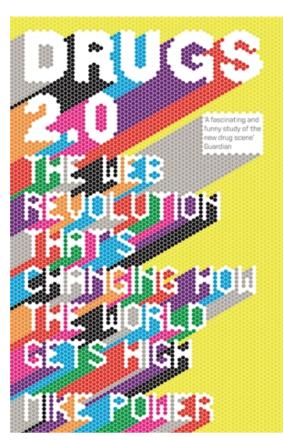


# New & Emerging Drug Trends

### What do clinicians need to know?



### **Dr Stephen Bright**



### What's In A Name?

# novel psychoactive pills substances





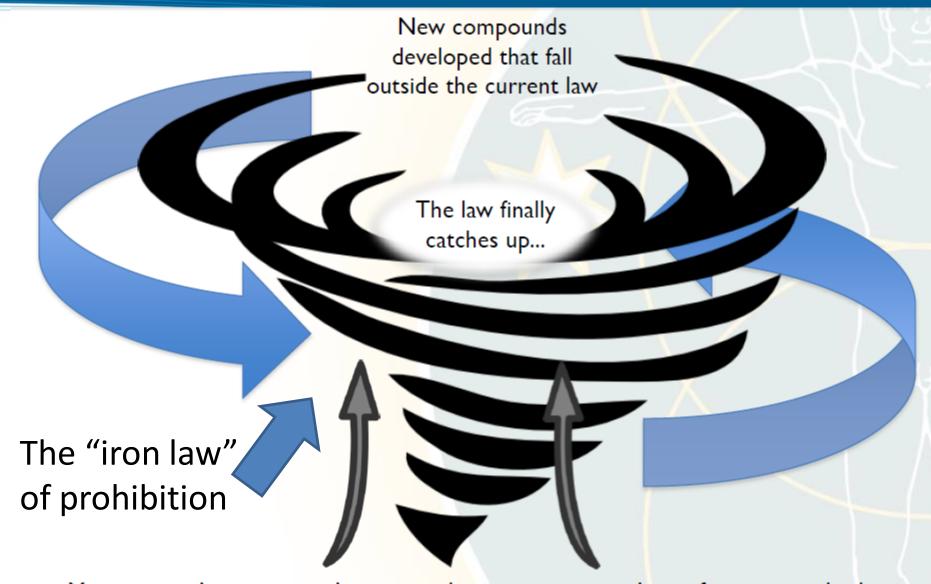


herbal highs

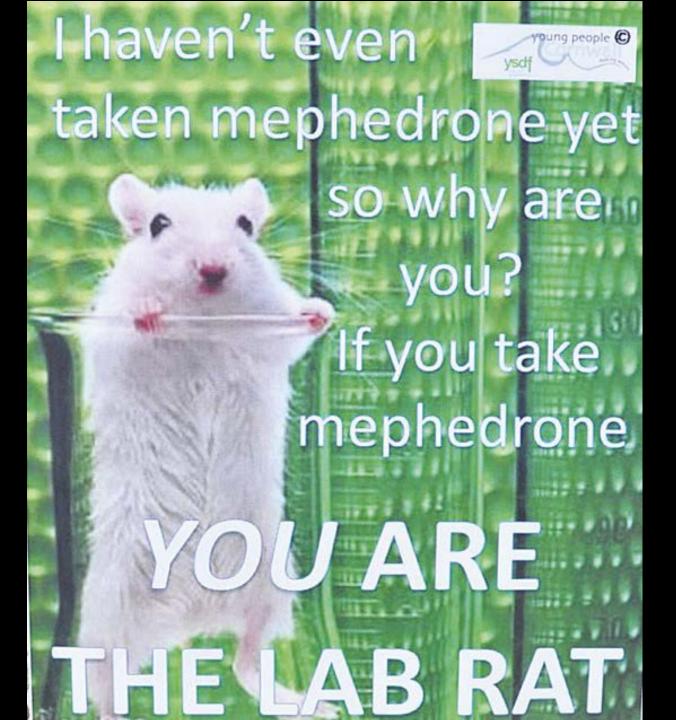
research chemicals



## The Vortex of Doom (Caldicott, 2016)

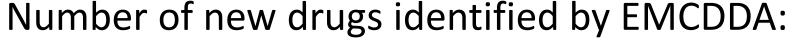


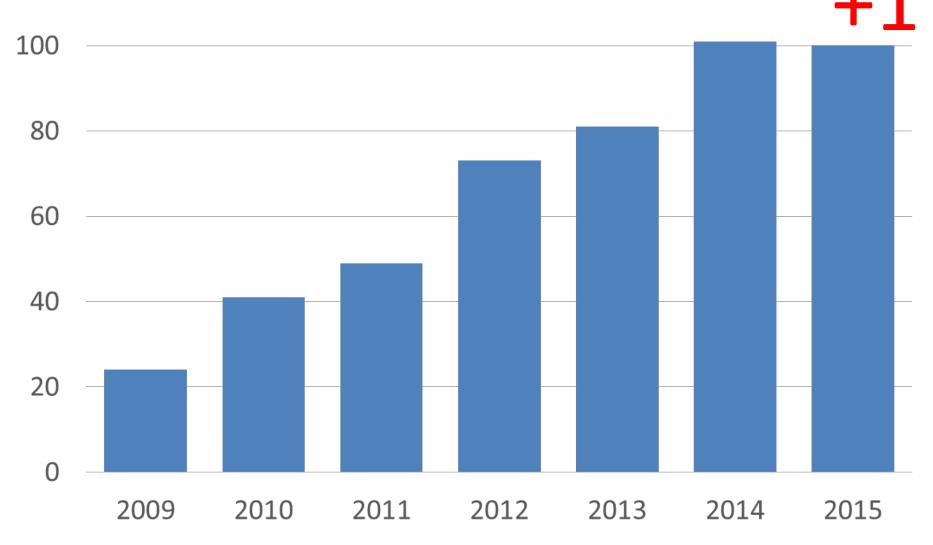
Young people increasingly exposed to growing number of compounds that have never been seen before



