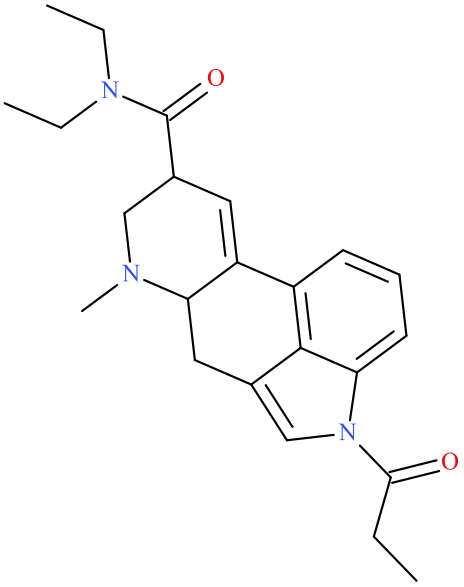
NMS Labs
2300 Stratford Ave
Willow Grove, PA 19090

1P-LSD

Sample Type: **Seized Material**



Latest Revision: **April 17, 2019**

Date Received: **November 28, 2018**

Date of Report: **April 17, 2019***

**Lag-time due to delay in receipt of reference material.*

1. GENERAL INFORMATION

IUPAC Name:	N,N-diethyl-7-methyl-4-propanoyl-6,6a,8,9-tetrahydroindolo[4,3-fg]quinoline-9-carboxamide
InChI String:	InChI=1S/C23H29N3O2/c1-5-21(27)26-14-15-12-20-18(17-9-8-10-19(26)22(15)17)11-16(13-24(20)4)23(28)25(6-2)7-3/h8-11,14,16,20H,5-7,12-13H2,1-4H3
CFR:	Not Scheduled (04/2019)
CAS#	Not Available
Synonyms:	1-Propionyl-Lysergic Acid Diethylamide, 1-Propionyl-LSD
Source:	Department of Homeland Security
Appearance:	Sheet of white paper with chemical structure on one side and “1P-LSD” on the other side, perforated into twenty two squares.

***Important Note**: All identifications were made based on evaluation of analytical data (GC-MS and LC-QTOF) in comparison to analysis of acquired reference material.*

***Prepared By:** Alex J. Krotulski, MSFS, Melissa F. Fogarty, MSFS, D-ABFT-FT, and Barry K. Logan, PhD, F-ABFT*

2. CHEMICAL AND PHYSICAL DATA

2.1 CHEMICAL DATA

Form	Chemical Formula	Molecular Weight	Molecular Ion $[M^+]$	Exact Mass $[M+H]^+$
Base	$C_{23}H_{29}N_3O_2$	379.49	379	380.2333

3. BRIEF DESCRIPTION

1P-LSD is a synthetic hallucinogen and analogue of LSD (lysergic acid diethylamide). Synthetic hallucinogens are reported to cause visual and auditory hallucinations, as well as adverse events including anxiety, depression, rapid heart rate, increased body temperature, and high blood pressure. Information regarding LSD analogues is sparse, and these analogues have not been studied in humans. LSD is a structurally similar compound and Schedule I substance in the United States; however, 1P-LSD is not currently scheduled.

4. ADDITIONAL RESOURCES

https://www.policija.si/apps/nfl_response_web/0_Analytical_Reports_final/1P-LSD-ID-1322-15-NFL-report_final.pdf

https://www.trc-canada.com/product-detail/?P737000

5. QUALITATIVE DATA

5.1 GAS CHROMATOGRAPHY MASS SPECTROMETRY (GC-MS)

Testing Performed At: NMS Labs (Willow Grove, PA)

Sample Preparation: Acid/Base extraction

Instrument: Agilent 5975 Series GC/MSD System

Column: Zebron™ Inferno™ ZB-35HT (15 m x 250 µm x 0.25 µm)

