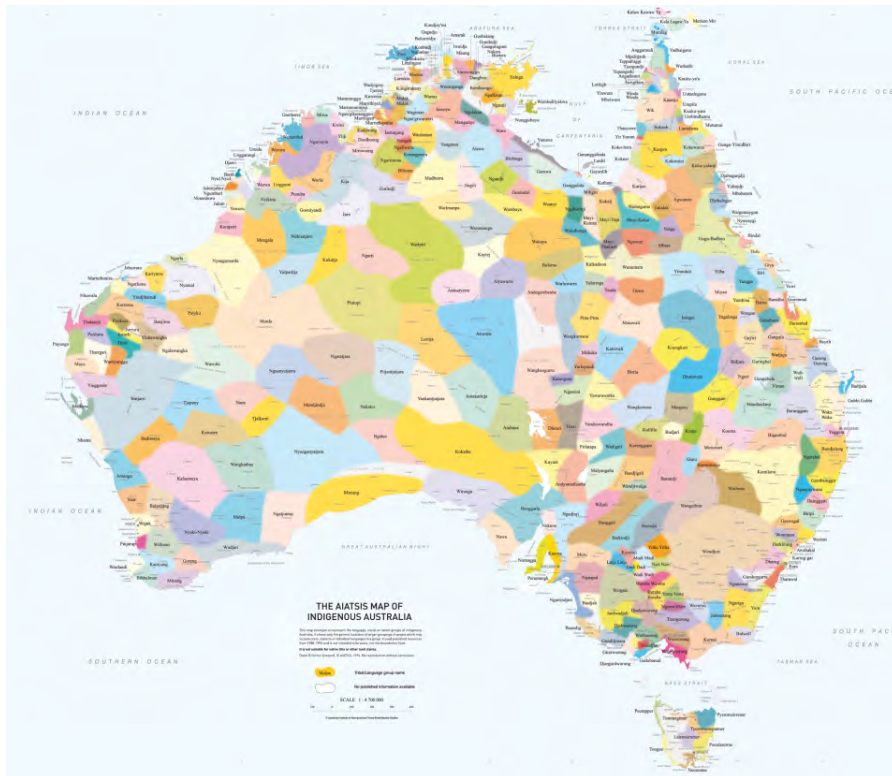


Welcome to today's Insight APSAD webinar.

We'll be starting a little after 10am (QLD time).

- Use the chat icon for all questions and comments – *select All panelists and attendees.*
- If you are on a computer and Zoom enters full screen mode – you can press the escape button or visit “View Options” at the top of the screen to change the layout.
- If you are experiencing other problems or require further technical assistance call Zoom on **1800 768 027** – the webinar ID is **973-118-396-68**.
- A pdf version of today's presentation will be available soon in the chat window.
- A recording of this webinar will be available on our YouTube channel in the coming weeks.





**We acknowledge the
Traditional Owners of the land
on which this event takes
place and pay respect to
Elders past and present.**

This map attempts to represent the language, social or nation groups of Aboriginal Australia. It shows only the general locations of larger groupings of people which may include clans, dialects or individual languages in a group. It used published resources from 1988-1994 and is not intended to be exact, nor the boundaries fixed. It is not suitable for native title or other land claims. David R Horton (creator), © AIATSIS, 1996. No reproduction without permission. To purchase a print version visit: www.aiatsis.ashop.com.au/

New Psychoactive Substances in Queensland

Karen Blakey

Forensic Chemistry

Qld Health Forensic and Scientific Services



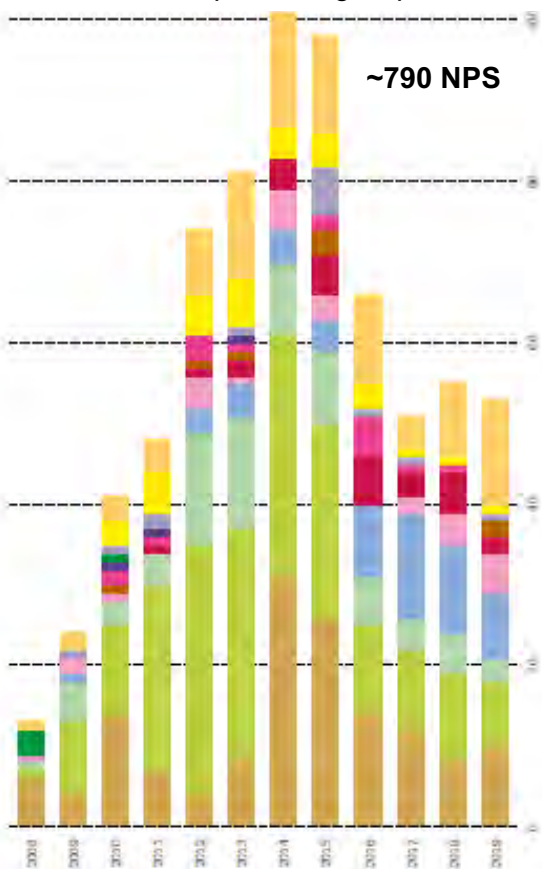
New Psychoactive Substances (NPS)

- Newly **emerging** compounds on the drug market that are **known/thought to be** psychoactive and **are not controlled** by legislation
- Designer drugs, emerging drugs, legal highs, herbal highs, research chemicals
- Many are not **new** – “chemical regurgitation” from medical literature
- Small structural change may cause large change in pharmacology
- **Psychoactivity** is not always known
- Different jurisdictions may class different compounds as NPS e.g Ketamine
- Currently in Queensland, NPS form only a very small proportion of seized drugs
- Many NPS are transient, some may become part of ongoing market