### P

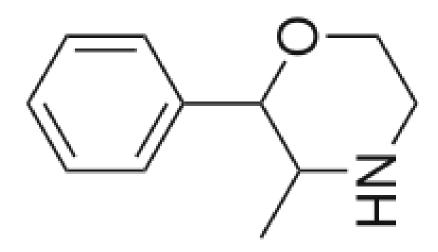
## Emerging Drug Trends







### Mike Powers - Phenmetrazine

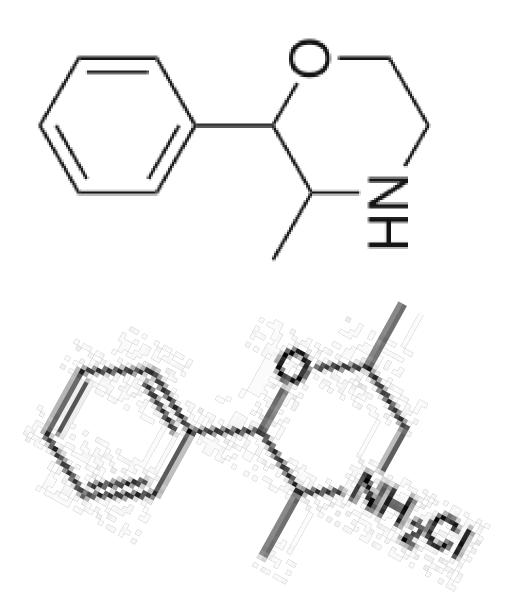








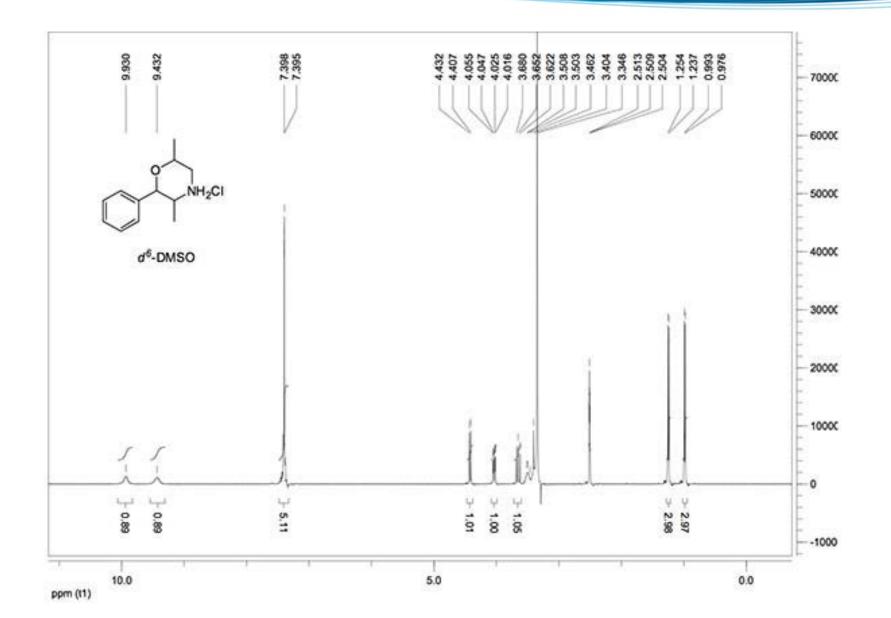
## Mike Powers - Phenmetrazine





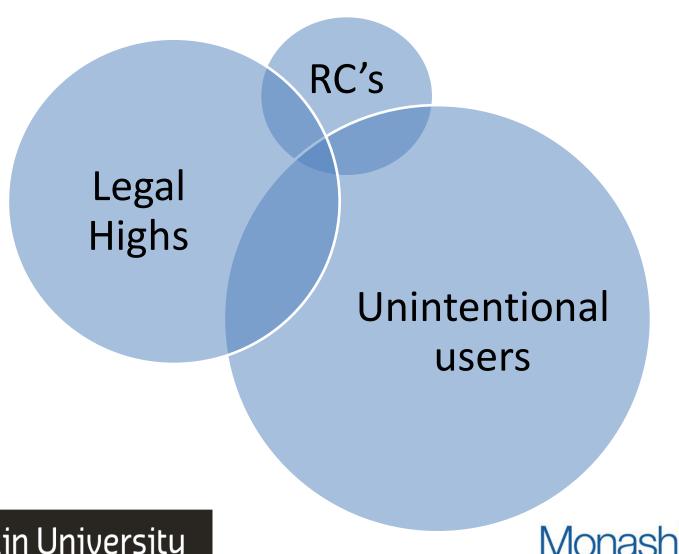


### Mike Powers - Phenmetrazine





## People who use NPS in Australia





**MonashHealth** 



### What Products are Available?

Synthetic cannabis





Powder & Pills (incl RC's)



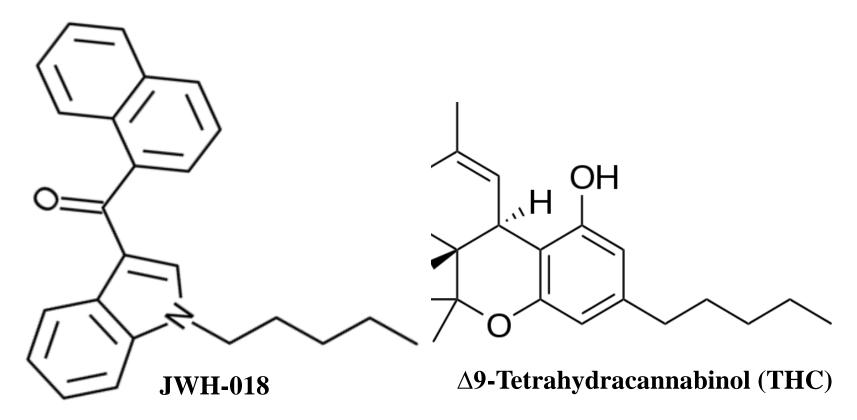




## Synthetic Cannabinoid Agonists

2005: Spice emerged in UK

2009: Chemical in Spice identified



### Kronic

2011: Kronic emerged as a new drug in Australia Produced in New Zealand







### Harms (pre-2012)

Reported side effects	Total	Serious
	% of 291	% of 6
No side effects reported	32	NA
Decreased motor coordination	38	100
Fast or irregular heartbeat	33	100
Dissociation	22	67
Dizziness	20	100
Paranoia	18	67
Confusion	18	83
Headache	18	83
Panic	14	83
Slurred speech	14	83
Sweating	14	67
Nausea or vomiting	9	83
Depression	4	50
Psychosis	4	50

0.3% sought emergency medical Rx

(Barratt et al, 2013)



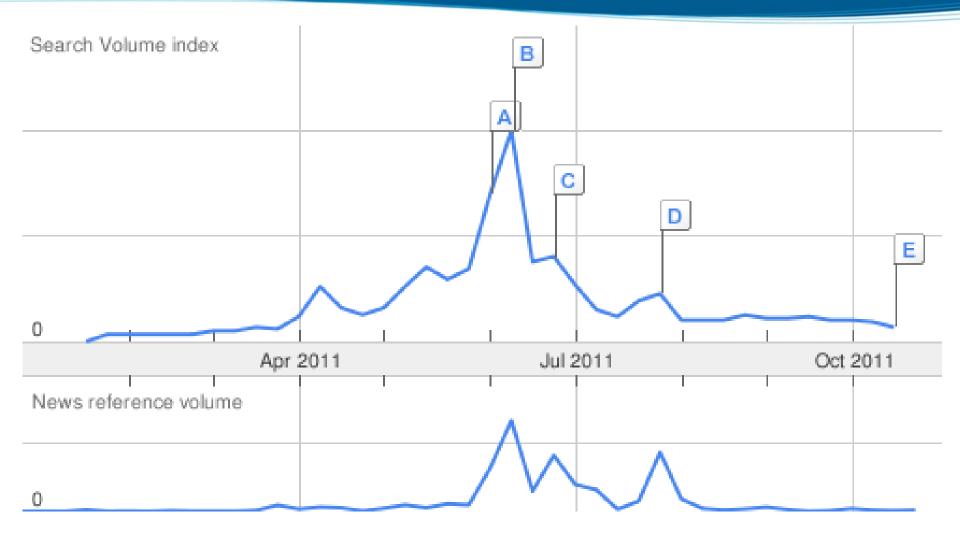
## First Legislative Action

WA government banned 7 synthetic cannabinoid agonists in June 2011:

- JWH-018
- JWH-073
- JWH-122
- JWH-200
- JWH-250
- CP 47,497
- The C8 Homologue of CP 47,49



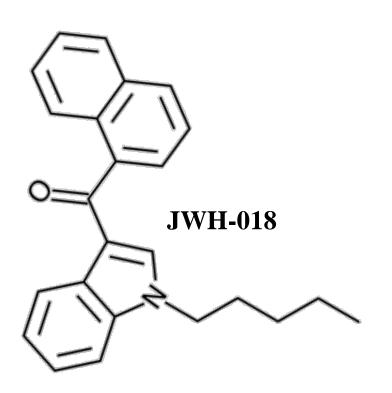
## Google Trends: "Kronic" Searches

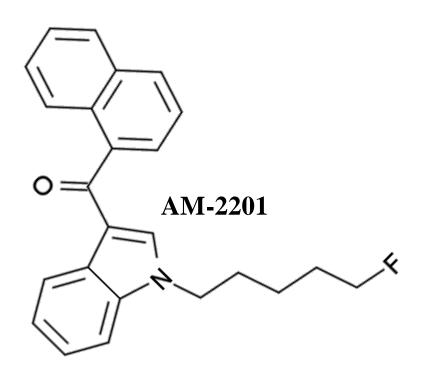


Bright, S. J., Bishop, B., Kane, R., Marsh, A., Barratt, M. J. (2013). Kronic hysteria: Exploring the intersection between Australian synthetic cannabis legislation, the media, and drug-related harm. *International Journal of Drug Policy, 24*, 231-237.



### New Chemicals





### **Further Legislative Actions**

### Federal:

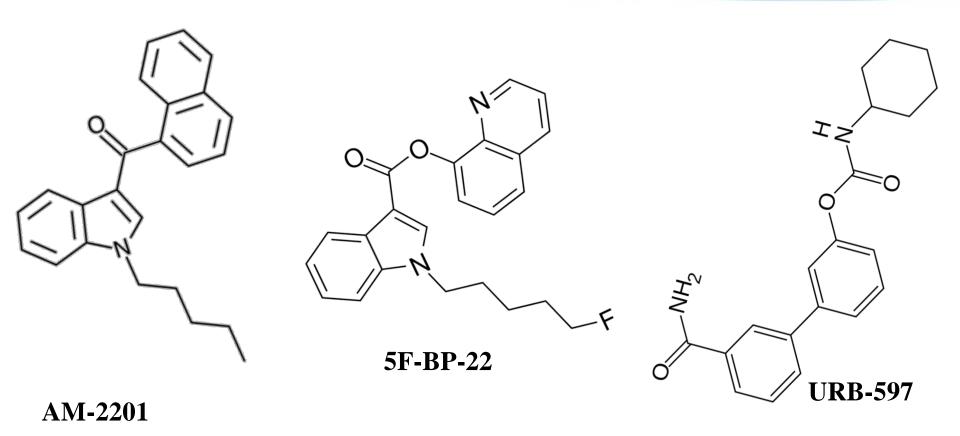
- July 2011: 7 individual chemicals
- May 2012: Broad groups + "Synthetic
   Cannabinomimetics"
- June 2013: Consumer law re: more individual chemicals

### State:

- 2011: WA (again), NSW, ACT, SA, NT & VIC
- 2013: TAS, QLD & NSW
- 2015: VIC & WA

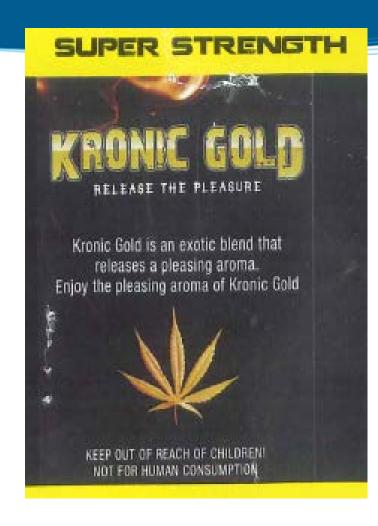


### More New Chemicals





New Local "Kronic"



### Home made: The case of "Marley"

#### Chief Health Officer, Victoria, Australia

Health home » Chief Health Officer » CHO health alerts » Synthetic cannabis safety warning

#### Synthetic cannabis safety warning - 29 November 2013

Status: Resolved

Date issued: 29 November 2013

Issued by: Dr Michael Ackland, Acting Chief Health Officer, Victoria

Issued to: Health professionals, emergency departments and intensive care units

#### **Key messages**

- Three males have been hospitalised in the last 36 hours with serious adverse reactions suspected to be associated with use of a product known as 'Marley' purchased in
  the Pakenham area of Melbourne. The precise chemical compound responsible for these events remains unknown.
- Synthetic cannabis is designed to copy the effects of cannabis but can include psychedelic drugs and other undisclosed chemicals not approved for human consumption and known to be harmful to human health
- · These products are available online and in limited retail outlets including sex shops.
- Be alert for patients presenting with agitation, confusion, seizures, vomiting, loss of consciousness, hyper/hypotension, myocardial ischaemia or myocardial dysfunction and check for use of synthetic cannabis or other synthetic drugs. Advise all patients to discontinue use and dispose of synthetic drug products.

#### What is the issue?

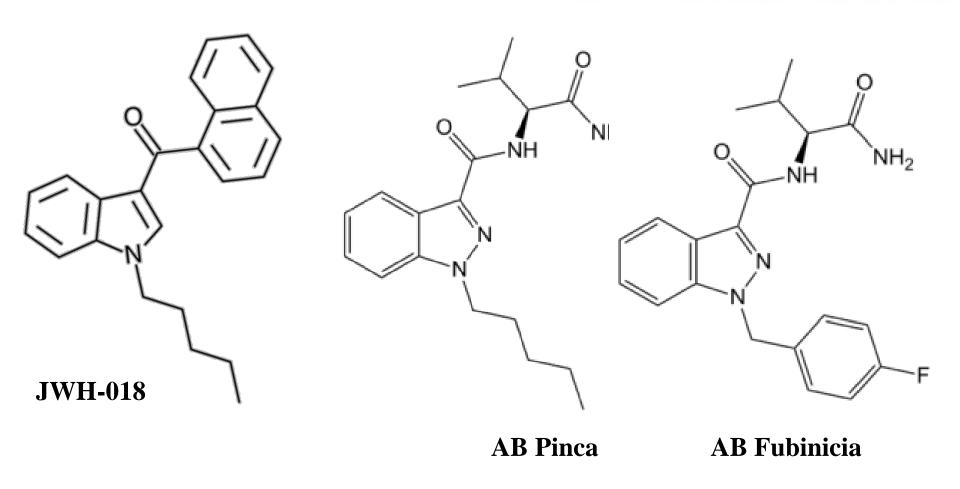
Synthetic cannabis is not approved as safe for human consumption and can induce unpredictable adverse effects such as seizures, agitation, increased heart rate and psychosis.

