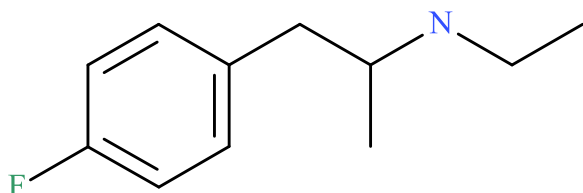


4-Fluoroethamphetamine

Sample Type: **Seized Material**



Latest Revision: **January 3, 2019**

Date Received: **July 31, 2018**

Date of Report: **January 3, 2019**

1. GENERAL INFORMATION

IUPAC Name:	N-ethyl-1-(4-fluorophenyl)propan-2-amine
InChI String:	InChI=1S/C11H16FN/c1-3-13-9(2)8-10-4-6-11(12)7-5-10/h4-7,9,13H,3,8H2,1-2H3
CFR:	Not Scheduled (12/2018)
CAS#	3823-31-2
Synonyms:	4-FEA, para-Fluoroethamphetamine
Source:	Department of Homeland Security
Appearance:	White Solid Material

2. CHEMICAL AND PHYSICAL DATA

2.1 CHEMICAL DATA

Form	Chemical Formula	Molecular Weight	Molecular Ion [M ⁺]	Exact Mass [M+H] ⁺
Base	C ₁₁ H ₁₆ FN	181.3	181	182.1340

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, and Barry K. Logan, PhD, F-ABFT

3. BRIEF DESCRIPTION

4-Fluoroethamphetamine is classified as a novel stimulant and substituted phenethylamine. Substituted phenethylamines are modified based on the structure of amphetamine. Novel stimulants have been reported to cause stimulant-like effects, similar to amphetamines. Novel stimulants have also caused adverse events, including deaths, as described in the literature. Structurally similar compounds include amphetamine, methamphetamine, 4-fluoroamphetamine (FA), 4-fluoromethamphetamine (FMA), and other positionally fluorinated amphetamines. Amphetamine and methamphetamine are Schedule II substances in the United States.

4. ADDITIONAL RESOURCES

<https://www.caymanchem.com/product/25811>

https://www.policija.si/apps/nfl_response_web/0_Analytical_Reports_final/4-FEA-ID-1900-18_report.pdf

https://www.policija.si/apps/nfl_response_web/0_Analytical_Reports_final/3-FEA-ID-1934-18_report.pdf

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

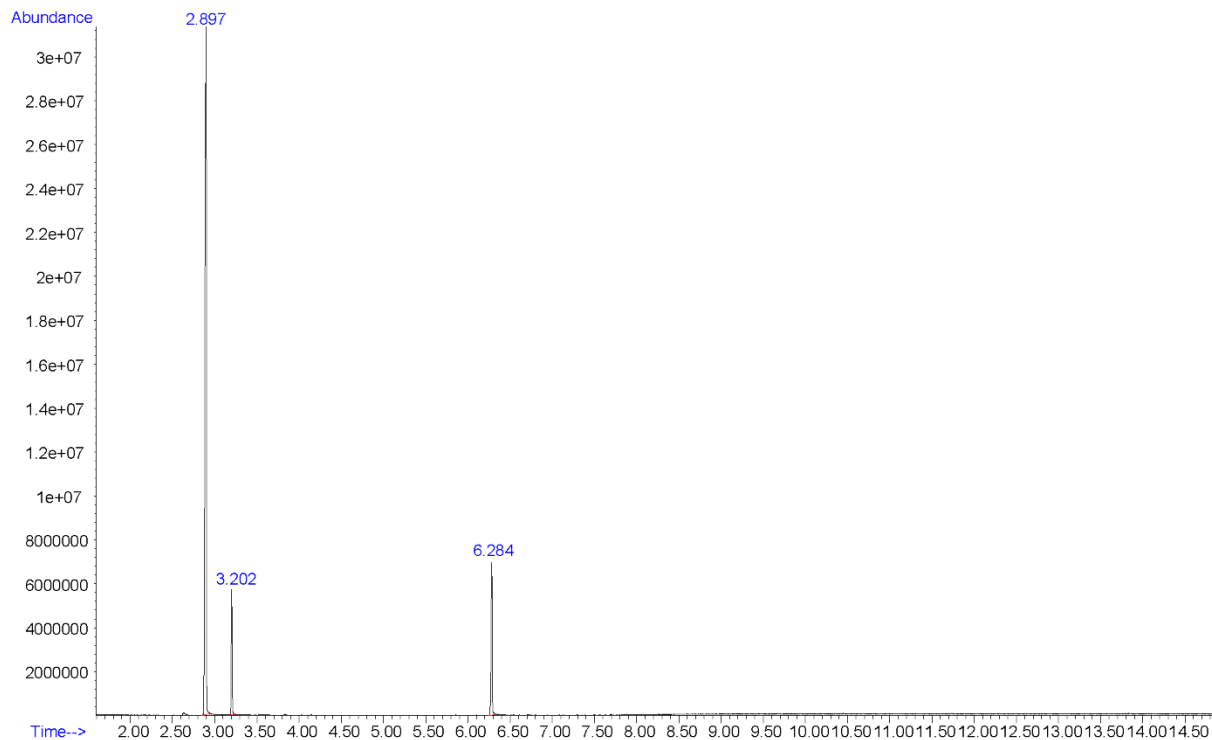
Threshold: 250

Retention Time: 2.897 min

Standard Comparison: Reference material for 4-Fluoroethamphetamine (Batch: 0536560-2) was purchased from Cayman Chemical (Ann Arbor, MI, USA). Analysis of this standard resulted in positive identification of the analyte in the exhibit as 4-Fluoroethamphetamine, based on retention time (2.889 min) and mass spectral data.