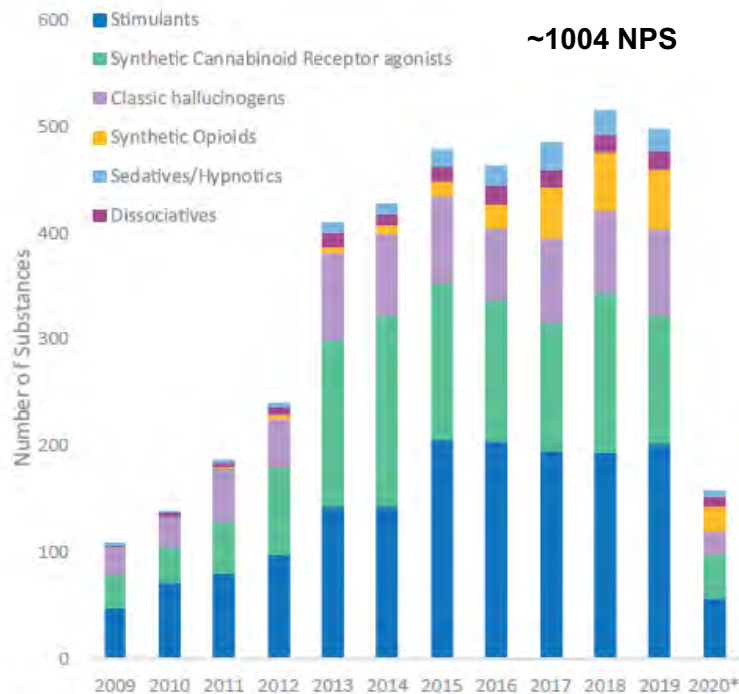


Global Situation

EMCDDA European Drug Report 2020



■ Cathinones ■ Cannabinoids ■ Phenethylamines ■ Opioids ■ Tryptamines ■ Benzodiazepines ■ Piperazines
■ Arylalkylamines ■ Aminoindanes ■ Plants and extracts ■ Piperidines and piperidines ■ Arylcyclohexylamines ■ Other substances

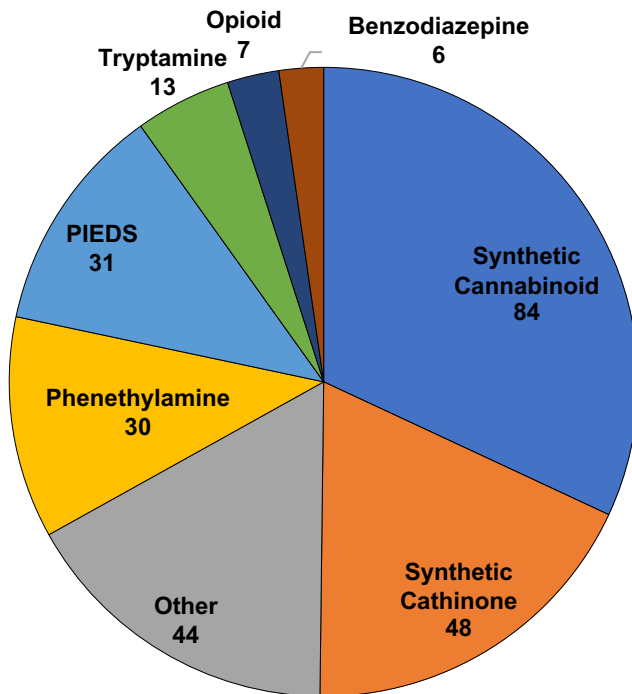


*Note: 2020 data not finalised

UNODC Current NPS Threats Vol 3, Oct 2020
 Figure 2: Emergence of NPS by effect group reported to the UNODC EWA 2009 - 2020

New Drugs in Queensland

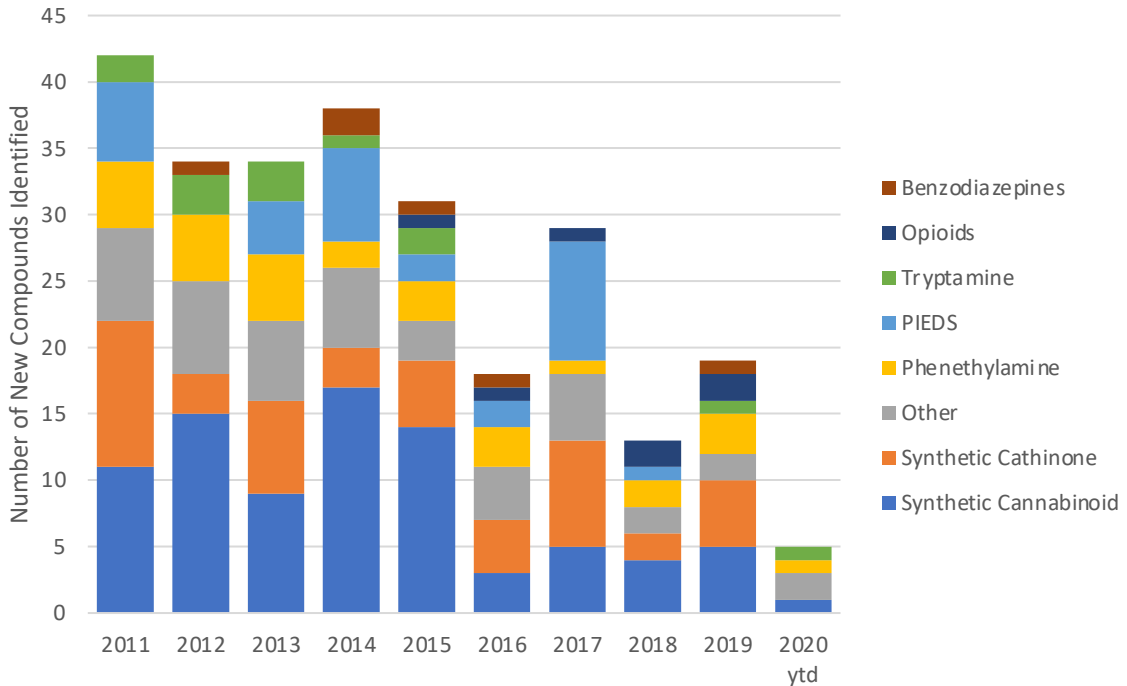
263



- 263 new drugs detected in Qld since 2010/11
- **Synthetic Cannabinoids** are largest group
- Have included **Performance and Image Enhancing Drugs (PIEDS)** which are not classed as NPS
- **Benzodiazepines** : small group of compounds but are most prevalent in Qld currently
- Only a small proportion of these drugs are currently seen in Qld seized drugs