Often the chemical compounds contained within synthetic cannabinoids or other synthetic drug products are not specified, and remain unknown. Therefore it is difficult to identify causative agents for adverse effects and instigate appropriate treatments.

Similar products to 'Marley' include K2, Kronic, Ash Inferno, Black Widow and Slappa. . The Victorian Government is currently introducing legislation expanding the definition of illicit drugs to include synthetic drugs.



## Home made: The case of "Marley"





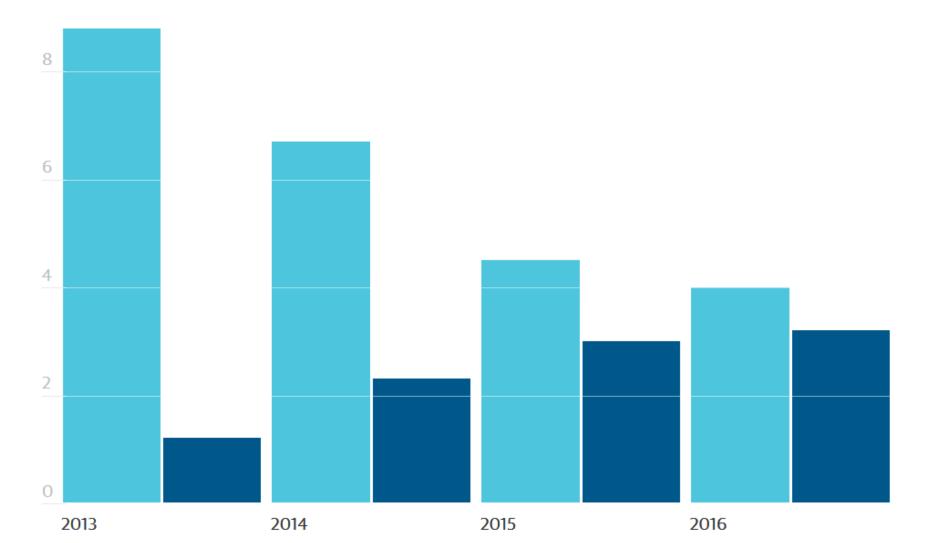
### Home made: The case of "Marley"

- Renal Failure
  - ?Chemicals?
  - Nitrate poisoning



### Harms (Australian 2016 GDS data)

- % purchased 'legal highs' in last 12 months
- % sought emergency medical treatment in last 12 months due to 'legal highs'



## Synthetic Cannabis Withdrawal

More complex that natural cannabis

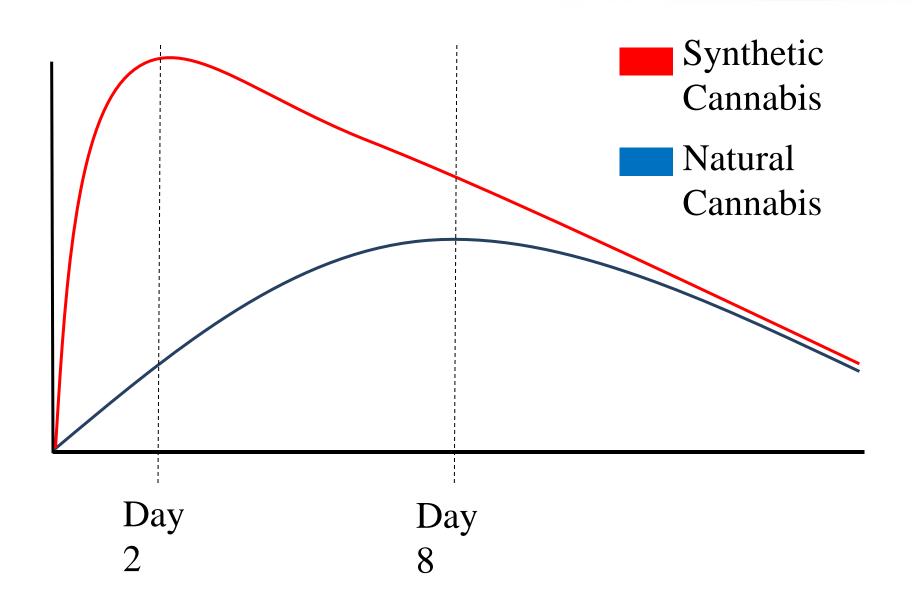


## Synthetic Cannabis Withdrawal

- More complex that natural cannabis
- More acute and severe that natural cannabis
  - CWAS scores peak at 2 days (cf 7 − 10 days)

(Macfarlane & Chrisite, 2015)

### **CWAS Scores**



## Synthetic Cannabis Withdrawal

Phenomenological study of 6 people dependent on SC "known" to contain 5f-AKB48 & 5F-PB-22

(Van Hout & Hearne, in press)

Sx: nausea, vomiting, sweats, cold shivers, racing heart, weakness, emotionally labile, agitation, ...

"Every 2-3 hours it's like a routine... If you told me I'd be dead tomorrow morning from [it] I still wouldn't give it up"

"I would do it on my own ... [it] just gets a bit much on me"

## Synthetic Cannabis Withdrawal

- More complex that natural cannabis
- More acute and severe that natural cannabis
  - CWAS scores peak at 2 days (cf 7 − 10 days)
  - Cases of psychosis and seizures

(e.g., Nacca et al., 2013)

- Consider the possibility of in-patient withdrawal
  - Inpatient Rx was deemed necessary for 53% of people seeking community treatment in NZ

(Macfarlane & Chrisite, 2015)

### Rx Guidelines in an Acute Setting

Treatment recommendations similar to cannabis:

- 1. in acute setting, treat Sx (e.g., benzodiazepines for anxiety)
- 2. most Sx will resolve spontaneously
- some with previously diagnosed psychotic disorders may not resolve as quickly
- 4. no specific treatments developed for chronic use/withdrawal, treat symptomatically

(Castellanos & Thornton, 2012)

## Synthetic Cannabis - Epidemiology

Who is most likely to use synthetic cannabis given all of these unpleasant side effects?

Survey of 53 Australian synthetic cannabis users in 2013 from Global Drug Survey:

- 80% male
- Median age of 23
- 66% were employed
- Median age of first use of SC at 21
- 99% reported using natural cannabis
- 93% preferred natural cannabis

(Winstock & Barratt, 2015)



## Synthetic Cannabis - Epidemiology

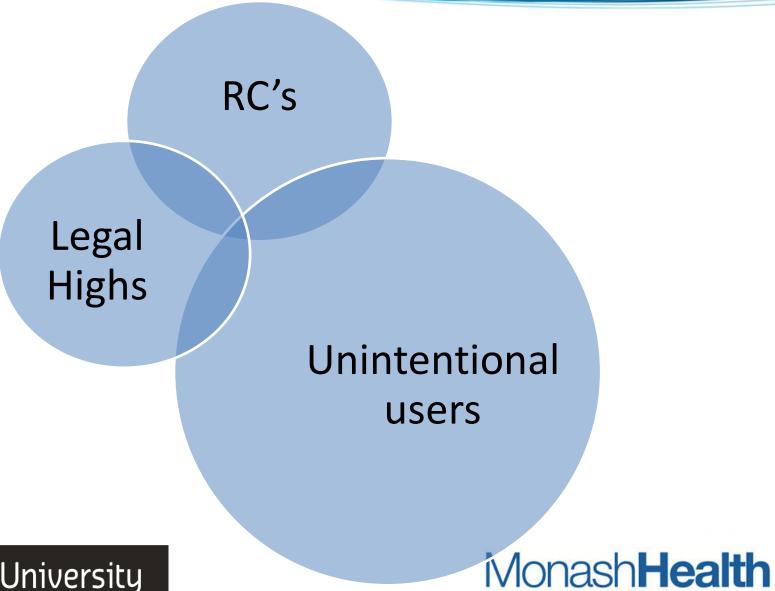
Of those who preferred it to natural Cannabis, why did they prefer it?

