THE UNCERTAIN PROMISE OF USING ADVANCED TECHNOLOGY REAL-TIME DRUG CHECKING AS A MECHANISM FOR HARM REDUCTION, STRUCTURAL INTERVENTION, AND HUMAN LIBERATION

Greg Scott
Lydia Karch
Maya Doe-Simkins
Acknowledgements
Longstanding Culture of Substance Checking among Humans who Put Stuff in their Bodies
Samples that cannot be identified are sent to the DIMS-bureau for further analysis. A week later, the laboratory results are entered into the online database by the DIMS-bureau. Users can then call the drug checking facility to obtain the test results.
European drug-checking services in existence in 2017

EROWID
Documenting the Complex Relationship Between Humans & Psychoactives

Plants & Drugs
Mind & Spirit
Freedom & Loss
Indiana State Police planning to buy more drug scanning devices

Sep 26, 2016

State buys 5 devices to scan drugs, keep officers safe

State buys 5 of them to scan substances, keep officers safe

By Clara Turcotte | October 21, 2018 at 4:30 am

Follow
Origin Of The Idea
Origin Of The Idea
Ways in which drug checking services can vary

<table>
<thead>
<tr>
<th>Technique</th>
<th>Colormetric reagents</th>
<th>High-performance liquid chromatography</th>
<th>Gas chromatography</th>
<th>Mass spectrometry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Testing for</td>
<td>Presence or absence of a component</td>
<td>Information on whole range of substances present</td>
<td>Quantitative information about all compounds</td>
<td></td>
</tr>
<tr>
<td>Setting</td>
<td>At home</td>
<td>On-site/mobile</td>
<td>Remote site</td>
<td></td>
</tr>
<tr>
<td>Who</td>
<td>Individuals</td>
<td>Professionals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Results</td>
<td>Drug content</td>
<td>Public health alerts</td>
<td>Harm reduction information</td>
<td>Brief interventions</td>
</tr>
<tr>
<td>Use of results</td>
<td>Individual harm reduction</td>
<td>Public health action</td>
<td>Market monitoring</td>
<td></td>
</tr>
</tbody>
</table>

Heterogeneous Mixture VS Homogeneous Mixture

- Particles distributed non-uniformly
- Cereal in milk
- Ice in soda
- Soil
- Blood

- Particles distributed uniformly
- Vodka
- Steel
- Air
- Rain

This is a chocolate chip cookie. But is it?
Step 1: FTIR
<table>
<thead>
<tr>
<th>Hit No.</th>
<th>Color</th>
<th>Hit Quality</th>
<th>Compound Name</th>
<th>CAS number</th>
<th>Molecular formula</th>
<th>Molecular weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td>Lactose</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td>Lactose BP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td>alpha Lactose</td>
<td>9H016831</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td>D-Mannitol</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Step 2: HPMS
Hey Mark, we are heading to a call – possibly a high concentration of fentanyl with the local PD – we may need reachback support.

Roger that, I'll put the team on standby.

It was a positive hit. No reachback required.

Was it pure fentanyl?

I don't think so.

Raman didn't work due to packaging. Nothing on the outer packaging. We swiped the inner package with MX and BTNX strips and found positive results. That was enough for us.
NOT IN THE MANUAL
AN EOD SERIES

MX
TRACE SAMPLING
FEDERAL RESOURCES
Step 3: Test Strips

ONE LINE
FENTANYL!

TWO LINES
NO FENTANYL
# BTN X FENTANYL ANALOGUE LIST

![BTN X Inc. Logo](image)

## Cross Reactivity List

<table>
<thead>
<tr>
<th>Compound</th>
<th>Compound</th>
</tr>
</thead>
<tbody>
<tr>
<td>CARFENTANIL</td>
<td>BUTYRYL FENTANYL</td>
</tr>
<tr>
<td>P-FLUORO FENTANYL</td>
<td>ACETYL FENTANYL</td>
</tr>
<tr>
<td>FENTANYL</td>
<td>FURANYL FENTANYL</td>
</tr>
<tr>
<td>VALERYL FENTANYL</td>
<td>OCFENTANIL</td>
</tr>
<tr>
<td>3-METHYL FENTANIL</td>
<td>REMIFENTANIL</td>
</tr>
<tr>
<td>SUFENTANIL</td>
<td>NORFENTANYL</td>
</tr>
</tbody>
</table>
Step 4 (sometimes): LC/MS
Solvents: mobile phase
Samples: Multiple component mixtures

High performance liquid chromatography (HPLC) device
HPLC Column

Mass spectrometer e.g., Quadropole-MS, other ion traps, etc.

Detection

LC-MS Interface + MS Ion source

Chromatogram + mass spectrum analysis
Opioid overdose deaths have increased dramatically in the past ten years in Chicago.

Data Sources: Years 2008-2016: Illinois Department of Public Health, Division of Vital Records, Death Certificate Data Files. *Year 2017: Cook County Medical Examiner. These data refer to deaths that occurred among Chicago Residents.
The opioid overdose death rate is over 1.5x higher in Chicago than in Illinois

Data Sources:
Chicago Rate: Cook County Medical Examiner. Includes all opioid-related overdose deaths that occurred in Chicago (2015 and 2016).
US Rate: Centers for Disease Control and Prevention (http://dx.doi.org/10.15585/mmwr.mm6712a11) US Census Bureau
Fentanyl and heroin overdose death rates are over 5x and 6x higher than the opioid pain reliever overdose death rate

Data Source: Cook County Medical Examiner. Includes all opioid-related overdose deaths that occurred in Chicago (2015-2017)
Racial disparities in opioid-related overdose death rates in Chicago persist and have widened in recent years.

