

Designer Drugs – (Spice/K2, Bath Salts, & Beyond - 2012 Update)

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Synthetic Cananbinoids & Designer Stimulants (Novelty Powders)

- history designer drugs
- two primary categories of designer drugs
- drug testing challenges
- legal status
- court's response

March 1, 2011 DEA “Banned” Five Synthetic Cannabinoids

- synthetic cannabinoids covered under the DEA’s new rule includes the following:
 - ◆ JWH-018 *
 - ◆ JWH-073 *
 - ◆ JWH-200
 - ◆ CP-47,497
 - ◆ CP-47,497 (C-8 homologue)

	JWH-018 (mg/g)	JWH-073 (mg/g)	CP47,497 (n=8) (mg/g)	JWH-250 (mg/g)
K2 Blonde	12	13	-	-
K2 Standard	9	9	-	-
K2 Citron	10	10	-	-
K2* (Unknown)	-	-	6	-
K2 Summit	11	9	-	-
K2 Blue	15	-	-	-
K2 Pink	11	-	-	-
K2 Latte	16	0.28	-	14
K2 Mint	19	0.30	-	-
K2 Silver	8	-	-	16
Spike Gold	20	11	-	-
Spike Maxx	17	-	-	19
Spike Diamond	17	0.07	-	-
Spike Silver	9	16	-	-
Space	10	-	-	-
Herbal blends*	2.0 – 35.9	-	1.1 – 16.9	-

Bath Salts

On October 21, 2011, the Drug Enforcement Administration (DEA) “banned” three synthetic cathinones by placing them into Schedule I of the Controlled Substances Act (CSA)

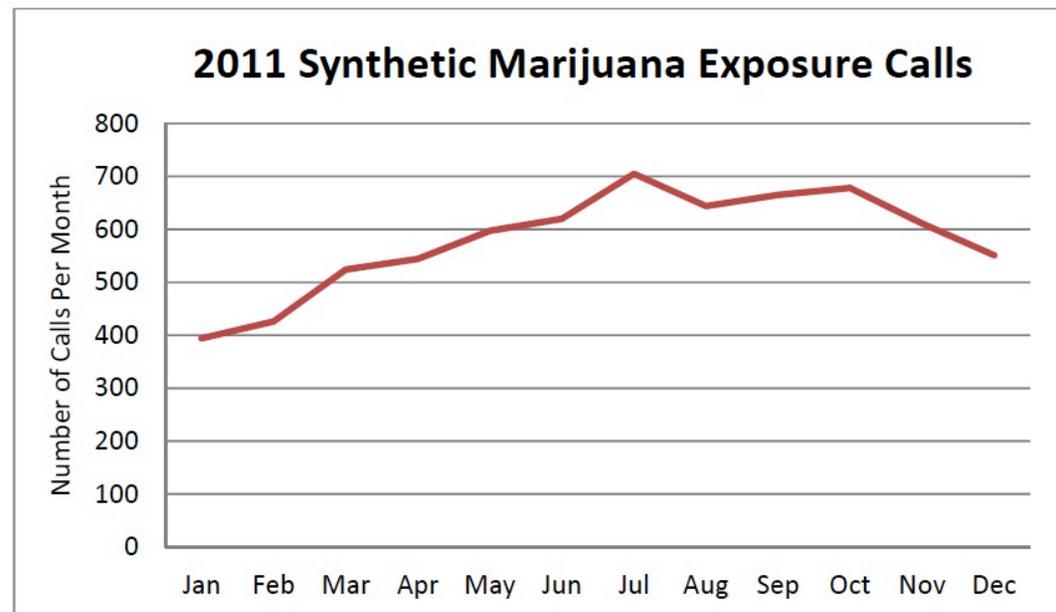
- mephedrone
- 3,4 methylenedioxypropylone (MDPV)
- methylone

DEA Actions:

- DEA took action - imminent hazard to the public safety
- imposes criminal sanctions and regulatory controls of Schedule I substances under the CSA
- covers the manufacture, distribution, possession, importation, and exportation
- RAMIFICATIONS?