- More intense effect & shorter duration (58%)
- Easier to get than cannabis (19%)
- Avoid Urine Screens (15%)

(Winstock & Barratt, 2015)



## Australian EPS/NPS users





### Research Chemicals

Methoxetamine (MXE)

"Overdose pair had luck and an expert on their side"

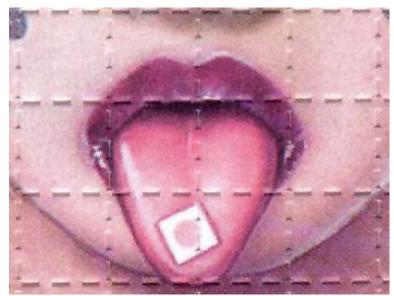
(Canberra Times, April 13 2013)

**NBOMe** series

"NSW teen dies after taking LSD"

(National Nine News, December 6 2012)





### Possible Unintentional Consumption

### **Ketamine**

Methoxetamine

3-Meo-PCP

### **Heroin**

Acetyl-fentanyl (10x)

MT-41 (hearing loss)

4FIB-fentanyl (4FIBF)

U47700

W-18 (?10,000)

\*\*Carfentanil\*\*

### **MDMA**

**BK-MDMA** 

Mephedrone

2C-B, 2C-I

**MDPV** 

**PMA** 

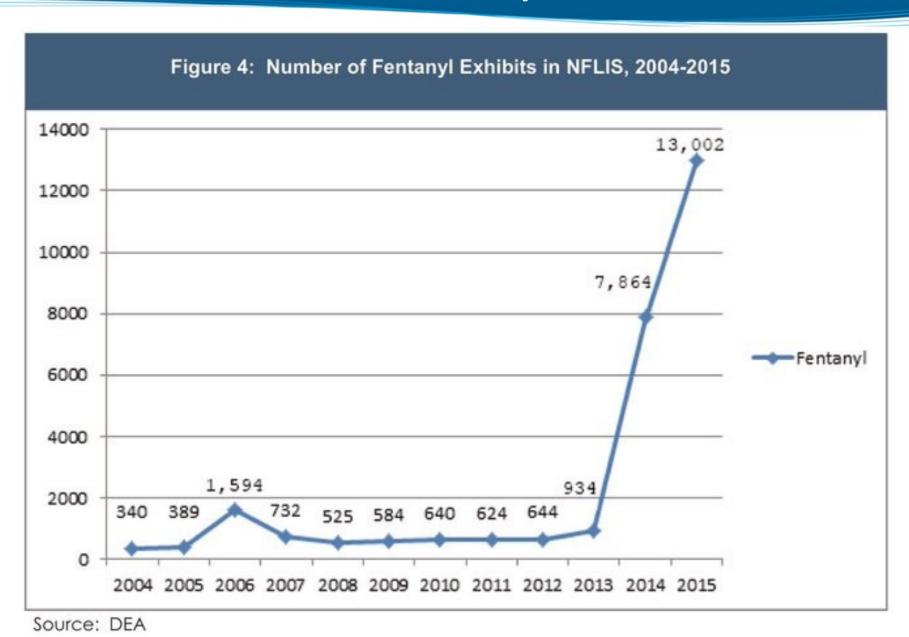
### **LSD**

2C-E

DOM, DOB, DOI

**NBOMe** series

## Counterfeit Opiate Pills



# Other scary stuff...

### Alprazolam - 500mg

500mg of pure imported alprazolam. Includes express post. Inform yourself on proper safety and dosing before handling this product. This product is usually dissolved into a propylene glycol solution. You should avoid eyeballing your dose in the powder form as you may easily consume too much and end up sick or over-sleeping. Submit your ENTIRE ADDRESS IN CAPITAL LETTERS in the following f...

Sold by Dimercurio - 85 sold since Aug 26, 2015

Vendor Level 7

Trust Level 5

	Features		Features	
Product class	Physical package	Origin country	Australia	
Quantity left	Unlimited	Ships to	Australia	
Ends in	Never	Payment	Escrow	

Purchase price: AUD 250.07

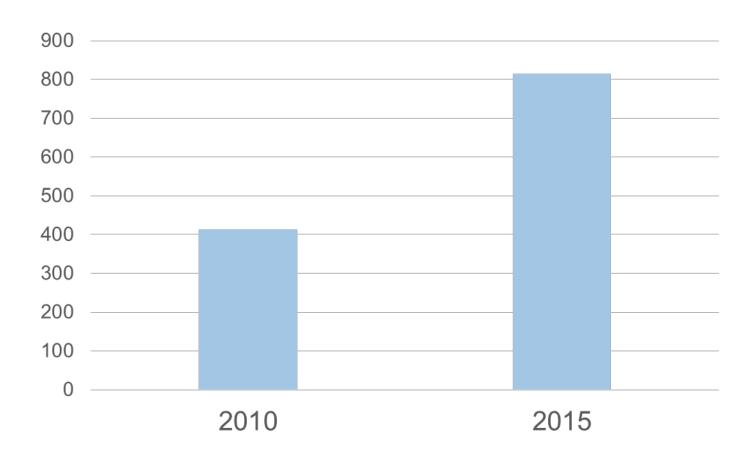
Qty: 1 Buy Now Queue



0.3149 RTC

### Unintentional Users

The number of people presenting at NSW hospitals related to their use of ecstasy has almost doubled in the past six years



### Assessment

The primary drug of choice that the person is presenting for may not be the most likely to cause them harm

- conversation around other drugs the person is using

The person's primary drug of choice may contain new and novel drugs that could cause harm

- conversation about new and emerging "adulterants" they may be unintentionally ingesting and the

### Psychoeducation

# Just Say No to

Drugs





**MonashHealth** 

### Psychoeducation

# Just Say Know to

Drugs



### www.erowid.org



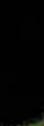






Erowid Monthly ∢NEW What's New Donations About











### **EROWID**

Documenting the Complex Relationship Between Humans & Psychoactives









Plants & Drugs Mind & Spirit Freedom & Law Culture & Art







### **Psychoactive Chemicals**

Psychoactive Chemicals are chemicals which have mind- or emotion-altering properties. These chemicals range from the common to the extremely uncommon and include chemicals with a long history of use as well as those with little to no track record.