Data Sources: Years 2009-2016: Illinois Department of Public Health, Division of Vital Records, Death Certificate Data Files. ^Year 2017: Cook County Medical Examiner. These data refer to deaths that occurred among Chicago Residents.
In contrast, in the US, overdose death rates are highest among NH Whites, however drug overdose deaths are rising the fastest among NH Blacks.

Data Source: Cook County Medical Examiner. Includes all opioid-related overdose deaths that occurred in Chicago (2017).
Results

124 samples

48% heroin  15% heroin + fentanyl
48% fentanyl  1% cocaine
19% amphetamine
4% Novel Synthetic Opioids
(AH-7921 & U-47700)
Results

18 samples
100% cocaine
11% amphetamine

7 samples
100% cocaine base
71% amphetamine
Results

1 sample
1 fentanyl

5 samples
1 heroin
2 fentanyl
2 cocaine
Results

2 samples
2 ketamine

6 samples
1 amphetamine
1 fentanyl
5 MDMA
1 methamphetamine
Results

1 sample
1 methamphetamine

1 sample
1 PCP
What’s REALLY in your stuff?

April: Opioids

Drug samples checked at AHOPE Harm Reduction Services Program

18 SAMPLES DESCRIBED AS "DOPE/BROWN"

-Important-

The machine we use to check drugs (MX908) is NOT able to identify: Benzodiazepines, THC, PCP, cathinones and other (less common) drugs. For a complete list of what we can look for, or if you have questions about your drugs, talk to an AHOPE staff member. No drug checking is 100% accurate, start low and go slow!

18 Samples described as ‘Dope/Brown’

<table>
<thead>
<tr>
<th>RESULTS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fentanyl</td>
<td>13</td>
</tr>
<tr>
<td>Fentanyl + Ketamine</td>
<td>1</td>
</tr>
<tr>
<td>Fentanyl + Meth</td>
<td>1</td>
</tr>
<tr>
<td>Acetyl Fentanyl + Meth</td>
<td>1</td>
</tr>
<tr>
<td>Heroin</td>
<td>1</td>
</tr>
<tr>
<td>Meth</td>
<td>1</td>
</tr>
</tbody>
</table>

You can drop off samples at AHOPE during our normal hours (Monday, 7:30AM-10:30AM and 1PM-3PM, Tuesday-Friday, 7:30 AM-12PM and 1PM-3PM) or call the outreach phone (617-534-7828) to find us in an area near you.
<table>
<thead>
<tr>
<th>DOPE42</th>
<th>Sample collected 4/26/19 at Homeless Youth Alliance</th>
<th>SAMPLE PROFILE</th>
<th>WHAT WAS IT?</th>
<th>SO WHAT?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample</td>
<td>Purchased in the Tenderloin</td>
<td>Purchased in the Tenderloin</td>
<td>Major component: heroin</td>
<td>Even though this sample has some minor amounts of stimulants in it, the allergy-like reaction was most likely due to the poorly processed heroin. The majority of the sample was 6-acetylmorphine, an impurity from incomplete processing of heroin which could cause these reactions.</td>
</tr>
<tr>
<td>collected</td>
<td>Sold as black tar heroin</td>
<td>Sold as black tar heroin</td>
<td>Trace components: cocaine, lidocaine and methamphetamine</td>
<td></td>
</tr>
<tr>
<td>4/26/19</td>
<td>Caused itchy rash, burning in feet, neck, back, swollen lips, had no legs</td>
<td>Caused itchy rash, burning in feet, neck, back, swollen lips, had no legs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DOPE43</th>
<th>Sample collected 4/19/19 at Homeless Youth Alliance</th>
<th>SAMPLE PROFILE</th>
<th>WHAT WAS IT?</th>
<th>SO WHAT?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample</td>
<td>Purchased in the Tenderloin</td>
<td>Purchased in the Tenderloin</td>
<td>Major component: fentanyl</td>
<td>This sample was primarily fentanyl, it did contain some meth (but only a trace of cocaine) so the speedy sensation is likely due to the presence of stimulants.</td>
</tr>
<tr>
<td>collected</td>
<td>Sold as fentanyl</td>
<td>Sold as fentanyl</td>
<td>Minor components: heroin, methamphetamine</td>
<td></td>
</tr>
<tr>
<td>4/19/19</td>
<td>Caused a speedy sensation, anxiety, antsy, twitchy</td>
<td>Caused a speedy sensation, anxiety, antsy, twitchy</td>
<td>Trace components: cocaine</td>
<td></td>
</tr>
</tbody>
</table>
* Practical street science
  - Reproducibility, generalizability
  - Scalability
  - Validity and reliability
* Individual harm reduction interventions (change)
* Structural intervention
  - Safer drug supply
  - Reduction in community-level OD incidence
* Discursive (Cultural) Change
  - Bodily autonomy / consciousness / pleasure
  - Consumer protection
  - Prohibition’s bloody hands (structural violence)
THAT IS AN EXCELLENT QUESTION