Synthetic Cannabinoid Data from Poison Control Centers

Year	Number of Calls
2010	2,906
2011	6,959
2012 As of Feb. 29, 2012	1,261 (7,566)



Bath Salt Data from Poison Control Centers

Year	Number of Calls
2010	304
2011	6,138

2011 by Month	Number of Calls
January 2011	301
February 2011	487
March 2011	639
April 2011	600
May 2011	720
June 2011	743
July 2011	680
August 2011	602
September 2011	512
October 2011	401
November 2011	231
December 2011	222
Total	6,138

The Story of Designer Drugs

Designer Drugs:

drugs, which are created (or reformulated, if the drug already existed) to get around existing drug laws (CSA), usually by modifying the molecular structures of existing drugs to varying degrees

An agonist is a chemical that binds to a receptor and triggers a response – often mimicking the action of a naturally occurring substance.

Receptor

Drug (agonist)



Why Change the Key?

- prolong the effect of the drug
- increase the potency of the drug
- “select” the desired effect
- make the drug more difficult to detect
- avoid patent infringement
- make an illegal drug “legal”

Spice / K2 and Synthetic Cannabinoids

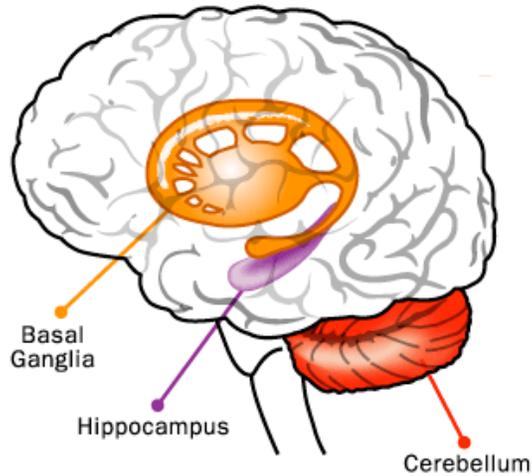
Preparation of the “incense”:

- botanicals are sprayed with liquid preparations of:
 - ◆ HU-210
 - ◆ HU-211
 - ◆ CP 47,497
 - ◆ JWH-018
 - ◆ JWH-073

Origins of Synthetic Cannabinoids

- HU-210 & HU-211 - synthesized at Hebrew University, Israel in 1988. HU-210 is an anti-inflammatory; HU-211 as an anesthetic
- CP 47,497 - developed by Pfizer in 1980 as an analgesic
- JWH-018 & JWH-073 - synthesized by a researcher at Clemson (1995) for use in THC receptor research - John W. Huffman
- more than 100 different synthetic cannabinoids have been created

Cannabinoid Receptor Sites

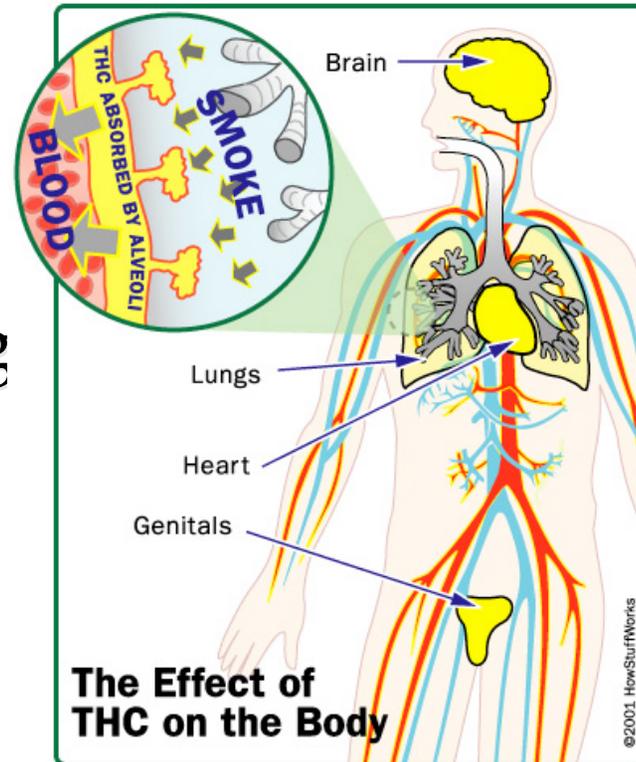


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Smoking Cannabinoids

What does CB₁ receptor control?