New Drugs in Queensland

~2 to 3/month ~1 to 2/month



“Synthetic Cannabinoids”

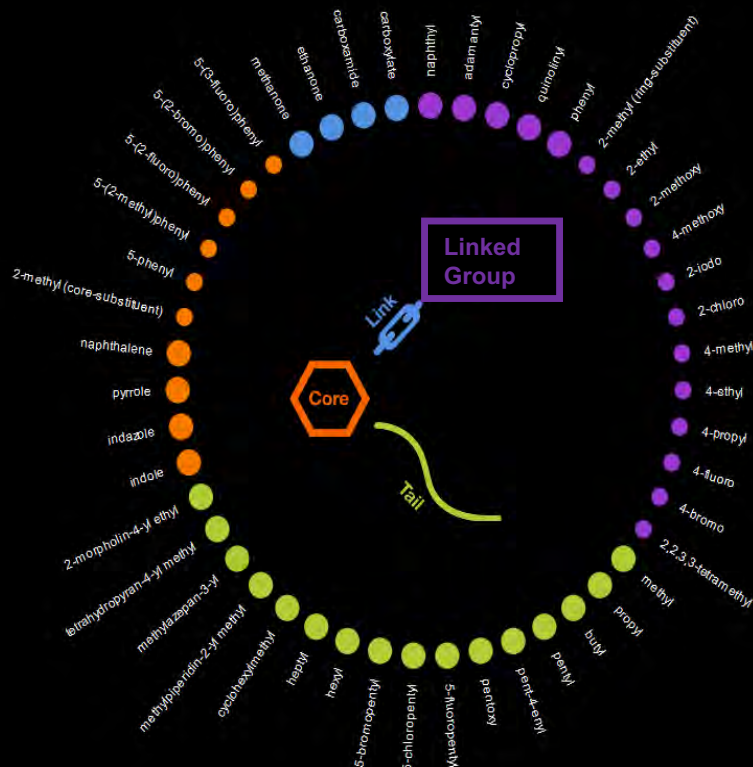
- Synthetic Cannabinoid Receptor Agonists (SCRAs)
- Compounds from medicinal research e.g. JWH-018 and AM-2201
- Chemicals sprayed onto plant material to prepare product for smoking



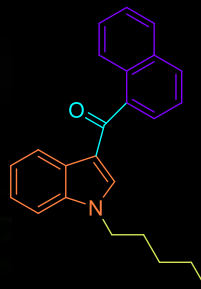
QPS Photo

- “Kronic”, “Spice”, “K2”
- Herbal incense, pot pourri, tea, pheromones, wine essence, impregnated paper, powders
- Recent trends shifting to vaping liquids

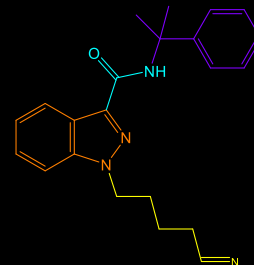
Synthetic Cannabinoids



JWH-018



Cumyl-4-Cyano-BINACA



LINKED GROUP

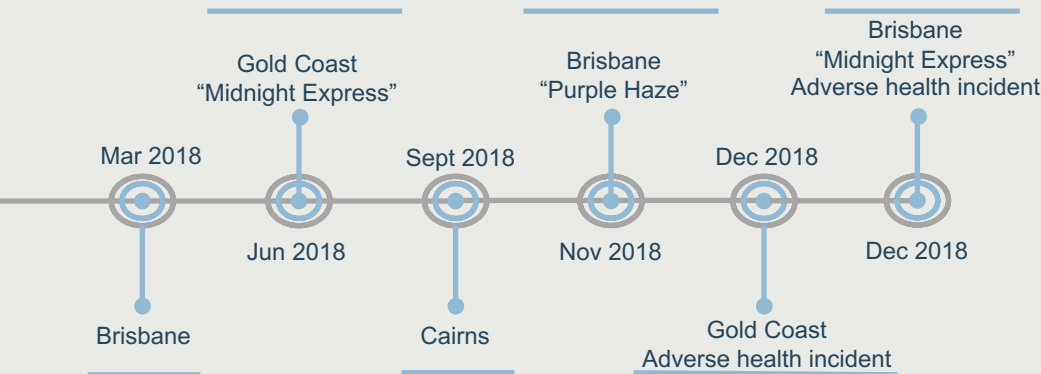
LINKER

CORE

TAIL

Source : European Monitoring Centre for Drugs and Drug Addiction
(modified)

- Derived from 2014 New Zealand patent – Stargate International
- Has been associated with deaths in Europe¹
- Found to be a pro-convulsant in animal studies at lower doses than other SCRA^s²



1. EMCDDA–Europol Joint Report on a new psychoactive substance: 1-(4-cyanobutyl)-N-(2-phenylpropan-2-yl) indazole-3-carboxamide (CUMYL-4CN-BINACA), 2017

2. Kevin, R., *et.al.*, Frontiers in Pharmacology, 2019

Synthetic Cannabinoids



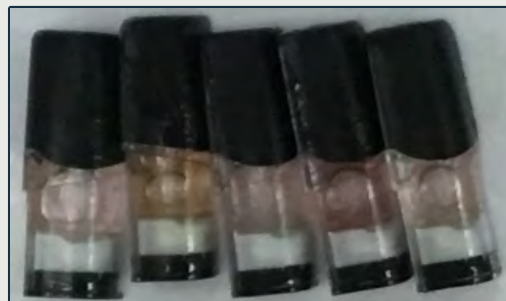
- Cumyl-4-Cyano-BINACA
- Cumyl Pegaclone
- 5-Fluoro Cumyl Pegaclone
- Mixtures



