Materials/Methods

-**Toxicological analysis:**
  - Comprehensive toxicology and drug chemistry analyses were performed on multiple specimens and drugs using glass chromatography/mass spectrometry (GC/MS) for targeted and untargeted analyses of drugs of abuse at the Cuyahoga County Medical Examiner’s Office for the postmortem and driving under the influence of drugs (DUID) cases from Cuyahoga County.
  - Toxicology analyses were performed on the DUID cases from Lake County, Ohio on various specimens for drugs of abuse at the Cuyahoga County Medical Examiner's Office. Multiple specimens were collected and analyzed using a full panel of drugs of abuse at the Cuyahoga County Medical Examiner's Office.

Postmortem Tissue Distribution of AB-CHMINACA Following Lethal Intoxication Compared with AB-CHMINACA Concentrations in Impaired Drivers

<table>
<thead>
<tr>
<th>Specimen</th>
<th>AB-CHMINACA</th>
<th>AB-PINACA</th>
<th>ADB-PINACA</th>
<th>ADB-CHMINACA</th>
<th>AB-FUBINACA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood</td>
<td>8.7 ng/mL</td>
<td>3.9 ng/mL</td>
<td>&lt; 0.05 ng/mL</td>
<td>0.2 ng/mL</td>
<td>&lt; 0.05 ng/mL</td>
</tr>
<tr>
<td>Gastric Contents</td>
<td>59.2 ng/mL</td>
<td>&lt; 0.05 ng/mL</td>
<td>404 ng/g</td>
<td>46.7 ng/mL</td>
<td>&lt; 0.05 ng/mL</td>
</tr>
<tr>
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**Drug Chemistry Submissions: Synthetic Cannabinoids 2014/2015**

- N-(1-ethylcyclohexyl)-2,3-dihydroxybenzamide (A20-PINACA) and 2,5-dimethoxy-4-bromo-N-(cyclohexylmethyl)-1H-indazole-3-carboxamide (AB-CHMINACA) were reported as present. Drug Chemistry exhibits chromatography/tandem mass spectrometry after solid-phase extraction. Liquid extraction and in hair using high performance liquid chromatography/tandem mass spectrometry after liquid extraction.

- AB-CHMINACA and other SCs have psychotropic and pharmacological effects similar to Cannabinoid, delta-9-tetrahydrocannabinol (THC), and Δ9-tetrahydrocannabinol (Δ9-THC).

- Recent studies indicate these cannabinoid agents SCs exert their pharmacological effects as potent agonists at the cannabinoid 1 (CB1) and cannabinoid 2 (CB2) receptors.

<table>
<thead>
<tr>
<th>Case</th>
<th>Impaired Driver</th>
<th>Offense</th>
<th>Blood Alcohol</th>
<th>AB-CHMINACA</th>
<th>AB-PINACA</th>
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</thead>
<tbody>
<tr>
<td>Case #1:</td>
<td>Erratic Driving</td>
<td>10.8 ng/mL</td>
<td>0.20 ng/mL</td>
<td>None detected</td>
<td>AB-FUBINACA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Case #2:</td>
<td>Erratic Driving</td>
<td>1.4 ng/mL</td>
<td>0.05 ng/mL</td>
<td>None detected</td>
<td>AB-PINACA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Case #3:</td>
<td>Erratic Driving</td>
<td>0.25 ng/mL</td>
<td>None detected</td>
<td>AB-CHMINACA</td>
<td>ADB-CHMINACA</td>
<td></td>
<td></td>
<td></td>
</tr>
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**Results & Discussion**

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- AB-CHMINACA and other SCs continue to have high abuse potential, severe toxicities, significant central nervous system, respiratory depression, and reported deaths. They have also been associated with DUDE and impairment cases.

- As of January 30, 2015, AB-CHMINACA is a DEA Schedule I drug. The State of Ohio is also taking measures to consider scheduling and future synthetic cannabinoid regulation.

- The next synthetic cannabinoid implicitly controlled as a DEA Schedule I drug is ADB-CHMINACA or Maybe-CHMINACA. Numerous analytical methods have been published for the analysis of synthetic cannabinoids.

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**Objectives**

- To describe how postmortem AB-CHMINACA cases, single one and multiple drug intoxications, and three driving under the influence of drugs (DUID) cases involving AB-CHMINACA impairment.

**Methods**

- The site of death in case #1 was believed to result from a fall. In the second deceased Decedent #2, the site of death was believed to result from a self-inflicted gunshot wound. The cause of death in Decedent #3 was believed to be cardiac arrest.

- AB-CHMINACA and SC concentrations were measured in the various tissues, blood, urine, vitreous, gastric, liver, kidney, brain, and bile. Tissue and fluids associated with detoxification had higher values compared with the blood.

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- The hair extraction and analysis for SCs and AB-CHMINACA were performed at Omega Laboratories, Mogadore, OH, USA, using ultra performance liquid chromatography/mass spectrometry for therapeutic and drugs of abuse (9-panel ELISA screen) and for volatiles.

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