NAME	OTHER NAMES	EFFECTS
<u>AB SINTHE</u>	Green Fairy	
<u>ACETYLFENTANYL</u>		Pain Killer
<u>ADRENOCHROME</u>	Pink adrenaline	
AET		Psychedelic Tryptamine
<u>ALCOHOL</u>	Beer, Wine, Liquor	Depressant
alpha-PVP	Flakka, Gravel	Euphoric Stimulant
<u>AMITRIPTYLINE</u>	Elavil	Anti-depressant; Sedative
<u>AMPHETAMINE</u>	Speed	Stimulant
AMT	IT-290	Psychedelic Tryptamine
AYAHUA SC A	Yage	Psychedelic Brew
<u>BARBITURATES</u>		Depressant
BK-MBDB		Euphoric Empathogen
BROMO-DRAGONFLY	3C-Bromo-Dragonfly	Psychedelic Phenethylamine
BUFOTENIN	Toad Venom, 5-Hydroxy-DMT	Psychedelic Tryptamine
<u>BZ</u>		Anti-cholinergic Psychedelic
<u>BZP</u>	Piperazine, A2	Stimulant
CAFFEINE	Coffee, Tea	Stimulant

DET		Psychedelic Tryptamine
DIPT		Psychedelic Tryptamine
<u>DMT</u>	Dimitri	Psychedelic Tryptamine
<u>DOB</u>	Bob, Dr. Bob	Psychedelic Phenethylamine
DOC		Psychedelic Phenethylamine
DOI		Psychedelic Phenethylamine
<u>DOM</u>	STP	Psychedelic Phenethylamine
<u>DPT</u>		Psychedelic Tryptamine
<u>DXM</u>	Robo, Tussin	Dissociative, Cough Suppressant
<u>EPHEDRINE</u>	Mini Thins	Stimulant
<u>ETHER</u>		Anaesthetic Gas
<u>ETHYLCATHINONE</u>	ethyl c at	Stimulant
<u>ETHYLENE</u>		Anaesthetic Gas
<u>ETHYLPHENIDATE</u>		Stimulant
<u>GHB</u>	G	Depressant
<u>GHV</u>		Depressant
<u>HARMALA</u>	Haoma, Harmine, Harmaline	MAOI
<u>HEROIN</u>	Horse	Opiate
<u>HYPOCRETIN</u>	Orexins	Hormone
<u>IAP</u>		Psychedelic Amphetamine
<u>IBOGAINE</u>		Psychedelic
<u>INHALANTS</u>		
<u>KETAMINE</u>	K, Special K	Dissociative, Anaesthetic
<u>LSA</u>	LAA, LA-111, Lysergamide, Ergine	Psychedelic
LSD	Acid, L	Psychedelic
<u>LSZ</u>		Psychedelic
MA OIs		
MBDB	Eden, Methyl-J	Psychedelic Amphetamine
mC PP	CPP, 3-CPP	Stimulant



Plants & Drugs ▼

Mind & Spirit ▼

Freedom & Law V

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Photo @ Erowid.org

Library ~

### **MDMA**

### COMMON & BRAND NAMES

Ecstasy; E; X; XTC; Rolls; Beans; Adam; Molly

### EFFECTS CLASSIFICATION

Euphoric Empathogen; Stimulant; Phenethylamine

### CHEMICAL NAME

3,4-methylenedioxymethamphetamine

### DESCRIPTION

MDMA is one of the most popular recreational psychoactives, most commonly sold as "ecstasy" (usually tablets) or "molly" (usually crystals). It is known for its empathogenic, euphoric, and stimulant effects, and has also been used in psychotherapy.

### CAUTION

Ecstasy tablets are notoriously impure, often containing chemicals other than MDMA. See Ecstasydata.org for pill testing results.

















In 2016, some ecstasy tablets containing dangerously high doses of MDMA have been found in the EU. The slang name "molly" is traditionally used to refer to pure MDMA. However, other chemicals such as ethylone, methylone, and MDPV are often sold as "molly".



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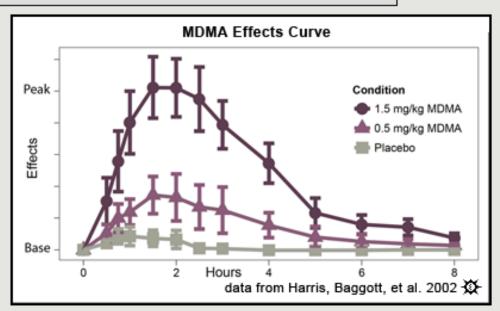
Library \*

### MDMA

Effects by Erowid

Caution: Reactions and experiences may vary dramatically from person to person. [see below]

MDMA Duration Oral				
Total Duration	3 - 5 hrs			
Onset	20 - 90 mins			
Coming Up	5 - 20 mins			
Plateau	2 - 3 hrs			
Coming Down	1 - 2 hrs			
After Effects	2 - 24 hrs			
Hangover / Day After	2 - 72+ hrs			





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### **EFFECTS LIST** =

### POSITIVE

- mild to extreme mood lift, euphoria
- increased willingness to communicate
- increase in energy (stimulation)
- ego softening
- decreased fear, anxiety, and insecurities
- feelings of comfort, belonging, and closeness to others
- feelings of love and empathy
- o forgiveness of self and others
- a sense of inner peace and acceptance of self, others, and the world
- increased awareness & appreciation of music
- o increased awareness of senses (taste, smell, touch, hearing, vision)
- increased tactile sensation (pleasure from the sense of touch and being touched)
- life-changing spiritual experiences
- sensations bright and intense
- urge to hug and kiss people
- analgesia, anti-nocioception, decreased pain perception

### NEUTRAL

- decreased appetite
- visual distortion
- o rapid, involuntary eye jiggling (nystagmus)
- mild visual hallucinations (uncommon)
- moderately increased heart rate and blood pressure (increases with dose)
- restlessness, nervousness, shivering
- · change in body temperature regulation
- upwellings of unexpected emotion, emotional lability
- strong desire to do or want more when coming down

### NEGATIVE

(negative side effects increase with higher doses and frequent use)

- inappropriate and/or unintended emotional bonding
- anxiety or paranoia (less common than opposite)
- o agitation (less common than opposite)
- o tendency to say things you might feel uncomfortable about later
- mild to extreme jaw clenching (trisma), tongue and cheek chewing, and teeth grinding (bruxia)
- o difficulty concentrating & problems with activities requiring linear focus
- short-term memory scramble or loss & confusion
- o short periods of swooning, or disconnection from the external world, usually at very high doses or during brief blasts of intense rushing while coming up.
- impaired ability to focus eyes / blurred vision (related to ny stagmus and dilation)
- muscle tension
- o insomnia, inability to fall as leep when physically tired
- erectile disfunction and difficulty reaching orgasm
- increase in body temperature, hyperthermia, dehydration (drink water)
- hyponatremia (don't drink too much water)

### Harm Reduction for NPS

When trying a new tab, pill, or powder:

Reagent test kits

Never be the first person in your group to use

Always start off small:

- Your first dose should only be a 1/4 dose
- Wait for at least 90-120 minutes before re-dosing

Only use one drug at a time

Never use alone

Use in a safe and familiar place

Don't drive, swim, play with knifes or engage in other risky activities while under the influence of a drug

Make sure you're in the right head space

Plan ahead so that you have some downtime to recover

# Clinical signs and Sx

### **Acute settings**

**Presentation:** Ataxia, Tachycardia, Arrhythmia, Hypertension, Hyperthermia, Rhabdomyolysis, Kidney Failure, Nausea, Anxiety, Agitation, Confusion, and Paranoia.