- 5-Fluoro Cumyl PINACA
- 4-Fluoro MDMB BINACA
reported as increasing contributory factor in deaths in USA³
- 5-Fluoro MDMB PICA
- Mixtures with cannabinoids and/or nicotine



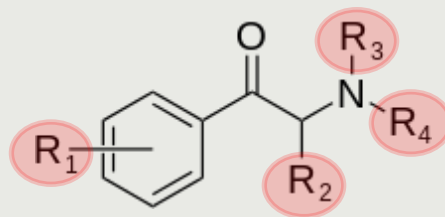
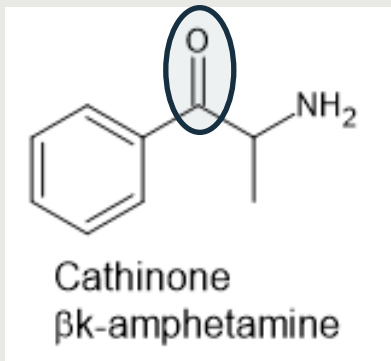
- THC
- 4-Fluoro MDMB BINACA
- 5-Fluoro MDMB PICA
- EMB-FUBINACA



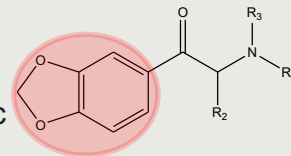
CBD and 4-Fluoro MDMB BINACA

Synthetic Cathinones

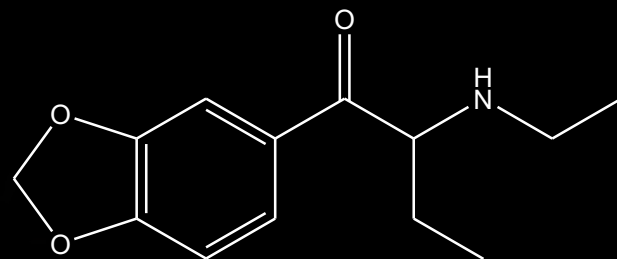
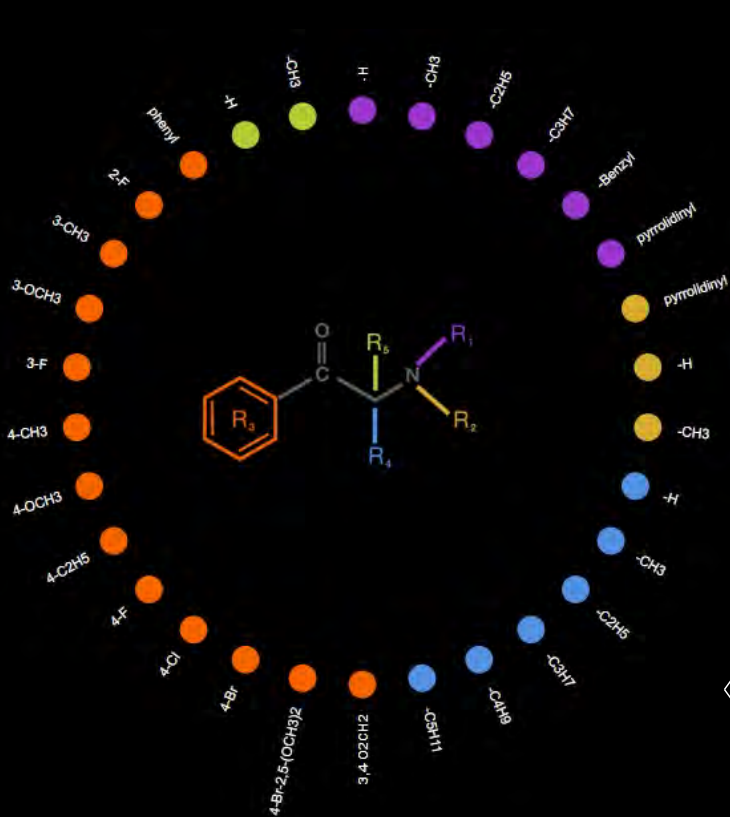
- *Catha edulis* or Khat grown largely in Africa
 - Leaves and young roots chewed for a stimulant effect
 - Cathinone principal psychoactive component



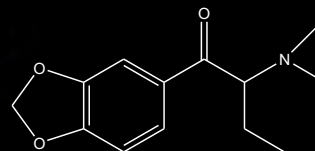
- Synthetic cathinones are modifications of this core cathinone structure
- Structurally related to amphetamines → stimulants
- Methylenedioxy (**MD**) cathinones are currently more common in Qld
 - β k-Methylenedioxyamphetamines : names typically end in “ylone”
 - e.g. Methylone, Ethylone, Butylone, Pentylone, Ephylone, Eutylone etc



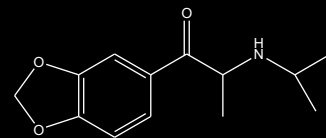
Synthetic Cathinones



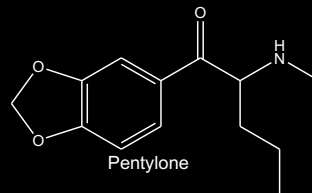
Eutylone



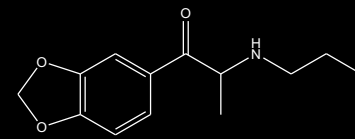
Dibutylone



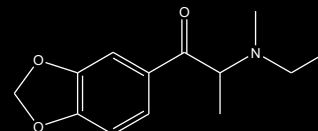
Isopropylone



Pentylone



Propylone



N-Methylethylone



Monkey Dust: New street drug turns users into Incredible Hulk and causes violent, psychotic outbursts

The synthetic drug costs as little as £2 and has been dubbed 'zombie dust' and 'cannibal dust' for its dark and negative effects

By Ishani Ghose

Published on : 07:28 PST, Aug 10, 2018



Monkey Dust: Warnings over party drug sweeping Australia after 'epidemic' in UK



By Sarah Swain | 9:53am Jan 8, 2019

FLAKKA FACTS

Flakka is a synthetic stimulant made from a substance similar to the banned cathinone called alpha-PVP.

