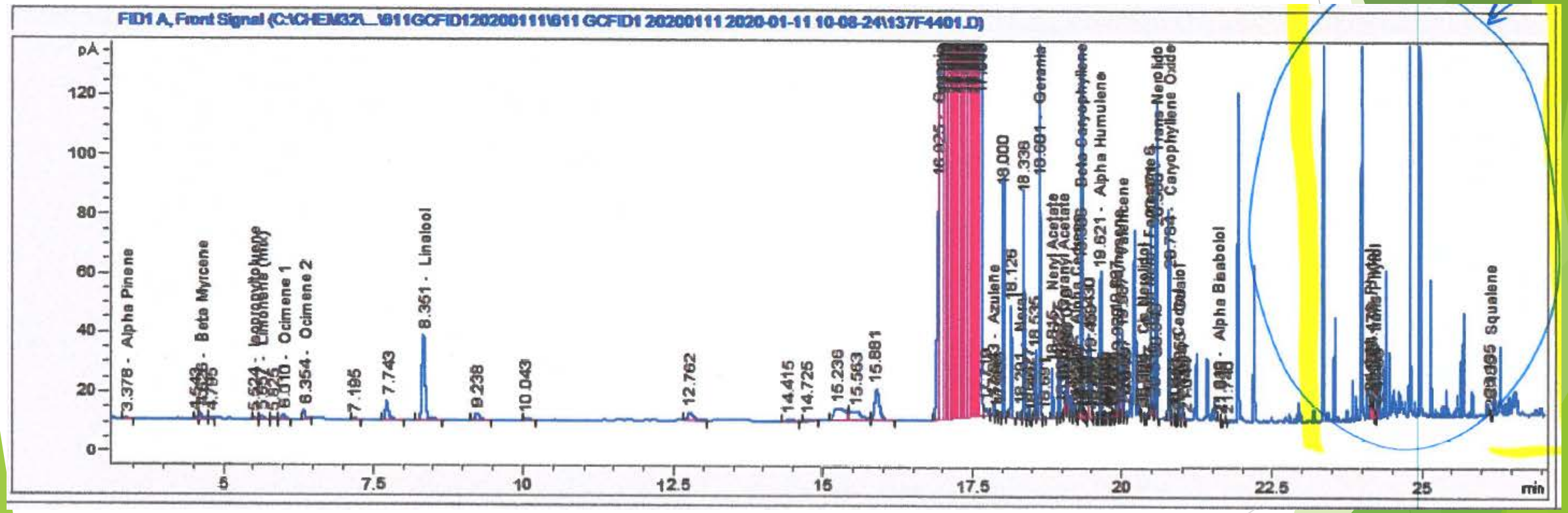

Geraniol Terpene Solution (zoom)

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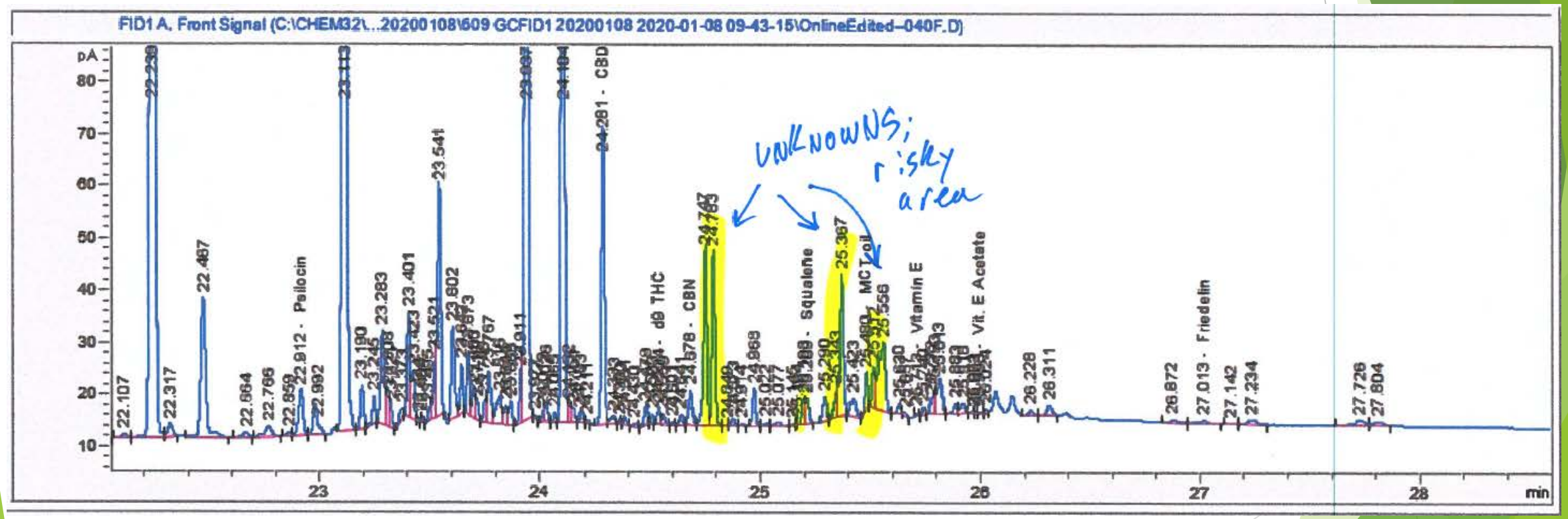

What have we seen?

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Sample	Squalene (%)	MCT (%)	Bisabolene (%)	Vitamin E (%)	Vitamin E Acetate (%)
1 Viscosity	<0.10	2.12	ND	ND	ND
2 Terp. Sol.	<0.10	7.31	ND	ND	0.47
3 OLCC RSO	<0.10	5.82	<0.50	<0.10	0.31
4 CBD Vape	<0.10	7.09	ND	<0.10	0.40
5 OLCC Vape	0.66	2.14	3.79	0.12	0.35
6 Viscosity	<0.10	ND	<0.50	ND	0.71
7 CBD Vape	<0.10	ND	0.88	<0.10	0.44

Summary

- Independent testing laboratories are focused on targeted testing
- Terpene analysis separates compounds by volatility
- Typical flavored distillate products have few detected compounds
- Low-volatility compounds are found in terpene solutions
- Non-cannabis terpenes were found in OLCC regulated product
- Many viscosity agents can be measured with current equipment