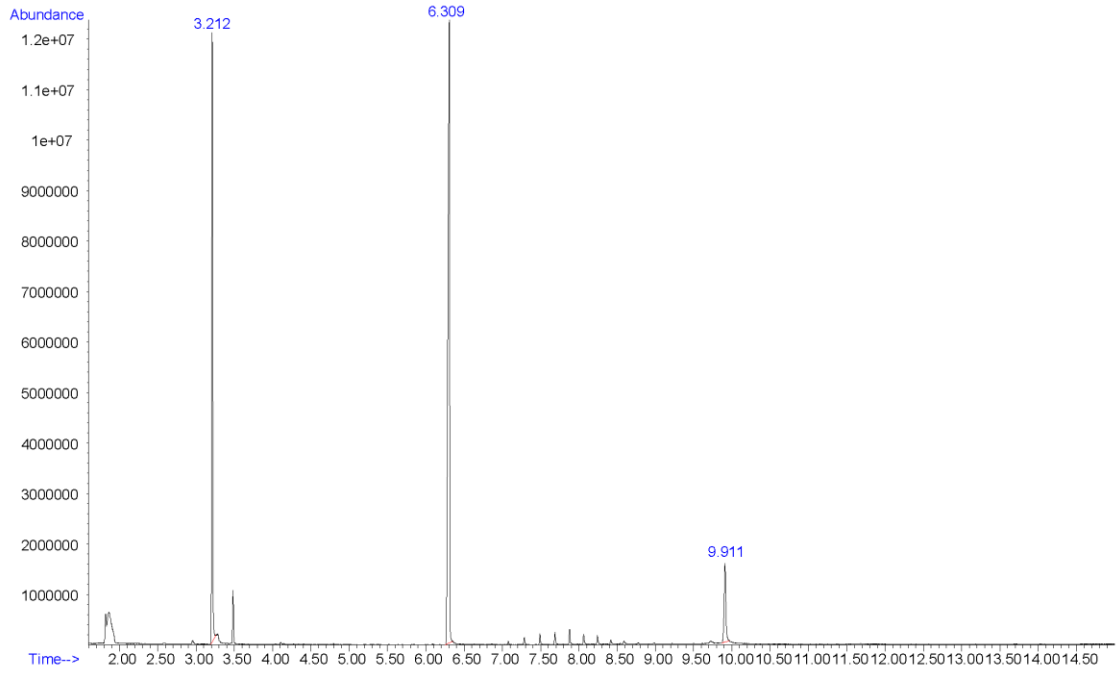
Carrier Gas: Helium (Flow: 1 mL/min)

Temperatures: Injection Port: 265 °C

Transfer Line: 300 °C

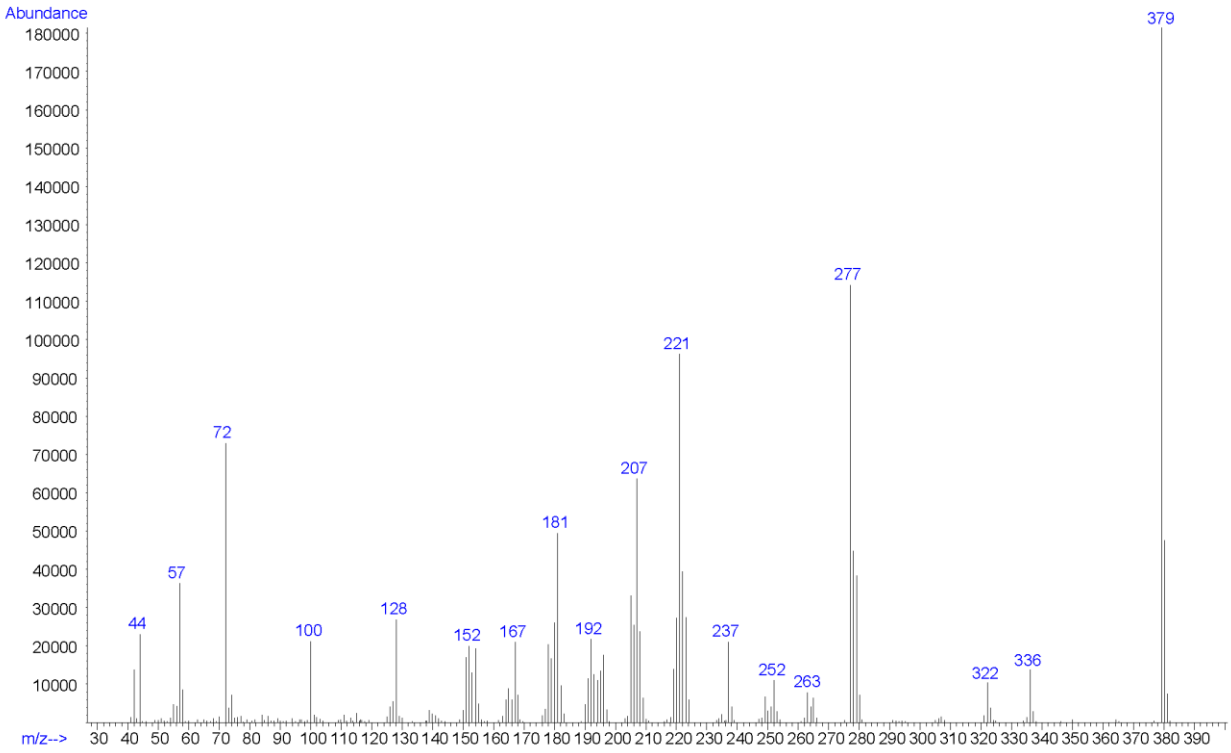
	MS Source: 230 °C
	MS Quad: 150 °C
	Oven Program: 60 °C for 0.5 min, 35 °C/min to 340 °C for 6.5 min
Injection Parameters:	Injection Type: Splitless
	Injection Volume: 1 µL
MS Parameters:	Mass Scan Range: 40-550 m/z
	Threshold: 250
Retention Time:	9.911 min
Standard Comparison:	Reference material for 1P-LSD (Batch: 15-EQJ-135-1) was purchased from Toronto Research Chemical (North York, ON, Canada). Analysis of this standard resulted in positive identification of the analyte in the exhibit as 1P-LSD, based on retention time (9.919 min) and mass spectral data. (https://www.trc-canada.com/product-detail/?P737000)