AKA
zombie drug
gravel

EFFECTS
panic
hysteria

COST
R400 - R1 000

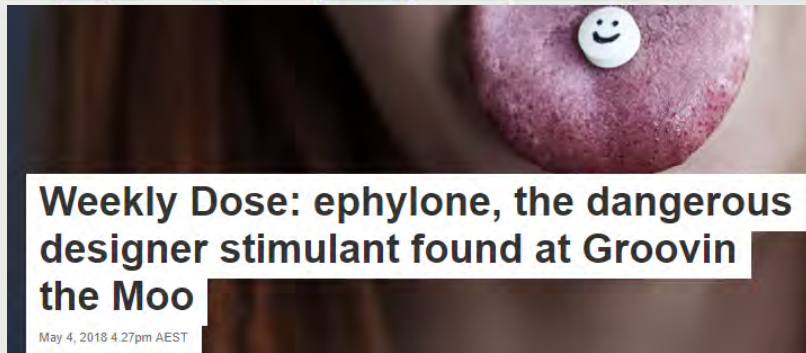
DRUG FORM
tablet
powder

10 times more powerful than cocaine

It takes five days for the drug to be flushed out of the body

Flakka is a highly addictive stimulant

Daily News



Weekly Dose: ephylone, the dangerous designer stimulant found at Groovin the Moo

May 4, 2018 4:27pm AEST

This summer's crap drug: n-ethylpentylone

Deadly new drug has reached Australia, pill testing reveals

Here's What Was In the Bad Batch of MDMA That Put 13 Kiwis in Hospital

Everything we know so far about N-ethylpentylone, the "cracky" drug that's started doing the rounds at New Zealand festivals.

- Often similar presentation to MDMA

N-Ethyl Pentylone / Ephylone

- A methylenedioxy cathinone
- First seen in Qld in Jan 2017
- Media coverage in Australia in 2018
- Associated with adverse health events
- Crystal, powders, capsules and tablets
- 2020: Rarely seen in Qld



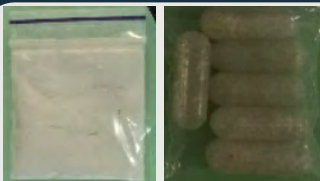
Ephylone



Irgacure 907 / MMTMP / Caccure 907 / MMMP

- First seen in QLD in 2016
- 118 grams with range of other cathinones
- Industrial chemical used as photoinitiator
- Structural similarities to cathinones
- Seen in international drug markets
- 2020: Rarely seen in QLD

MMTMP



Ephylone + MMTMP

Eutylone

Monday, 15 July 2019

Warning after drug 'eutylone' detected in testing

By John Gibb

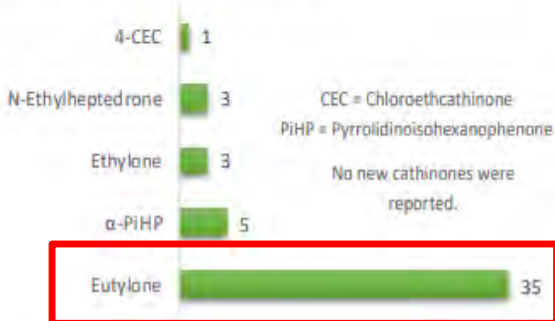
f 380 t 0 w

News > Dunedin New Zealand - Otago Daily Times

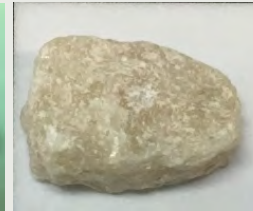
- Most recently emerging cathinone in Qld
- Following global trends
- Crystalline substance and mixed with MDMA in tablets

CATHINONES

THERE WERE **47** CATHINONE IDENTIFICATIONS THIS REPORTING PERIOD. EUTYLONE WAS THE MOST REPORTED CATHINONE ACCOUNTING FOR **74%** OF THE IDENTIFICATIONS.



Queensland



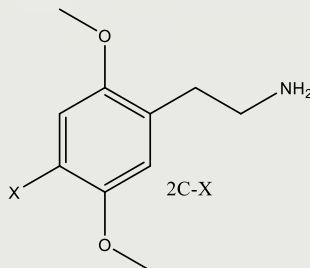
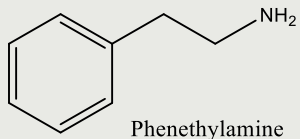
Reportedly bought as MDMA

Eutylone and MDMA

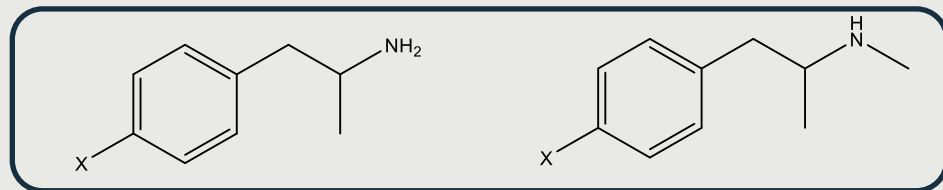
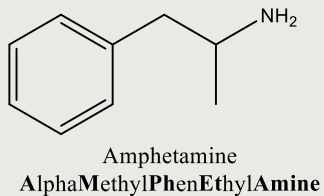
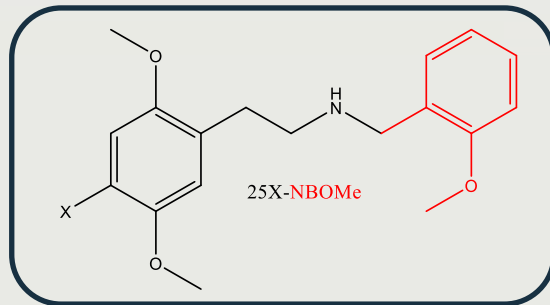