### **Assessment**

- Lab results?
- Clinical presentation & careful questioning

Treatment: Similar to prototype drug

Benzo (<u>not beta-blockers</u>), Antipsychotics, Cooling,
 IV Saline (Mas-Morey et al. 2012)

### SURFACE WEB

Bing

Google

Wikipedia

Academic Information

DEEP WEB

Medical Records

Legal Documents

Scientific Reports

Subscription Information

Contains 90% of the information on the Internet, but is not accessible by Surface Web crawlers.

Social Media

Multilingual Databases

Financial Records

Government Resources

Competitor Websites

Organization-specific Repositories

# (DARK WEB)

A part of the Deep Web accessible only through certain browsers such as Tor designed to ensure anonymity. Deep Web Technologies has zero involvement with the Dark Web.

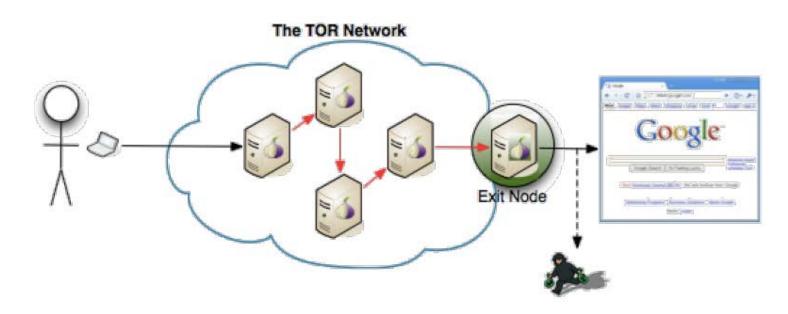
Illegal Information TOR-Encrypted sites

Political Protests

Drug Trafficking sites Private Communications

- Darknet markets exist on the TOR network
  - Must know the exact address to access market
  - Markets sometimes require referral
- Anonymous currency BitCoin is used
  - Highly fluctuating

(Van Buskirk, 2006)



# Background – Typical purchasing

### Step 1: Commit to buy listing

Bitcoins are held in 'escrow' by the marketplace

### Step 2: Retailer receives order

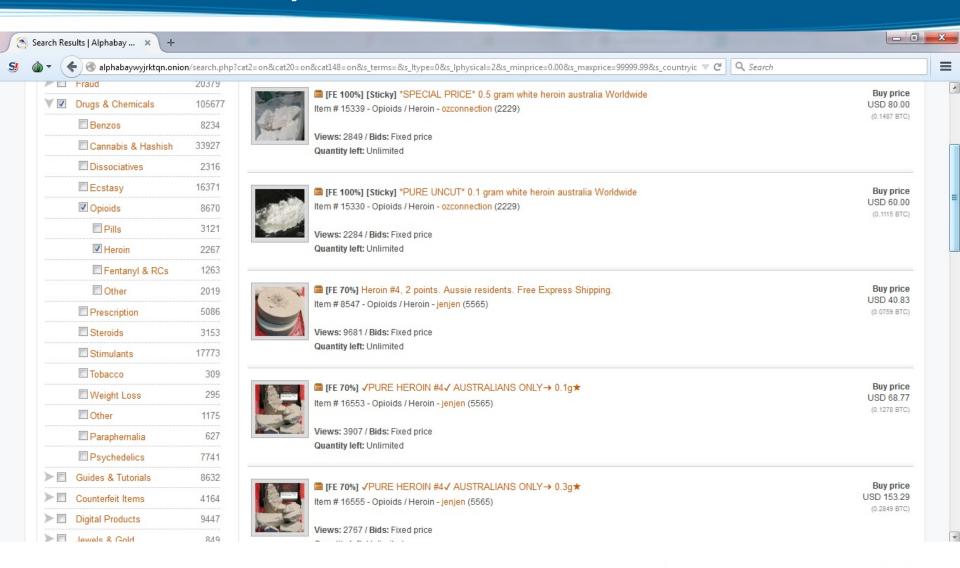
Retailer sends out package and marks order as 'sent'

### Step 3: Customer receives package

Marks order as received

### Step 4: Funds are released to retailer

(Van Buskirk, 2006)







[FE 100%] [Sticky] \*SPECIAL PRICE\* 0.5 gram white heroin australia Worldwide

Item # 15339 - Opioids / Heroin - ozconnection (2229)

Views: 2849 / Bids: Fixed price Quantity left: Unlimited Buy price USD 80.00 (0.1487 BTC)

10

[FE 100%] [Sticky] \*PURE UNCUT\* 0.1 gram white heroin australia Worldwide

Item # 15330 - Opioids / Heroin - ozconnection (2229)

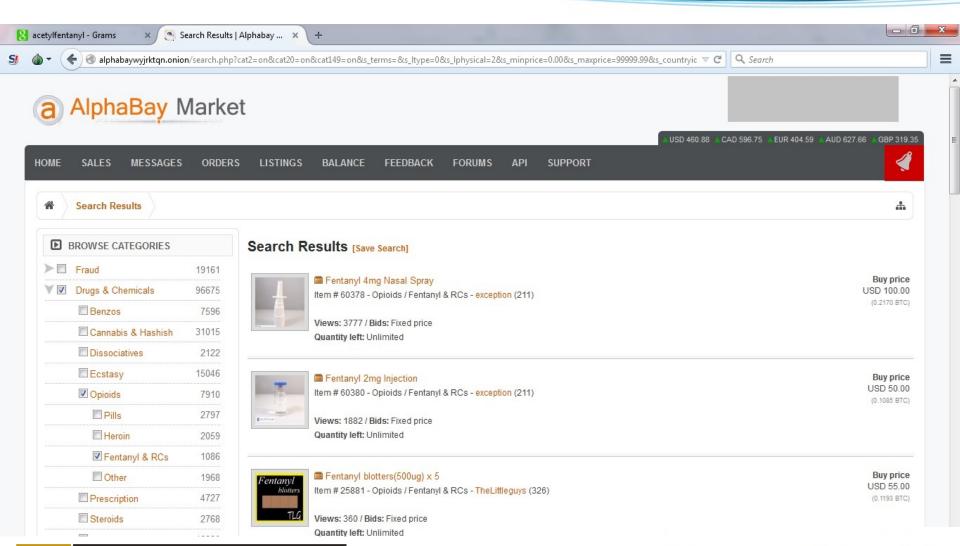
Views: 2284 / Bids: Fixed price Quantity left: Unlimited Buy price USD 60.00 (0.1115 BTC)

[FE 70%] Heroin #4, 2 points. Aussie residents. Free Express Shipping.