- BG: motor control, learning
- Hippo: memory, spatial navigation
- CB: cognitive functions - attention, language, emotions



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Pharmacological Effects of Synthetic Cannabinoids are Similar to THC

- increase heart rate & blood pressure
- altered state of consciousness
- mild euphoria and relaxation
- perceptual alterations (time distortion)
- intensification of sensory experiences
- pronounced cognitive effects
- impaired short-term memory
- reduction in motor skill acuity
- increase in reaction times

Synthetic Cannabinoids: Physical & Social Effects

- increasing reports of adverse effects
 - ◆ ER admissions, assaults, homicides, DUID
- effects similar to THC, BUT
 - ◆ increased anxiety, paranoia, panic
 - ◆ increased restlessness & aggressive behavior
- leads to untoward consequences
 - ◆ contact with law enforcement
 - ◆ loss of life (violence & unexplained)

Current state of drug testing for synthetic cannabinoids

Evolutionary Landscape

- appearing & disappearing
- what's popular today cycles out to be replaced by new synthetic THC analogs
- labs testing for common compounds a few months ago may not be testing for same chemicals now
- on-site, POC devices cannot keep pace

Lab-Based Drug Testing (2010):

JWH-018

JWH-019

JWH-073

CP 47, 497 (C7)

CP 47,497 (C8)

WIN 48,098

HU-210

HU-211

Lab-Based Drug Testing (2012):

AM-694	JWH-018 Chloropentyl analog	JWH-251
AM-1220	JWH-018 6-Methoxyindole analog	JWH-302
AM-1241	JWH-018 1-Methylhexyl homolog	JWH-307
AM-1248	JWH-019	JWH-398
AM-2201	JWH-020	RCS-4
AM-2233	JWH-022	RCS-8
CB-13	JWH-072	RCS-8 4-Methoxy
CB-25	JWH-073	UR-144
CB-52	JWH-073 3-Methylbutyl homolog	URB-447
CP47,497 (C7 analog)	JWH-081	URB-597
CP47,497 (C8 analog)	JWH-098	URB-602
CP55,940	JWH-122	URB-754
HU-210/HU-211	JWH-133	URB-937
HU-308	JWH-147	WIN48,098
HU-331	JWH-175	(Pravadoline)
JP-104	JWH-200	WIN55,212-2
JTE-907	JWH-201	WIN55,212-3
JWH-007	JWH-203	XLR-11
JWH-015	JWH-210	
JWH-018	JWH-250	