Phenethylamines

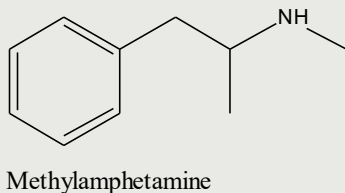
- Class including amphetamines



25X-NBOMe
X = Iodine, Bromine, Chlorine etc

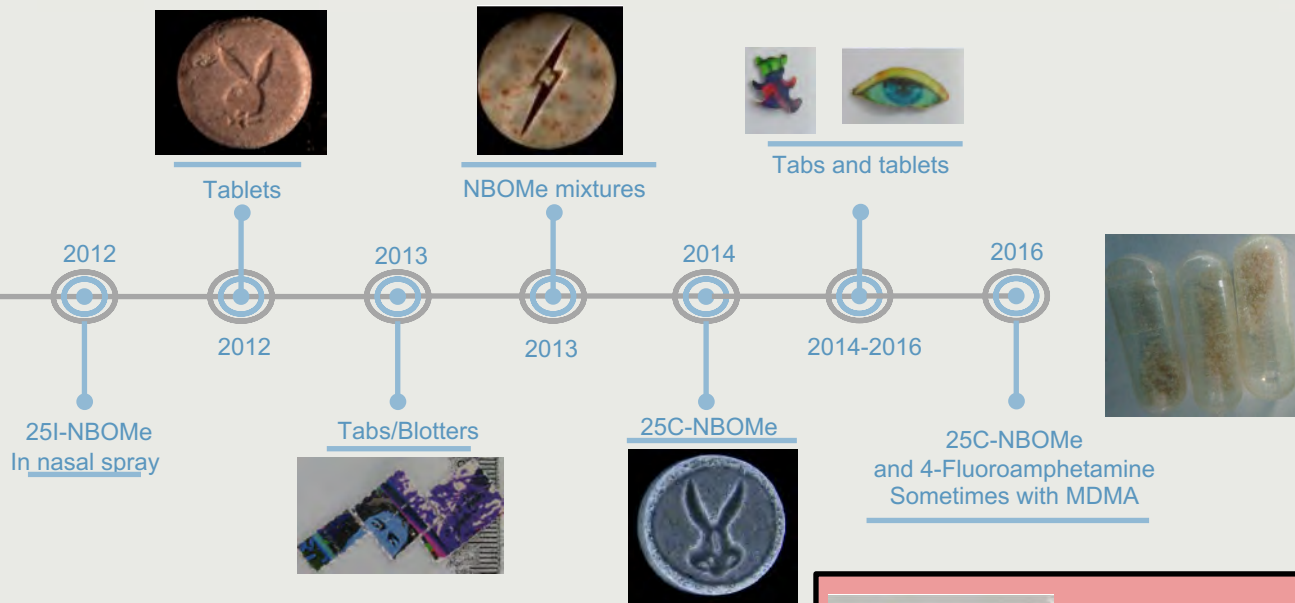


Halogenated Amphetamines X = Fluorine, Chlorine



NBOMes

- Various NBOMe compounds seen in Qld from 2012
- Rarely seen after 2017
- Combination of 4-fluoroamphetamine (4-FA) and 25C-NBOMe associated with adverse health effects



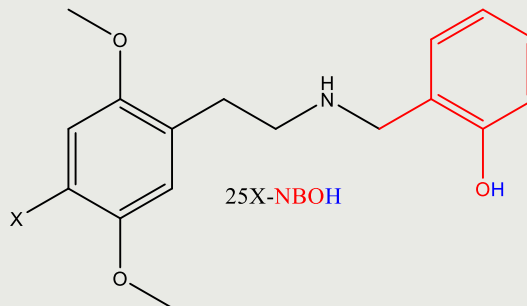
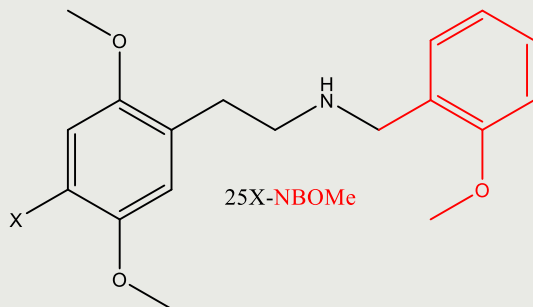
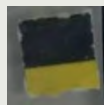
Recent detection
May 2020
4-FA and 25C-NBOMe

Visually similar to
MDMA crystal

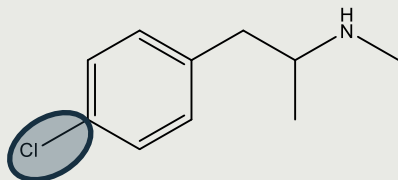
(Image: A pile of yellowish, crystalline powder.)

