Pesticide Testing in Washington State

A White Paper

2022-02-15

Confidence Analytics™ Inc.

A Washington state licensed and ISO accredited cannabis laboratory since 2014, providing pesticide testing services since 2016.

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Contents

Background

The need for pesticide testing in Washington's recreational cannabis industry (the "502 Industry") has long been contemplated [1]. Dating back as far as 2016, off-the-shelf pesticide testing by industry watchdogs has revealed alarming levels of pesticide residues in cannabis products [2]. The most concerning revelations have come from cannabis concentrates (vape pens and "dabbable" extracts), with failure rates for those product types reaching as high as 40% [3]. These high failure rates have been repeated by separate, independent 502 watchdog groups and private testing labs [4], and are mirrored by the Washington State Department of Agriculture's own state-run testing laboratory [5]. (The WSDA conducts random compliance checks at cannabis producer and processor locations across the state.)

Business Case

It is anticipated that beginning in April 2022 Washington state will introduce state-mandated cannabis quality control rules for pesticide testing [6]. We expect this will bring immediate challenges to the businesses licensed to produce and process cannabis products in the 502 Industry (Licensees). At the forefront of vocal concerns is the price of the test, as much as $200 per sample submission. To mitigate this cost, the Washington State Liquor and Cannabis Board (WSLCB) has reduced the sampling frequency of cannabis plant material ("flower") from a minimum of one sample per 5 lbs to a minimum of one sample per 50 lbs. It is unclear how much that allowance will benefit all producers.

Less frequently discussed – but certainly more impactful – is the dramatic economic losses that will be faced by 502 Licensees when failing a pesticide test. The anticipated rules suggest that batches of cannabis products which fail the pesticide test "may not be remediated… [and] require immediate destruction." The economics of this statutory "destruction" mechanism (i.e. the cost of destroying a batch of failed cannabis product) has implications that far exceed the cost of a lab test. Many of the largest processors in the state are accustomed to purchasing untested trim and bulk flower from large independent growers as source material for their extractions. Pesticide failure after product manufacturing would be devastating. As such, without realignment between producers (growers) and processors (manufacturers) on early pesticide testing, a major market disruption could occur.

Further complicating the economics: only five out of the eleven Washington state certified laboratories (Labs) have the technological capability, and WSLCB authorization, for pesticide testing [7]. Additionally, those five Labs are authorized within the medical marijuana program which only includes thirteen pesticide compounds [8] and not the anticipated 59 pesticide compounds listed in the cannabis quality control rules [9].

In order to test for the anticipated 59 pesticide targets, a Lab must utilize two separate technologies, both of which are complex and expensive. To comply, the Lab must have accreditation with both LCMSMS[1] ***and*** GCMSMS[2] [10]. Most notably, the pesticide compounds Chlorfenapyr, Cyfluthrin, Methyl-parathion, and MGK 264 all require a GCMSMS and cannot be analyzed with LCMSMS [11]. While a Lab could potentially test those four compounds with an LCMS-APCI[3], instead, doing so would not improve the economics of the testing [12].

[1] Liquid Chromatography Tandem Mass Spectroscopy with Electrospray Ionization (LC-ESI-MS/MS aka LCMSMS)
[2] Gas Chromatography Tandem Mass Spectroscopy (GC-MS/MS aka GCMSMS)
[3] Liquid Chromatography Tandem Mass Spectroscopy with Atmospheric Pressure Chemical Ionization (LC-APCI-MS/MS)

Problem Statement

With adoption of the anticipated rules slated for April 2nd, 2022 [6], 502 Licensees may face new challenges. Those Licensees who rely on cannabis source material untested for pesticides may face costly product destruction and potential license violations. It is important to note that cannabis material can be pesticide tainted due to intentional application or even unwittingly by airborne or soil borne drift. Many Licensees may be blissfully unaware or in denial that they potentially have a problem. Conversely, those Licensees who have invested in evaluating their cannabis source material, with pre-manufacturing pesticide testing, may experience a sudden market advantage if their competition isn't similarly prepared.