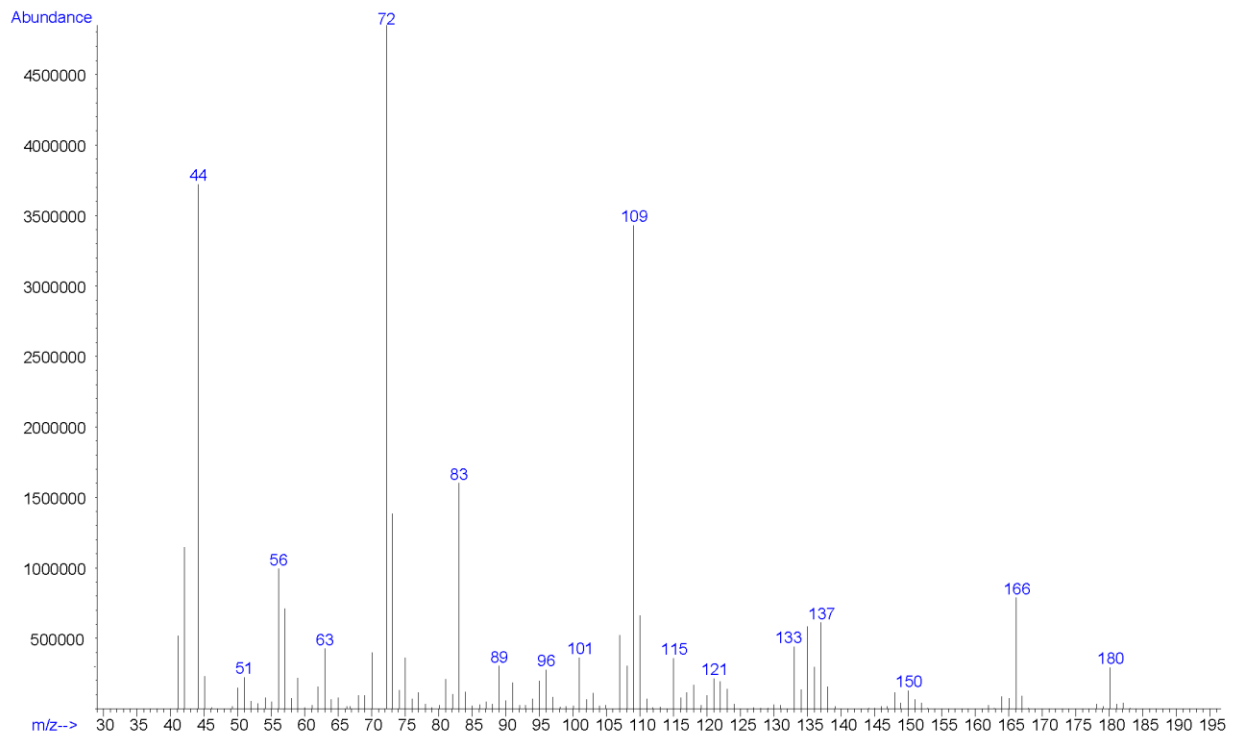
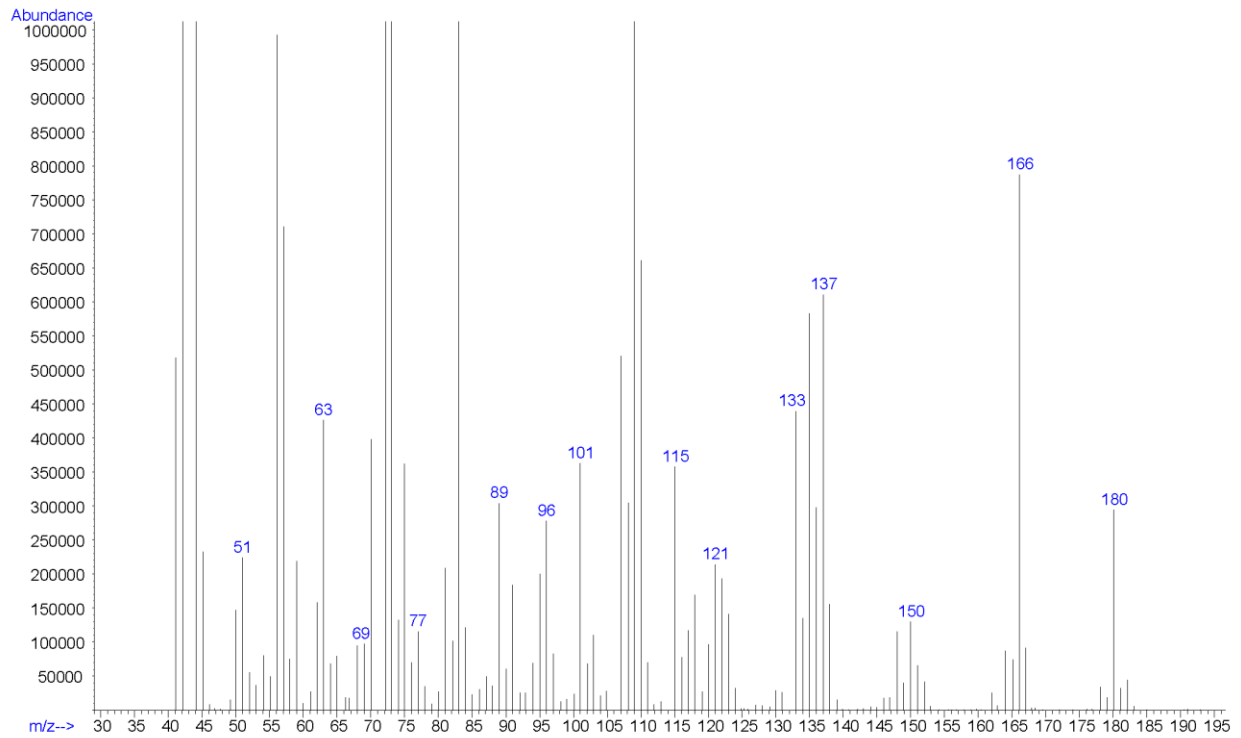
<https://www.caymanchem.com/product/25811>