NBOHs

- 2017 : detection of 25I-NBOH on tabs
- Three different NBOHs have been detected
- Isolated to tabs – not seen in tablets
- Rarely seen in 2020



- Tablets containing 4-chloromethamphetamine in 2019
- Tablets reported in Romania and Austria in 2015
- Further seizure in Croatia in 2016
- Not seen on European market since then
- Proposed to be neurotoxic⁴
- Only one case in Qld



QLD



Europe⁴

Fentanyl Analogues

- Fentanyl from diverted pharmaceuticals seen sporadically for some time
- First high purity fentanyl and carfentanil powders in 2017
- 5 other fentanyl analogues detected in Qld, and 2 associated compounds
- Powder packaged with naloxone injection and instructions in case of overdose
- Rarely seen – isolated cases, no trends observed in seized drugs
- All seized heroin is screened for the presence for fentanyl / analogues

- Fentanyl
- Carfentanil
- Acetylfentanyl
- Methoxyacetylfentanyl
- Cyclopropylfentanyl
- Furanylfentanyl
- Fluorofuranylfentanyl

Fentanyl in Heroin

- Very rare
- 2 isolated cases
- No trends evident

Acetylfentanyl and fentanyl has been found unexpectedly in drugs in Sydney and more recently in regional areas of NSW in October 2020.

Use of these drugs can be life-threatening.

<https://www.health.nsw.gov.au/aod/public-drug-alerts/Pages/cocaine-or-ketamine-contains-fentanyl.aspx>

Queensland

- **U-47700**
 - Developed by Upjohn in 1970s
 - ~8x potency morphine
 - A range of U-compounds in drug market
 - only U-47700 seen in Qld
- **MT-45**
 - Developed by Japanese pharma in 1970s
 - ~equivalent potency to morphine
- **Kratom** (*Mitragyna speciosa*) [Not NPS in Qld]
 - Traditional use chewing leaves – stimulant
 - Powders/leaf extracts – opioid-like effects



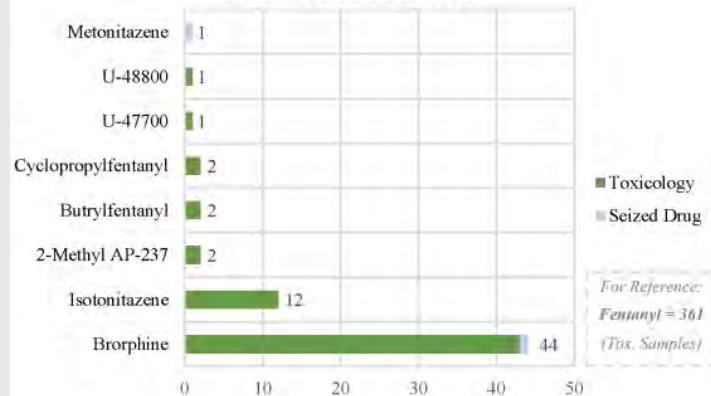
Internationally

COUNTERFEITS
Fake Oxycodone pills in US/UK
Not seen in QLD

- Tighter control of fentanyl and analogues leading to new opioids
- Isotonitazene - Reported comparable potency to fentanyl⁵
- Brorphine⁶ and etazene⁷

NPS Opioid Positivity

REF8



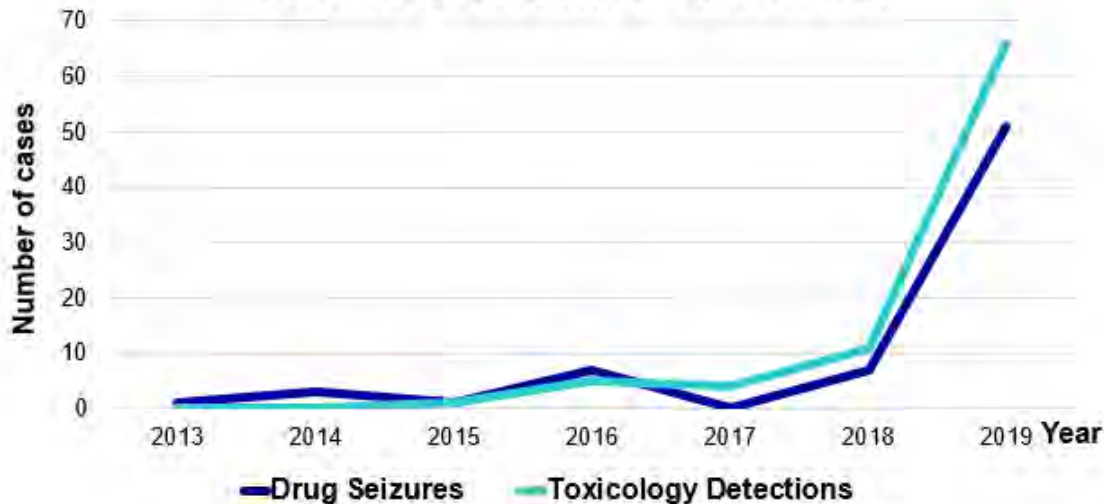
5. Blanckaert, P., *et.al.*, *Drug Testing and Analysis*, 2019.
6. Verougstraete, N., *et.al.* *Journal of Analytical Toxicology*, 2020
7. Siczek, M., *et.al.*, *Forensic Toxicology*, 2020
8. CFSRE NPS Discovery, NPS Opioids in the US, Trend Report: Q3 2020

Benzodiazepines (BZDs)

- Insight webinar : Designer Benzodiazepines in Qld : What's in fake "Xanax"?
- Scottish Drug Forum webinars on benzos
- Changing presentation of BZDs with alprazolam seen on tabs, powders and in liquids
- Increase in detections of designer BZDs driven by counterfeit pharmaceuticals



Etizolam Detections in Queensland



Oral doses and duration of action of designer benzodiazepines (TripSit FactSheets).

