SQRDLAB

Cannabis Aerosol Analysis

A NEW FORM
OF PRODUCT TESTING

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SQRDLAB

CONTENTS

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THE MOST TRUSTED TESTING LAB IN LOS ANGELES

SQRD LAB

ABOUT US

THINKING OUTSIDE THE BOX

WHAT WE DO BEST

SQRD is a state of the art lab with a wealth of experience in testing. Our incredible staff of scientists and professionals coupled with some of the most sophisticated equipment in California allows us to be faster, more accurate and more reliable than our competitors.

Our number one priority will always be ensuring the safety of products in this space and that is why we have gone above and beyond current state requirements to develop a unique method of testing aerosol in vape products. Ensuring the safety of your vaping products is crucial for both consumer trust and regulatory compliance. By understanding the science of vaping, the factors that contribute to the production of harmful byproducts, and the importance of testing, companies can take the necessary steps to protect their customers and their brand.

SQRD Lab is here to help, offering state-of-the-art testing services for vaping products that can ensure that you are putting out the safest products on the market.

» Why Aerosol?

Understanding AEROSOL TESTING

As the vaping industry continues to grow, ensuring the safety of vaping products has become increasingly important. With the recent "e-cigarette, or vaping, product use associated lung injury" (EVALI) outbreak and the ongoing COVID-19 pandemic, public trust in vaping products has been greatly diminished. In order to regain consumer trust and ensure the safety of your products, it is crucial that companies understand the importance of thorough testing for dangerous byproducts and additives in vaping products.

Breaking Down THE SCIENCE BEHIND VAPING

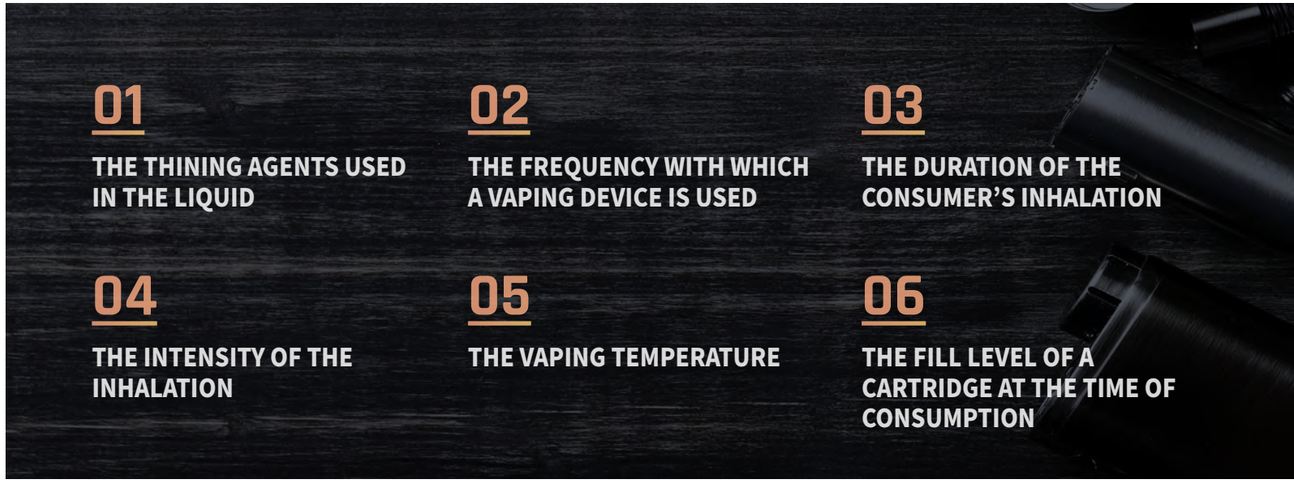
When a vape device is used, the heating element inside the device vaporizes the liquid, which is then inhaled by the user. This vapor, also known as aerosol, is composed of a mixture of ingredients including solvents, flavorings, and the active ingredients of the liquid. The heating process can also lead to the formation of harmful byproducts such as carbonyls, which are formed from the breakdown of lipid and oil based molecules. These byproducts can form in vapor through the heating of terpenes in cannabis oils, as well as during the heating of common thinning agents used in cannabis vapes such as propylene glycol (PG), vegetable glycerine (VG), MCT oil and polyethylene glycol 400 (PEG 400). Formaldehyde and acetaldehyde are some of the most common carbonyls and both are known carcinogens.

What Causes HARMFUL BYPRODUCTS?

It is important to note that while some thinning agents such as PEG 400 produce higher levels of harmful byproducts than others, even commonly used thinning agents like PG can still produce high levels of harmful byproducts based on certain usage profiles.

For Example, oftentimes, carbonyl production could be a result of a device working improperly—cannabis users wanting to capitalize on a higher level of THC will often vape at temperatures over 400˚F, and it is common for some vape cartridges to act erratically as the oil in them dwindles.