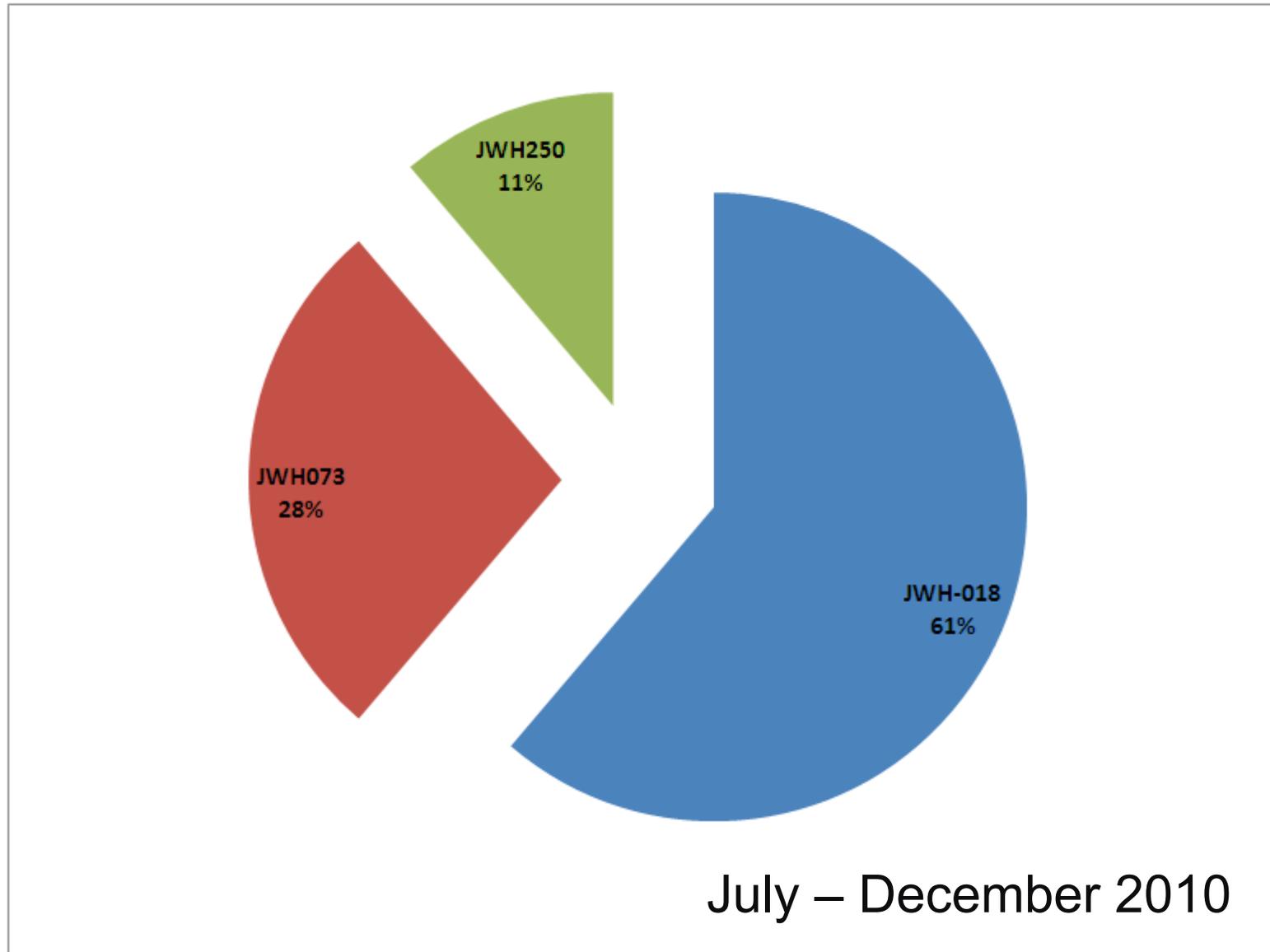
Acknowledgment:

Dr. Barry Logan

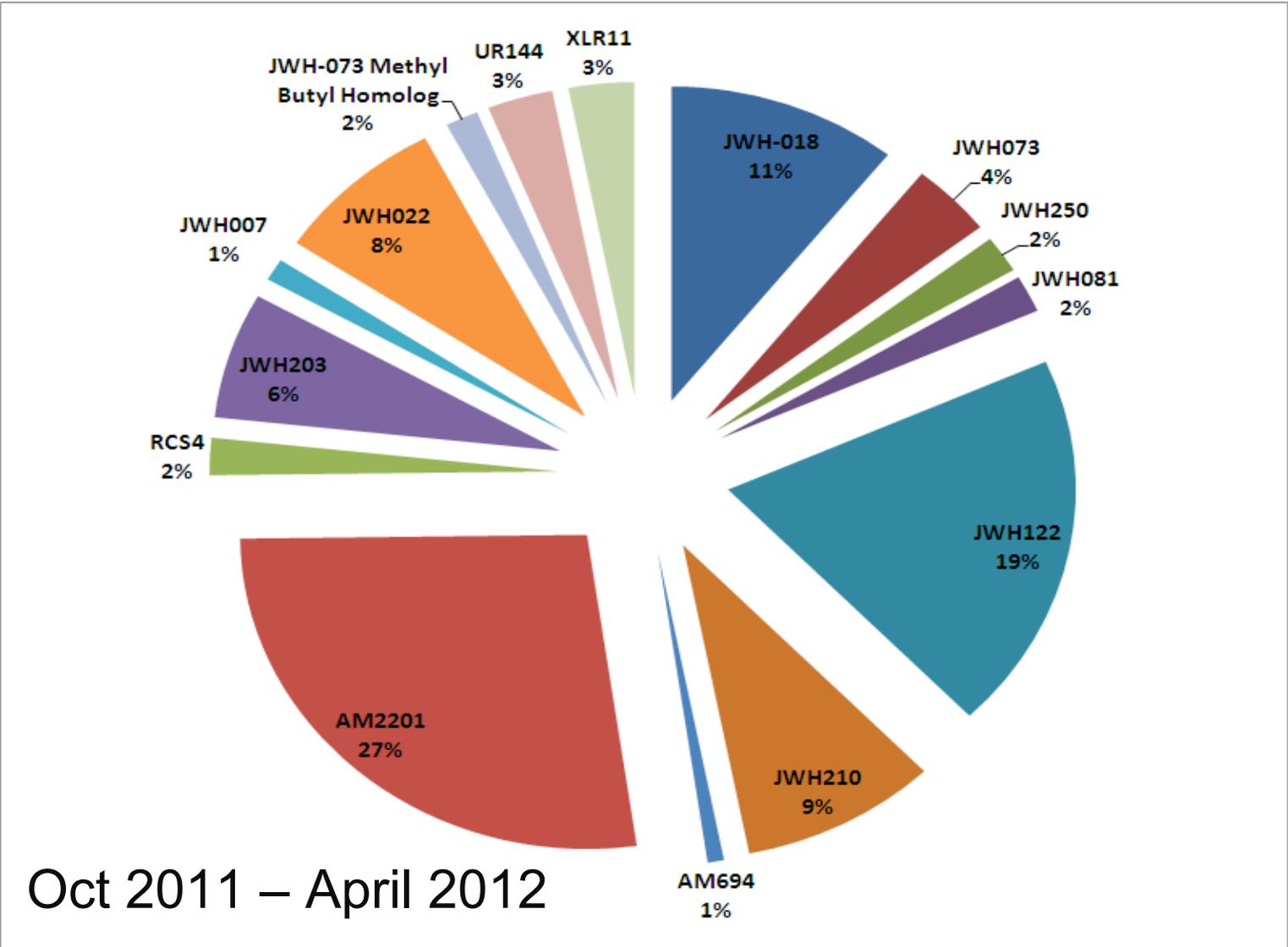
National Medical Services

Willow Grove, PA

Prevalence - 2010



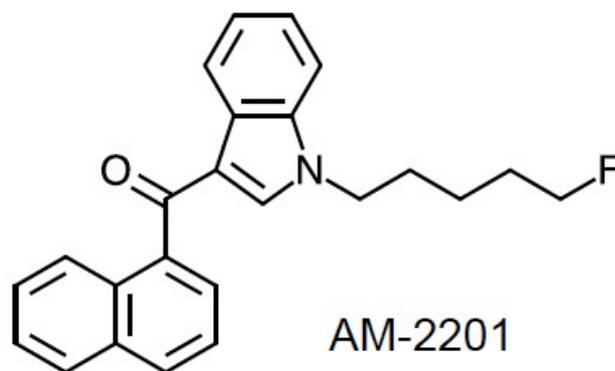
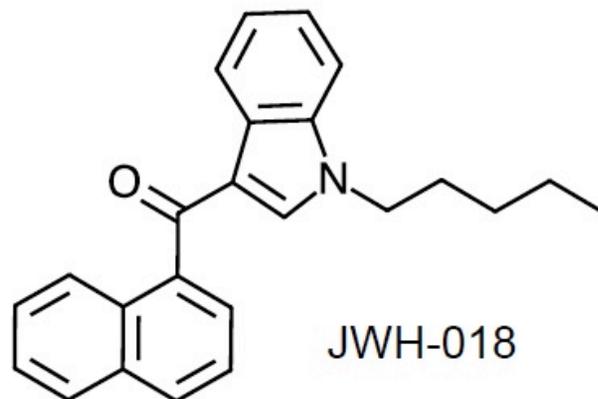
Prevalence - 2012



