

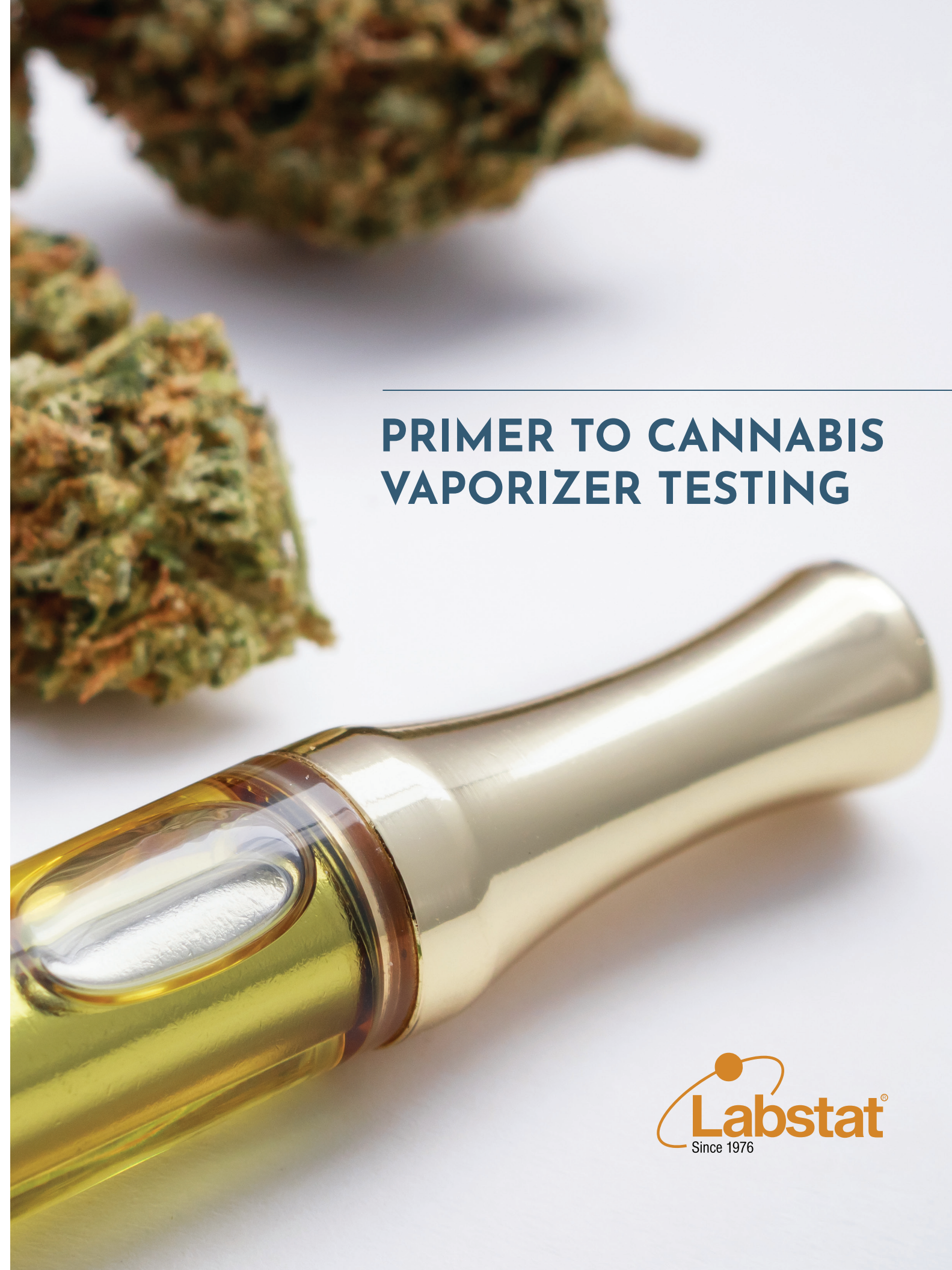
VAPE TESTING STANDARDS

HEALTH CANADA STANDARDS	LABSTAT VAPE TESTING PRIMER PHASE I, II, III	LABSTAT VAPE TESTING PRIMER PHASE IV
THC & CBD Content, Microbial Contamination, Heavy Metal Contamination, Pesticide Contamination, Solvent Contamination [Class I & II solvents] (cannabis oil only), Disintegration Testing (cannabis oil capsules only)	HC Standards + Cannabinoids, Terpenes, Metals, Dicarbonyls, Adulterants, Volatiles, Major Yields, Ammonia, pH, Density, Aromatic Flavourants, Propionic Acid	HC Standards ++ In-Vitro Toxicology
Oil Only	Oil + Vapour	Oil + Vapour
GOOD	BETTER	BEST