Other factors besides thinning agents can also lead to the production of carbonyls or other harmful byproducts in vaping devices such as:



» Aerosol Testing

Protecting YOUR CONSUMERS

While the California DCC currently requires testing for such things as heavy metals and residual solvents in cannabis extract, there are currently no regulations for testing the aerosol which results from vaping. Even in Colorado which now requires vapor testing, requirements do not include testing for such carbonyls as formaldehyde and acetaldehyde. Much like the circumstances which lead to the EVALI outbreak, it may only be a matter of time before we see an outbreak of health complications as a result of continuously consumed vape carbonyls. Getting ahead of it now will protect both, your brand and more importantly the health of your consumers.

Vaping is Trending UPWARDS

According to a recent study, the U.S. market saw an increase of 1,800% over the last year with 1 in 20 Americans currently vaping. That percentage grows larger in the cannabis community with 3 out of every 10 cannabis users also using vape products and 30% of those users predicting they will increase their usage of vape products over the next year.

The increase in popularity in vaping make it more imperative that these products are safe to consume. However, the complexity and variation of the products has made it difficult for cannabis labs to properly test for the harmful byproducts. And until now, no cannabis testing labs in the country currently have had the capability to conduct aerosol testing for cannabis vaping devices.

How Aerosol is Tested

Understanding THE TESTING METHOD

SQRD's advanced testing methods include not only the liquid but also the aerosol that is inhaled by the user. This type of testing, utilizing the Coresta Recommended Method 81 (CRM81) can help determine whether a vaping device is functioning correctly, delivering a consistent dosage of cannabinoids, and most importantly, whether or not it is producing harmful byproducts.

SQRD Lab is one of the only cannabis testing labs in the country that can effectively test vape aerosol for potentially harmful byproducts including heavy metals and carbonyls.

Utilizing state-of-the-art equipment that is generally found in large scale government labs at the CDC and FDA. SQRD Lab can run detailed tests for both cannabis extract and vape aerosol taking into account such factors as: performance of devices, cannabinoid and terpene content, and contaminants and harmful byproducts.

To achieve this, SQRD Lab's vape testing technology mimics a human lung and can simulate the variables of vape usage among consumers, including puff duration, intensity, and temperature.

Through a unique and extensive testing process, SQRD Lab can determine whether a vaping device will function correctly, deliver a consistent dosage of cannabinoids and terpenes, and whether harmful byproducts like heavy metals or carbonyls will be produced at any stage of the device's life cycle.

» SQRD'S Process

The process of
AEROSOL TESTING

Aerosol testing is a cutting edge method of testing that required a lot of research and development. We will test the device itself, the oil and the vapor produced during consumption. This comprehensive method of testing will provide you with a detailed understanding of your vape products. . SQRD Lab's team of experts work closely with clients to troubleshoot any obstacles that may arise in order to create the best experience for both clients and consumers alike.

TESTING PROCESS

Phase 1: Device Performance

SQRD will test the performance of the device and ensure that it is performing consistently throughout it's life-cycle and at different parameters.

Phase 2: Dose Delivery

SQRD will test the dose delivery of the cannabinoids and terpenes present in the vapor.

Phase 3: Compounds

SQRD will test the extract and vapor for potentially harmful toxins

Testing Standard

WE OFFER VARIOUS TESTING PACKAGES TO TRY AND MEET AND EXCEED YOUR EVENTUAL GOAL. OUR PACKAGES CAN BE AS SIMPLE AS TESTING THE VAPE DEVICE ONLY OR PERFORMING A COMPREHENSIVE PACKAGE WHICH TESTS THE VAPOR THAT IT EMITS AS WELL.

01

DEVICE TESTING

We will test the blank cartridge to ensure its performing as designed. We will provide you with details on everything from battery performance to potential hazards.

02

OIL + DEVICE TESTING

We can test both the device performance and the quality of the product inside the device and whether the device has had any negative impact on the product.

03

VAPE+OIL+DEVICE TESTING

Our most comprehensive package will give you the greatest insight on the device, the product and what happens when that product is consumed.

IN DEPTH

WHAT IS INCLUDED AS PART OF THE DEVICE TESTING?

Aside from various performance metrics, we will specifically perform a puff count test that test shows how many puffs that device can make with a fully charged battery. We will also analyze the evaporated mass per puff which quantifies how much substance evaporates during a standard puff.

» What We Test?

01 - CARBONYLS IN VAPOR

HPLC Method	2-Butanone, Acetaldehyde, Acetone, Acrolein, Benzaldehyde, Crotonaldehyde, Formaldehyde, Hexaldehyde, Methacrolein, m-Tolualdehyde, Butylraldehyde, Propinaldehyde, Valeraldehyde

02 - METALS IN OIL AND VAPOR

ICPMS-Method	Aluminum, Arsenic, berylli-um, Cadmium, Chromium, Cobalt, Copper, Iron, Lead, Manganese, Molybdenum, Nickel, Selenium, Silver, Zinc, Boron, Phosphorus, Potassium Nitrate, Calcium Carbonate, Vanadium, An-timony, Barium, Mercury, Thallium, Magnesium
Cold Absorption	Mercury; battery/device. Device mass loss, puff count.