Evolutionary Landscape

- **JWH-018/073** arrived early and have largely come and gone.
- **JWH-250** arrived a little later and as also cycling out.
- **JWH-081** was part of a second wave that has already completed its cycle.
- **JWH-122** was part of the same wave but has persisted in popularity and is part of the current scene.
- **AM-2201** was part of the same second wave and has gained in popularity, probably currently the most prevalent.
- **JWH-022** and **JWH-210** are showing signs of increasing popularity.

Ingenuity of Designer Chemists:



JAT July/ August - AIT Labs

Pre Federal Ban (12)		Post Federal Ban (52)	
JWH-018	11	AM 2201	40
JWH-073	7	JWH-122	14
JWH-250	1	JWH-250	9
		JWH-210	7
		OTHERS	8
		JWH-073	2
		JWH-018	0

Drug Testing for Synthetic Cannabinoids

Drug Testing - On-Site:

- rapid, instant, POC tests
- testing for JWH-018/JWH-073
- cutoff 50-75 ng/mL
- lab testing - cutoff 0.5 ng/mL
- false negatives

Drug Testing – Laboratory:

- rapidly changing landscape
- constantly updating menus
- lack of standards
- some labs developing screening tests
- not all lab-based testing is equal

Unresolved Issues of Concern:

- what synthetic compounds (or metabolites) are being tested by these laboratories?
- no standardized urine cutoff levels
- no standardized methods (LC/MS/MS)
- tests detect metabolites
- no independent quality control materials
- no proficiency testing
- detection window unknown

More dangerous than we first thought?

Coroner: Lamar Jack ingested chemical found in fake marijuana before he died

Synthetic Marijuana Blamed in Central Iowa Teen's Death

American Journal of Emergency Medicine (2011) xx, xxx-xxx



Teen seriously injured in fall from parking garage

Case Report

Cardiotoxicity associated with the synthetic cannabinoid, K9, with laboratory confirmation☆☆☆

Designer Stimulants (Novelty Powders)

Designer Stimulants:

- bath salts / bath bubbles
- plant foods / plant vitamins
- glass cleaners / pond cleaners
- soft drink additive
- “novelty collectors item”

MDPV:

- Methylendioxypropylone (MDPV) - a psychoactive drug with stimulant properties which acts as both a norepinephrine-dopamine reuptake inhibitor (NDRI).
- often snorted - similar to cocaine
- considered extremely addictive
- adverse medical/psychiatric ramifications

Methylmethcathinone (Mephedrone)

- designer drug chemically similar to cathinone
- first synthesized in 1929
- amphetamine-like properties
- powerful synthetic stimulant
- adverse medical/psychiatric ramifications

Pharmacological Effects of “Bath Salts”:

- increase heart rate & blood pressure
- pupil dilation
- hyperactivity, arousal & over stimulation
- increased energy & motivation
- euphoria - agitation
- dizziness
- nausea
- breathing difficulties
- diminished perception of the requirement for food and sleep

Health Hazard?