Compound	Dose (oral)		Duration of action	
Etizolam	Light	0.5-1 mg	Onset	10-40 min
	Common	1-2 mg	Duration	5-8 h
	Strong	2-4 mg +	After effects	6-24 h
Flualprazolam	Light	0.125-0.25 mg	Onset	10-30 min
	Common	0.25-0.5 mg	Duration	6-14 h
	Strong	0.5-1 mg	After effects	1-36 h
Flubromazolam	Heavy	1-2 mg		
	Threshold	80 µg	Onset	20-45 min
	Light	100-200 µg	Duration	3-6 h
Clonazolam	Common	200-400 µg	After effects	1-14 h
	Strong	400-600 µg +		
	Threshold	50-75 µg	Onset	10-30 min
	Light	75-200 µg	Duration	6-10 h
	Common	200-400 µg	After effects	1-12 h
	Heavy	500-1000 µg		

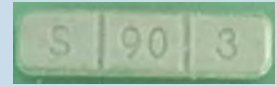
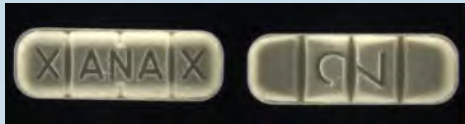
Etizolam

- Medicinal product in India, Italy, Japan
- Tabs, powder, tablets, liquids, confectionery

Flualprazolam

- Tabs, powder, liquid, tablets
- Mislabelling

- **Potential for lower dose BZDs – working with FSS Toxicology to maintain capability**
- FSS toxicology alerted us to co-detection of etizolam and flubromazolam before we observed in seized drugs
- Clonazolam has been identified in toxicology specimens – not yet seen in seized drugs



International “2mg alprazolam” tablets

Etizolam Alprazolam Flualprazolam Flubromazolam Clonazepam
Lidocaine Paracetamol Irgacure 907 5-Methoxy-N,N-Dibutyltryptamine
Amantadine Cyproheptadine Promethazine Zopiclone Doxepin



International “10mg diazepam” tablets Etizolam

- Public Health England alert July 2020 relating to increased hospitalisations and deaths – “blue staining around mouth”
- Recent alerts in New Zealand : <https://www.highalert.org.nz/>
- Counterfeit alprazolam tablets far more common than counterfeit diazepam in Qld



Drugs Detected

Etizolam Alprazolam

No drugs detected

Dosages (mg/tablet)

- Etizolam (1.6 – 4.4)
- Alprazolam (1.4 – 2.0)



Counterfeits of Australian pharmaceutical product

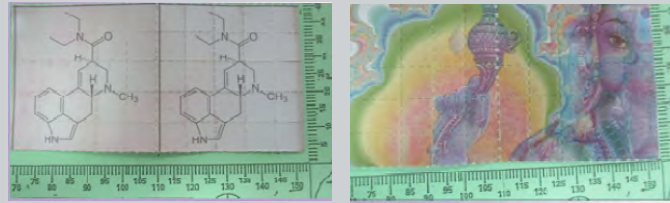
- In packaging very similar to genuine product
- Visually similar tablets containing different drugs within same bottle
- Can be difficult to visually determine whether counterfeit or genuine
- TGA alert and NSW Health alert online

Tryptamines

- Class includes LSD and dimethyltryptamine
- Tryptamine analogues have been seen in tablets and capsules – rare in 2020
- LSD analogues on tabs

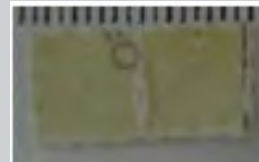
AL-LAD

Appeared on tabs in 2016 and 2017
One design had chemical structure of LSD
Modification of side chain



1P-LSD

Appeared on tabs 2019
Apparent chemical structure present
Close to 1-Acetyl-LSD (ALD-52) developed in the 1950s
~40% potency of LSD¹⁰



Dissociatives

- Ketamine and PCP
- Methoxetamine around 2011-2016
- Other ketamine analogues
- Most recent is **2-Fluorodeschloroketamine** (2-FDCK)
- White crystalline substance, by itself or mixed with ketamine
- Hospitalisations in Hong Kong re 2-FDCK¹¹



Cognitive Enhancers

- “NOOTROPICS” or “Smart Drugs”
- **Phenibut** – developed in 1960s as anti-anxiety drug / cognitive enhancer “Cosmonaut drug”
- CNS depressant
- Other adverse health effect incidents
- **Modafinil** analogues – “waking drug”
- **Racetams**
- What compounds are sold in Australia?

Mass school overdose investigation focuses on banned Russian drug

By staff reporters

Updated 22 Feb 2018, 7:23pm

- The proportion of NPS detections in Qld is small compared to other drugs
- Synthetic cannabinoids shifting to vaping products – potentially mixed with THC or nicotine
- Eutylone is most common cathinone – visually similar to MDMA or mixed with MDMA
- Recent detection of 4-FA and 25C-NBOMe in brown crystalline substance
- Increase in etizolam detections and counterfeit BZD pharmaceuticals - growing global concern
 - Dosage can be equivalent to many times expected dose
 - Contain mixtures of drugs or non-benzos e.g. cathinone or tryptamine
- Fentanyl is rare but are being monitored for presence as heroin adulterant
 - NSW alert about fentanyl/acetylfentanyl sold as or present in cocaine / ketamine
 - Monitoring for new non-fentanyl synthetic opioids emerging internationally
- Trends seen in Queensland may vary from those seen interstate or internationally
- Market can and will change – current trends may not apply next year
- Collaborative and proactive approach required to maintain knowledge and understand harms

Thanks



NCCRED

National Centre for Clinical
Research on Emerging Drugs



International Narcotics Control Board

Monitoring and supporting Governments' compliance
with the international drug control treaties



PROJECT ION

INTERNATIONAL OPERATIONS ON NEW PSYCHOACTIVE SUBSTANCES (NPS)

GLOBAL OPIOIDS PROJECT

OPERATIONAL PARTNERSHIPS TO INTERDICT OPIOID'S ILLICIT DISTRIBUTION & SALES



Thanks for joining us today!

Next week...**Wednesday 18 November 2020**

‘Bringing Trauma Informed Care to Working with
Men: A Practice Conversation’

James Hoey

Want to see previous webinars? Subscribe to our YouTube channel.

youtube.com/c/InsightQueensland