Chromatogram: 4-Fluoroethamphetamine



Additional peaks present in chromatogram: internal standards (3.202 min and 6.284 min)

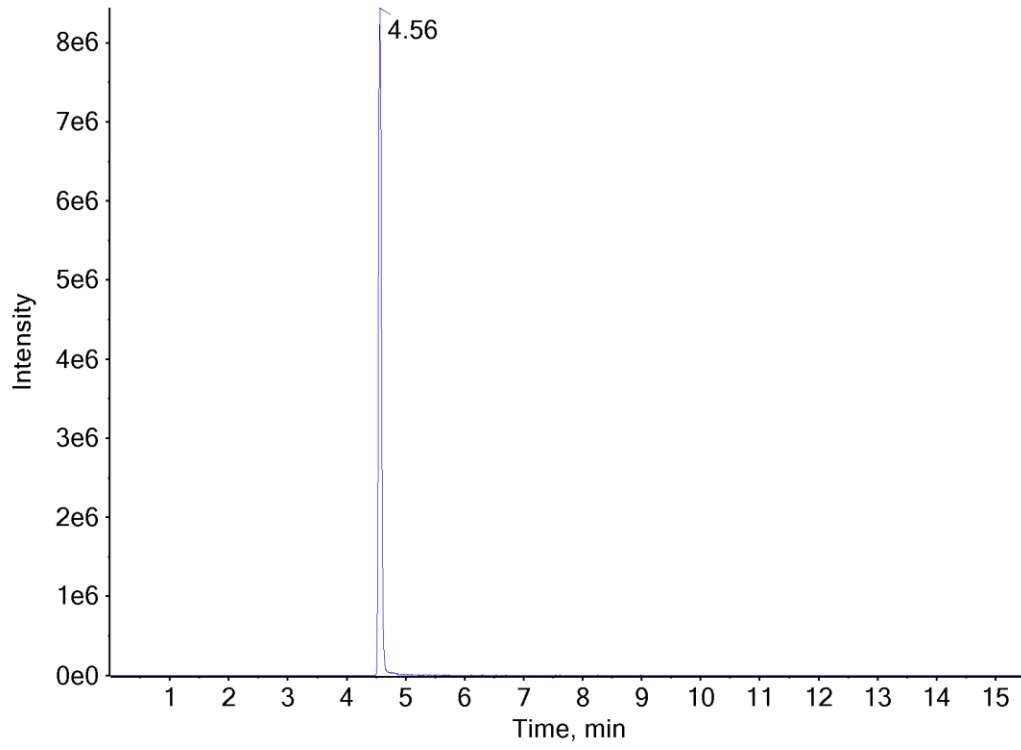
EI (70 eV) Mass Spectrum (Top) and 10x (Bottom): 4-Fluoroethamphetamine



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 extraction 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: Collision Energy Spread (35±15 eV) MS/MS Scan Range: 50-510 Da
Retention Time:	4.56 min
Standard Comparison:	Reference material for 4-Fluoroethamphetamine (Batch: 0536560-2) was purchased from Cayman Chemical (Ann Arbor, MI, USA). Analysis of this standard resulted in positive identification of the analyte in the exhibit as 4-Fluoroethamphetamine, based on retention time (4.53 min) and mass spectral data. (https://www.caymanchem.com/product/25811)

Extracted Ion Chromatogram: 4-Fluoroethamphetamine



TOF MS (Top) and MS/MS (Bottom) Spectra: 4-Fluoroethamphetamine