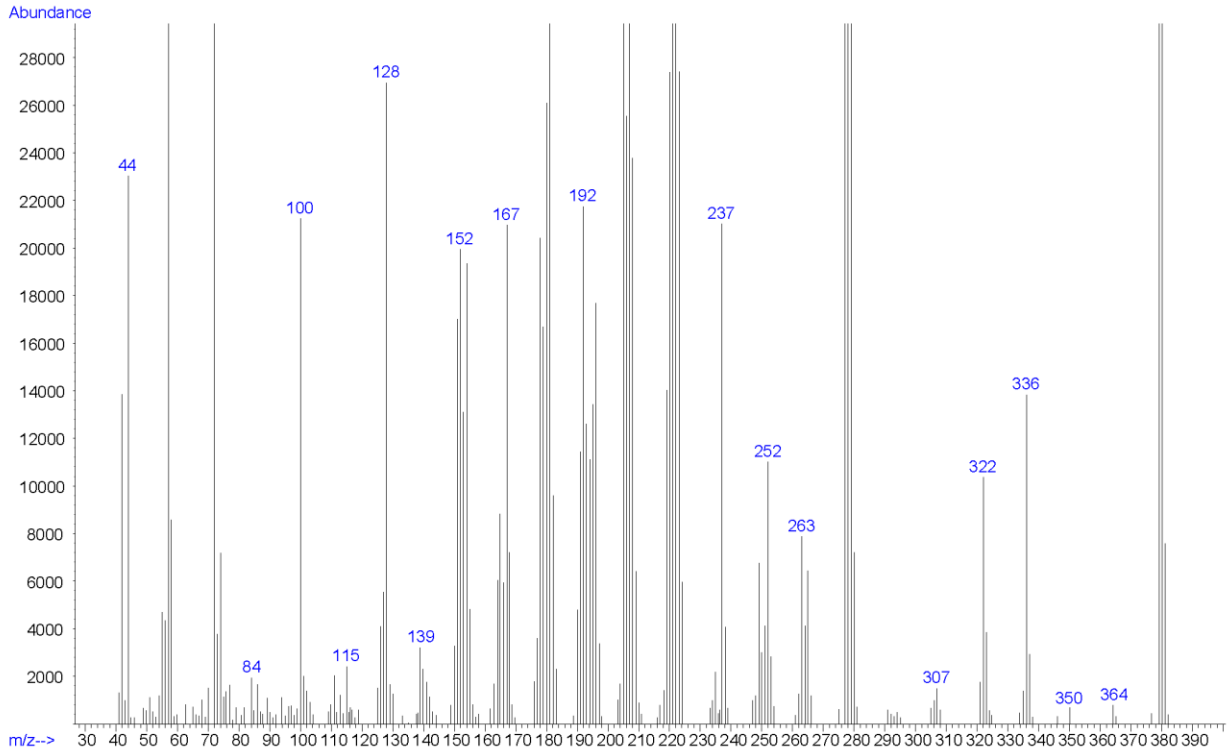
Chromatogram: 1P-LSD



Additional peaks present in chromatogram: internal standards (3.212 min and 6.309 min)