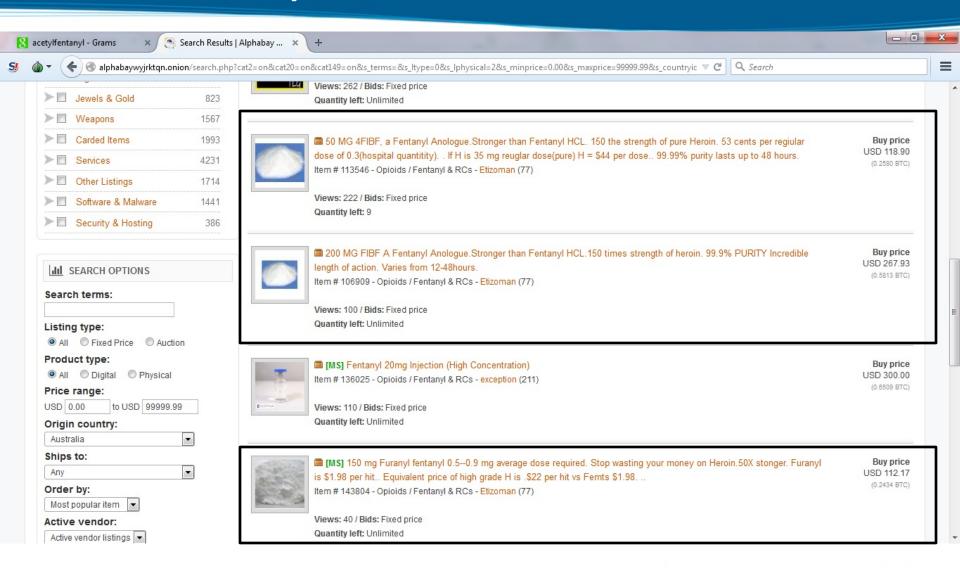
Item #8547 - Opioids / Heroin - jenjen (5565)

Views: 9681 / Bids: Fixed price Quantity left: Unlimited Buy price USD 40.83 (0.0759 BTC)

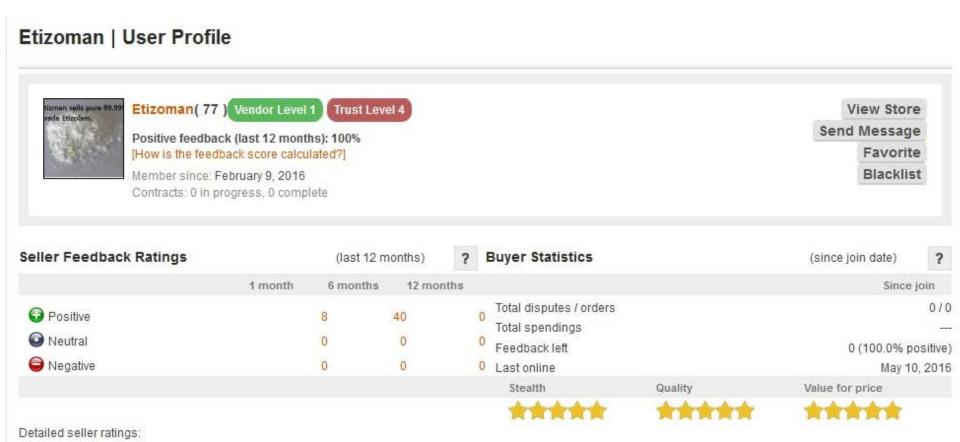




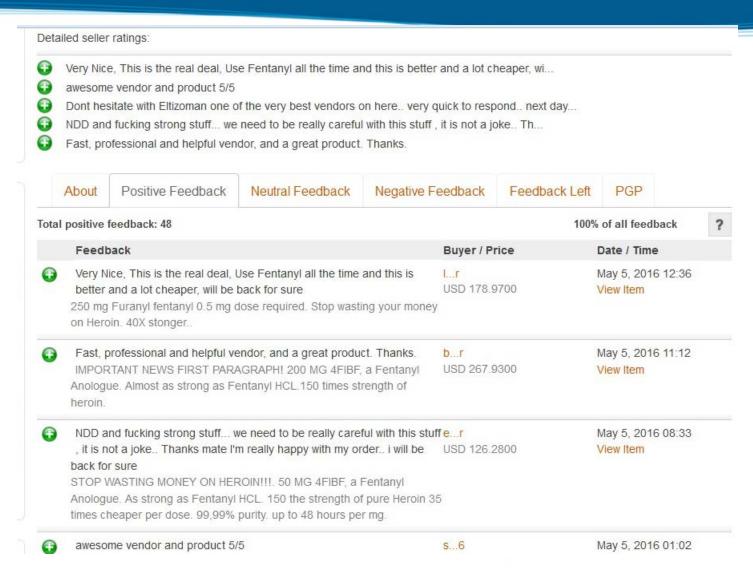


















STOP WASTING MONEY ON HEROIN!!!. 50 MG 4FIBF, a Fentanyl Anologue. As strong as Fentanyl HCL. 150 the strength of pure Heroin when including duration time. 150 would get you 1 day "pure H" This will last you 3 weeks at least if used properly

This is 65-85 doses!<--I've put this at the top to ensure people who don't read my warnings that they understand the potency. Snort a quarter match stick approx. This is 4Fibf Fentanyl. Every person who has purchased this has loved it. I've taken it every day for months and this stuff is the best opioid I've ever had. The feeling is fairly close to heroin with a lesser rus...

Sold by Etizoman - 12 sold since Feb 23, 2016 Vendor Level 1 Trust

Trust Level 4

	Features		Features
Product class	Physical package	Origin country	Australia
Quantity left	Unlimited	Ships to	Australia
Ends in	Never	Payment	Escrow

EMERGENCY FRIDAY DELIVERY SAME DAY - 1 days - USD +74.78 / item

Purchase price: USD 114.87

Qty: 1 Buy Now Queue

0.2525 BTC



@stephenjbright MonashHealth

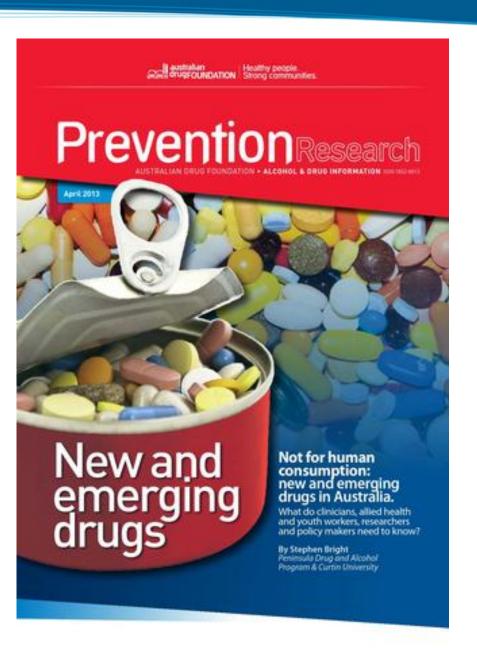
### Resources - Twitter

- @stephenjbright
- @Erowid
- @ACTINOSproject
- @GlobalDrugSurvy
- @EMCDDA
- @VAADA\_News
- @YoDDA\_Workers
- @monicabarratt
- **@**...





## Resources – www.adf.org.au



Bright, S. (2013). New and Emerging Drugs: What do clinicians, allied health & youth workers need to know? Melbourne, Australia: Australian Drug Foundation