PHASE III- CANNABIS EXTRACT TESTED FOR THE FOLLOWING:

CARBONYLS AND DICARBONYLS IN CANNABIS	METALS IN CANNABIS	METALS AND MERCURY IN CANNABIS RELATED LIQUIDS	CARBONYLS IN CANNABIS RELATED E-LIQUIDS
2,3-butanedione; 2,3-heptanedione; 2,3-hexanedione; 2,3-pentanedione; 3-buten-2-one; acetaldehyde; acetoin; acetone; acrolein; butyraldehyde; crotonaldehyde; formaldehyde; glycolaldehyde; glyoxal; isobutyraldehyde; methyl ethyl ketone; methylglyoxal; propionaldehyde; accumulated mass; device mass loss; device weight, before; puff count	aluminum; arsenic; beryllium; cadmium; chromium; cobalt; copper; iron; lead; manganese; molybdenum; nickel; selenium; silver; strontium; tin; titanium; tungsten; zinc; zirconium; accumulated mass; device mass loss; device weight, before; puff count	aluminum; arsenic; beryllium; cadmium; chromium; cobalt; copper; gold; iron; lead; manganese; mercury; molybdenum; nickel; selenium; silver; strontium; tin; titanium; tungsten; zinc; zirconium	2,3-butanedione; 2,3-heptanedione; 2,3-hexanedione; 2,3-pentanedione; 3-buten-2-one; acetaldehyde; acetoin; acetone; acrolein; butyraldehyde; crotonaldehyde; formaldehyde; glycolaldehyde; glyoxal; isobutyraldehyde; methyl ethyl ketone; methylglyoxal; propionaldehyde

PRIMER TO CANNABIS VAPORIZER TESTING



QUALITY CONTROL THAT GOES BEYOND

As the focus on consumer safety continues to sharpen, there is a growing concern about potentially harmful compounds, degradation by-products, and adulterants found in cannabis vaping products.

Stats Canada reports,

“Three-quarters of Canadians (76%) who consumed cannabis in the first half of 2019 cited quality and safety as an important consideration when purchasing cannabis.”

It’s never been more important for cannabis brands to go beyond the required Health Canada testing standards to win the attention and loyalty of today’s discerning consumers.

The following Vape Testing Protocol, developed by Labstat, is a step-by-step process that ensures your products meet the highest quality and safety standards possible. When you undertake the full testing protocol, you demonstrate your leadership as a champion for cannabis product safety.

ABOUT LABSTAT:

Labstat has helped to set the global standard and is recognized as a scientific leader in analytical chemistry and in-vitro toxicology testing of nicotine containing e-liquid and e-vapour products. Additionally, Labstat has been testing Cannabis smoke since 2003 and has been cited in a series of peer-reviewed scientific articles co-authored by Labstat scientists and members of Health Canada.

For more information please visit labstatadvantage.com or contact:

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SETTING THE STANDARD

Currently, there is **no aerosol testing standard** for cannabis vaping devices. Neither are there any regulatory requirements for the analysis of aerosols emitted from cannabis vaping devices anywhere in the world.

In the absence of a recognized standard, we have developed a three-phase approach to help mitigate risk, and demonstrate to regulators and consumers that your products are high quality and safe.

Analyzing aerosols from vaping devices is vital in providing answers to these fundamental questions:

1. Is the product performing as designed (i.e. delivering compounds of interest as intended); and
2. Is the product performing as expected, or is it generating unintended compounds or degradation by-products?

The Vape Testing Protocol is a phased testing approach designed to answer these questions. Each phase builds on the previous, allowing for the sequential development of a comprehensive technical understanding of the device, extracts and vapour.

PHASE	DESCRIPTION
PHASE I: Device Performance	This phase focuses on the performance of the device under different puffing parameters, and throughout its lifecycle to understand if the device is consistently delivering the intended volume of aerosol from beginning to end of life.
PHASE II: Dose Delivery	This phase focuses on measuring the dose delivery of the cannabinoids and terpenes present in the vapour, and consistency of deliveries amongst devices.
PHASE III: Compounds of Interest	This phase focuses on testing extracts and vapour for high-priority toxicants, such as potentially harmful compounds and adulterants that: <ol style="list-style-type: none"> a) Are of known interest to cannabis regulatory communities, such as heavy metals; b) Are of noted concern with consumers and public health communities, such as Vitamin E Acetate; and/or c) Are known to be potentially harmful compounds formed in the vaping process, such as carbonyls.

Note: Phases I and II are executed sequentially to understand device performance and delivery of intended compounds – cannabinoids and terpenes. Any single component of Phase III can be performed using the conditions established after Phase I (however this is not recommended without understanding dose delivery first).