EI (70 eV) Mass Spectrum (Top) and 10x (Bottom): 1P-LSD

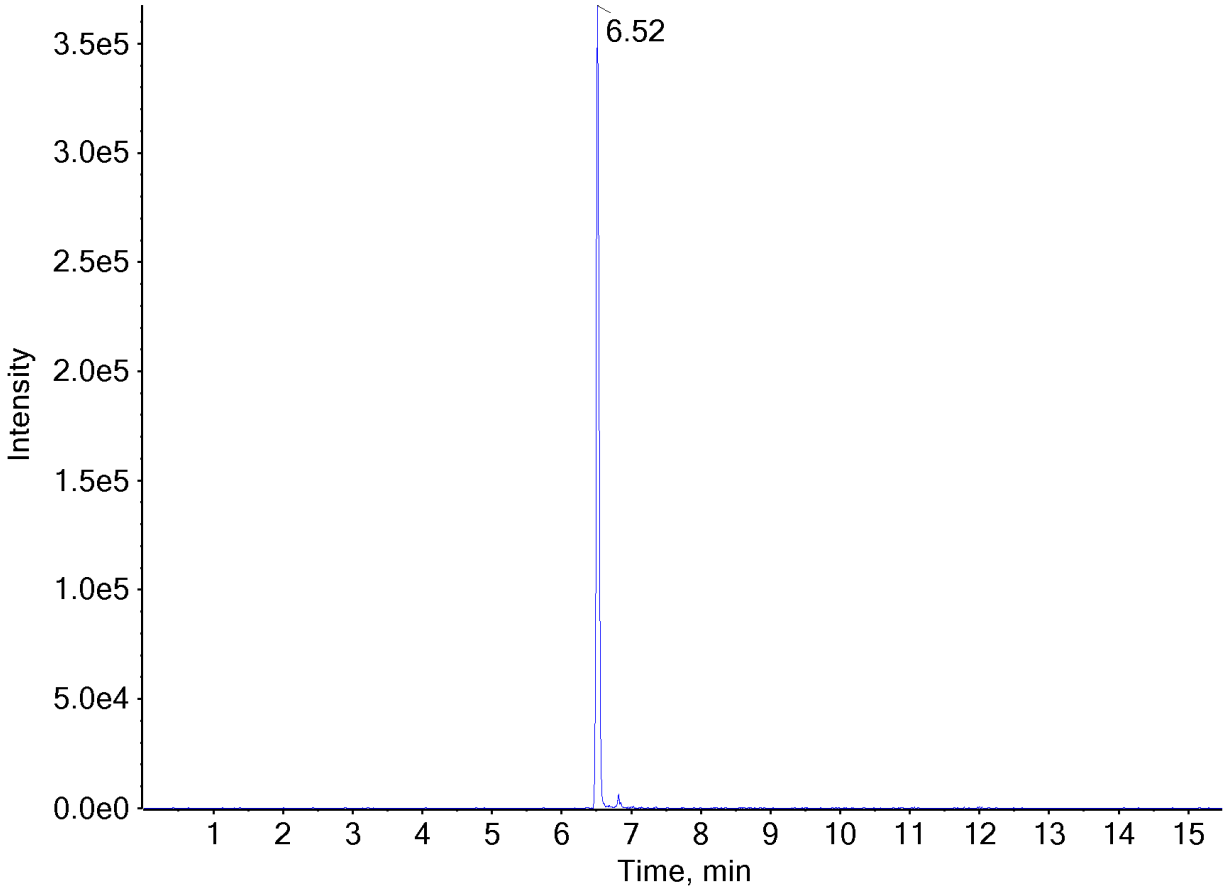




5.2 LIQUID CHROMATOGRAPHY QUADRUPOLE TIME OF FLIGHT MASS SPECTROMETRY (LC-QTOF)

Testing Performed At:	The Center for Forensic Science Research and Education at the Fredric Rieders Family Foundation (Willow Grove, PA)
Sample Preparation:	1:100 dilution of acid/base extract in mobile phase
Instrument:	Sciex TripleTOF® 5600+, Shimadzu Nexera XR UHPLC
Column:	Phenomenex® Kinetex C18 (50 mm x 3.0 mm, 2.6 µm)
Mobile Phase:	A: Ammonium formate (10 mM, pH 3.0)
	B: Methanol/acetonitrile (50:50)
	Flow rate: 0.4 mL/min
Gradient:	Initial: 95A:5B; 5A:95B over 13 min; 95A:5B at 15.5 min
Temperatures:	Autosampler: 15 °C
	Column Oven: 30 °C
	Source Heater: 600 °C
Injection Parameters:	Injection Volume: 10 µL
QTOF Parameters:	TOF MS Scan Range: 100-510 Da
	Precursor Isolation: SWATH® acquisition (27 windows)
	Fragmentation: Collison Energy Spread (35±15 eV)
	MS/MS Scan Range: 50-510 Da
Retention Time:	6.52 min
Standard Comparison:	Reference material for 1P-LSD (Batch: 15-EQJ-135-1) was purchased from Toronto Research Chemical (North York, ON, Canada). Analysis of this standard resulted in positive identification of the analyte in the exhibit as 1P-LSD, based on retention time (6.49 min) and mass spectral data. (https://www.trc-canada.com/product-detail/?P737000)

Extracted Ion Chromatogram: 1P-LSD



TOF MS (Top) and MS/MS (Bottom) Spectra: 1P-LSD