03 - MICROBIAL CONTAMINANTS

RT-PCR	Salmonella , STEC (Shiga-Toxin E. coli), Aspergillus terreus, Aspergillus fumigatus, Aspergillus flavus, Aspergillus niger

04 - RESIDIUAL SOLVENTS IN OIL

GC/MS-Method	Propane, Butane, Methyl Alcohol, ethylene Oxide, Pentane, Ethanol, Ethyl ether, Acetone, Isopropyl Alcohol, Acetonitrile, methylene Chloride, n-Hexane, ethyl Acetate, Chloroform, Benzene, 1,2-Dichloroethane, Heptane, Trichloroethylene, Toluene, m+p-Xylene, and o-Xylene.

05 - PESTICIDES

GC/MS-Method	Captan, Chlordane, Chlorfenapyr, Parathion-methyl, Pentachloronitrobenzene, Triphenyl Phosphate

06 - PESTICIDES & MYCOTOXINS

LCMSMS	Abamectin Total, Acephate, Acequinocyl, Acetamiprid, Aldicarb, Azoxystrobin, Bifenazate, Bifenthrin, Boscalid, Carbaryl, Carbofuran, Chlorantraniliprole, Chlorpyrifos, Clofentazine, Coumaphos, Cyfluthrin, Cypermethrin, Daminozide, DDVP (Dichlorvos), Diazinon, Dimethoate, Dimethomorph Total, Ethoprop(hos), Etofenprox, Etoxazole, Fenhexamid, Fenoxycarb, Fipronil, Fludioxonil, Hexythiazox, Imazalil, Imidacloprid, Kresoxim-methyl, Malathion, Metalaxyl, Methiocarb, Methomyl, Mevinphos, Myclobutanil, Naled, Oxamyl, Paclobutrazol, Permethrin, Phosmet, Piperonyl Butoxide, Prallethrin, Propiconazol, Propoxure, Pyreythrins Total, Pyridaben, Spinetoram Total, Spinosad, Spiromesifen, Spirotetramat, Spiroxamine, Tebuconazole, Thiaclomprid, Thiamethoxam, Trifloxystrobin, , Aflotoxin B1, Aflotoxin B2, Aflotoxin G1, Aflotoxin G2, Ochratoxin A

07 - POTENCY IN OIL

HPLC Method	Cannabidivarin, Cannabigerol, Cannabidiol, Tetrahydrocannabivarin, cannabinol, Delta-9-Tetrahydrocannabinol, Delta-8-Tetrahydrocannabinol, Cannabicyclol, Cannabichromene, Cannabidivarimic Acid, Cannabidiolic Acid, Cannabigerolic Acid, Tetrahydrocannabivarinic Acid, Cannabinolic Acid, THCA-A, Cannabichromenic Acid

08 - TERPENES IN OIL

HPLC Method	Alpha-Pinene, camphene , Beta-Pinene, Sabinene, Beta-Myrcene, 3-carene, Alpha-Phellandrene, alpha-Terpinene, D-limonene, m-Isopropyltoluene, p-Cymene, Eucalyptol, cis-beta-ocimene, o-Isopropyltoluene, trans-beta-Ocimene, gamma-terpinene, Terpinolene, Sabinene Hydrate, Linalool, Endo-Fenchyl-alcohol, Isopulegol, Isoborneol, Terpinen-4-ol, Borneol, L-Borneol, Menthol, Alpha-Terpineol, Nerol, Citronellol, Geraniol, Thymol, Carvacrol, a-Alpha-cedrene, Beta-Carophyllene, b-Alpha-cedrene, Alpha-Humulene, trans-beta-Farnesene, Valencene, Cis-nerolidol, Trans-Nerolidol, Guaiol, Cedrol, Carophyllene Oxide, Alpha-bisabolol, Farnesol 1, Farnesol 2

Testing Packages

If you are looking for a specific test, SQRD also offers individual tests for each component of your product. Just ask your sales representative and we can customize a package for you.

	Essential	Advanced	Comprehensive	Certified Safe/ Compliance
Turn Around Time	3 to 4 weeks	3 to 4 weeks	3 to 4 weeks	3 to 4 weeks
Matrix	Vapor and/or Oil	Vapor and/or Oil	Vapor and/or Oil	Vapor and/or Oil
Device Performance	☑	☑	☑	☑
Heavy Metals	☑	☑	☑	☑
Carbonyls		☑	☑	☑
Cannabinoids*			☑	☑
Terpenes*			☑	☑
Pesticides*				☑
Residual Solvents*				☑
Microbiology Contaminants*				☑

* Tested in oil/concentrates only

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Cannabis Aerosol Testing

California DCC License Number: C8-0000122-LIC and accredited by the following institutions:

QUALITY MANAGEMENT SYSTEM
ISO 17025
ACCREDITED
LABORATORY

ACIL

ilac-MRA
ISO/IEC 17025:2017

PJLA
Testing
Accreditation No. 113149

ASTM INTERNATIONAL