Processor Licensees who extract cannabis oil from plant material hold the greatest risk. Their manufacturing processes often concentrate pesticides and, furthermore, they may lack insight into the growing conditions that create the pesticide burden at hand. Retail Licensees, too, may find that vendors and brands they had long relied on to stock their shelves are suddenly without compliant products. Even growers (as noted above) who don't apply these pesticides to their crop can be surprised that neighbors – including rural, urban, and industrial neighbors – are contributing pesticides that drift onto their plants. In other cases, grow supplies can contain unlisted ingredients. Given the prevalence of pesticide residues found by secret shoppers and government inspections, this is not a small problem for the industry as a whole.

It is the obvious intention of the rules to increase circulation of so-called "pesticide free weed," while driving pesticide contaminated weed out of the regulated market. How well the rules achieve that goal will depend on the compliance of Licensees and Labs, which may in turn rely on the rigor of enforcement from the WSLCB.

Proposed Solution

Pre-purchase, pre-manufacturing pesticide testing.
The prudent action for any 502 licensee is immediate vetting of their cannabis supply chain for its pesticide testing status. Voluntarily, and preemptively, have your cannabis supply tested. Washington state has five Labs accredited for some degree of pesticide testing. Establish a relationship with one of these laboratories. Inquire if the Lab will be testing for the full 59 pesticides listed in the anticipated rules. Will the Lab have the capacity to test all the samples they regularly intake for pesticides? Do they anticipate delays in testing as a result of new rules?

Future Direction

Future developments in 502 cannabis quality control will continue to unfold in the months, and years, ahead. Of immediate significance, a pair of companion bills are presently working through the Washington State legislature [13], [14]. The Cannabis Science Taskforce, which was the impetus for the bills, made formal recommendations for third-party sampling and laboratory-derived source material, which could potentially result in further revisions to the product quality rules [15].

These two bills address cannabis Lab standardization and accreditation. If passed by the legislature and signed by the governor, the bills will not be operative for a couple more years. However, they would have wide-reaching effects on the laboratories and their customers.

A third bill, with a lengthy history, would create additional authority for regulation of cannabinoids other than THC and CBD, and would have further impacts on the operations of cannabis labs [16].

Conclusion

The cannabis quality control rule revisions anticipated for April 2nd will have dramatic effects on the 502 Industry. Every level of the supply chain will be impacted. The economic implications, if enacted, will likely lead to market disruptions and realignments, creating winners and losers. Proactive assessment of product supply and procurement policies through the lense of pesticide testing is now more important than ever before. Taking proactive measures before the rules are enacted may make the difference between coming out ahead, or not.

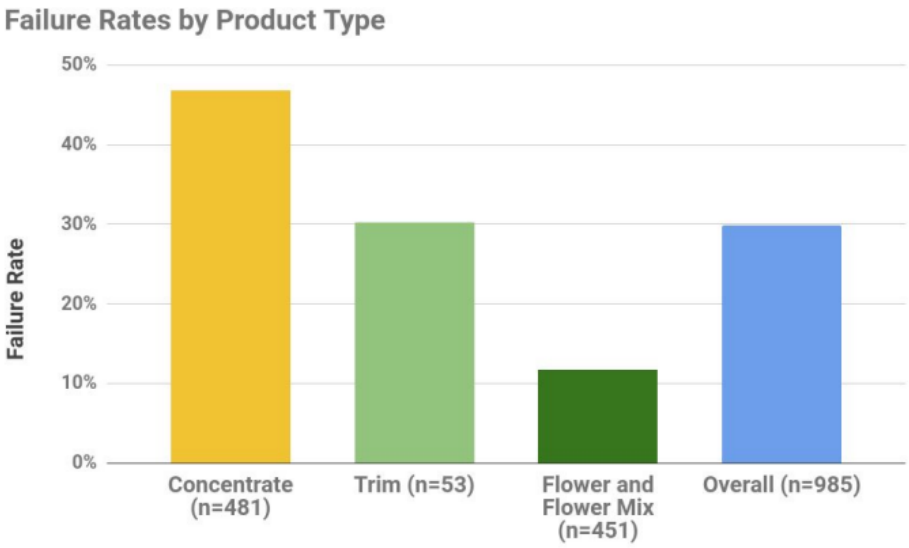
Appendices

Appendix A – Scenarios

Reference [2] from Appendix C, statistics from Clean Cannabis Association. A series of pesticide tests at Trace Analytics on random samples of Washington recreational marijuana products purchased at retail. Pesticide Fails as a percentage of submissions by product category (based on current action limits in rule):

Category	SUM of Failed	SUM of TOTAL	% Failed
Concentrate	14	22	63.63%
Flower	2	15	13.33%
Grand Total	**16**	**37**	43.24%

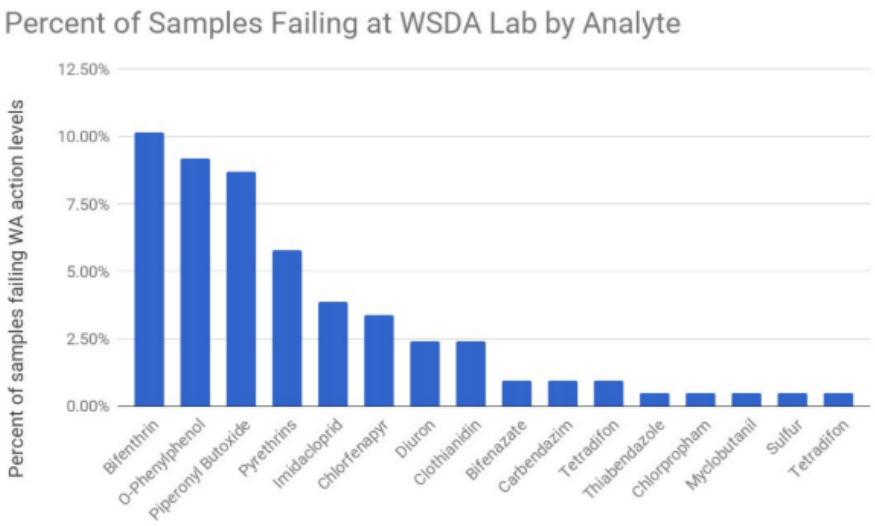
Reference [3] from Appendix C, statistics from Confidence Analytics between June, 2016 and October, 2018. Samples of Washington recreational marijuana submitted to the lab for voluntary testing. Pesticide Fails as a percentage of submissions by product category:



Reference [4] from Appendix C, statistics from the OK Cannabis Program between April, 2019 and January 2020. Random samples of Washington recreational marijuana products purchased at retail. Pesticide Fails as a percentage of submissions by product category:

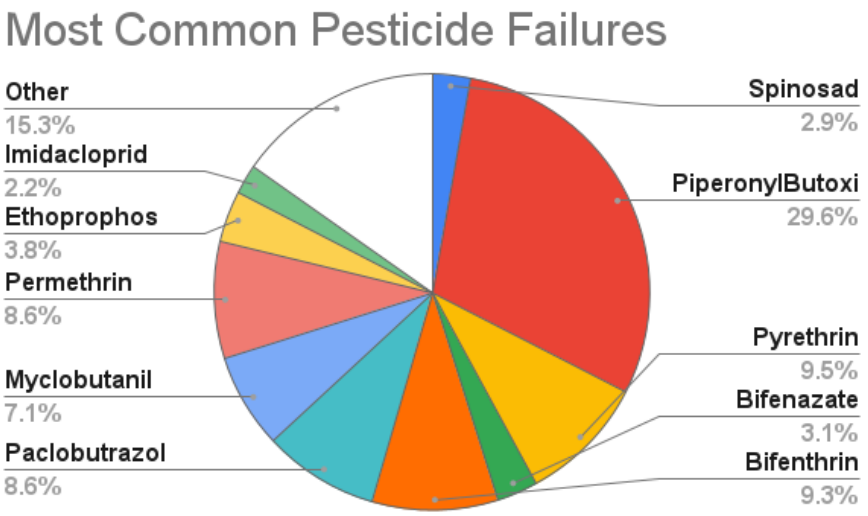
Category	SUM of Failed	SUM of TOTAL	% Failed
Concentrate	10	36	27.78%
Flower	0	24	0.00%
Preroll	3	23	13.04%
Grand Total	**13**	**83**	15.66%

Reference [5] from Appendix C, statistics from the Washington State Department of Agriculture in 2017. Samples of Washington recreational marijuana products collected from production and processing facilities by enforcement officers at random compliance checks. Pesticide Fails as a percentage of submissions by pesticide compound:



Most common pesticide failures as tested by Confidence Analytics. Data below represent 452 pesticide detections that were quantified above the fail limit between January 2021 and October 2021.

Read more at https://www.conflabs.com/pesticide-testing-comes-to-washington-state/



Appendix B – Authors

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Appendix C – References

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