HALLUCINATING BOY RAN AMOK IN HOSPITAL

By Staff Reporter

**The bride killed by bath salts -
the new 'legal high' Ivory
Wave drug that's sweeping
Britain**

**Sheriff: Scott County man high on bath salts fires 30
shots inside trailer**

'Bath salts' legal high lands 20 in hospital in a week

Adam Morris - Evening News - 9th August 2010

**Ivory Wave drug implicated in death of
24-year-old man**

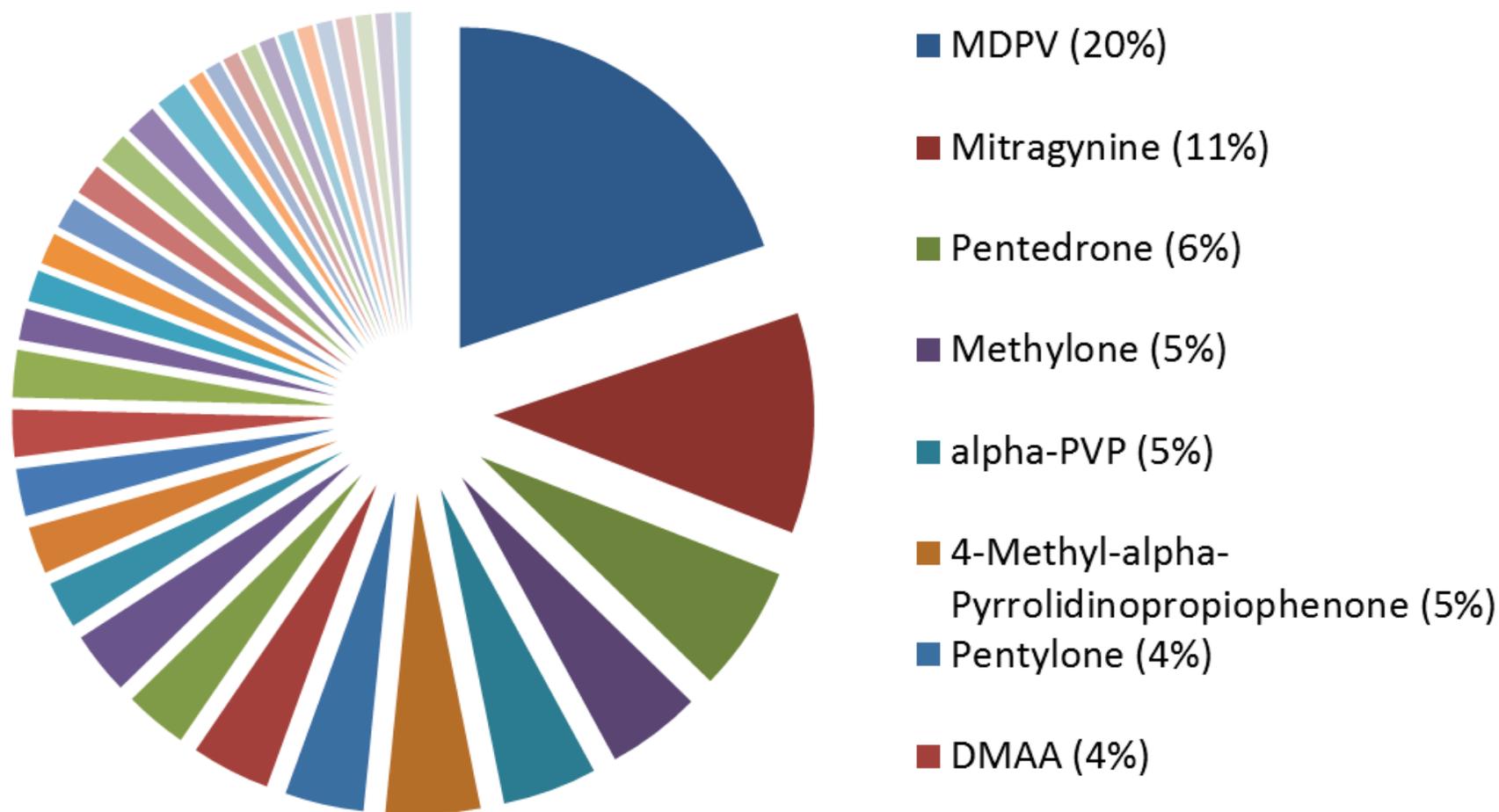
Drug bought online as legal high following ban on mephedrone
causing several hospitalisations and possibly one death

How 'bath salts' led to suicide

**Police consider buying Tasers to
deal with bath salts users**

**One death in Blaine drug overdose case
confirmed**

Pravalence - Designer Stimulants



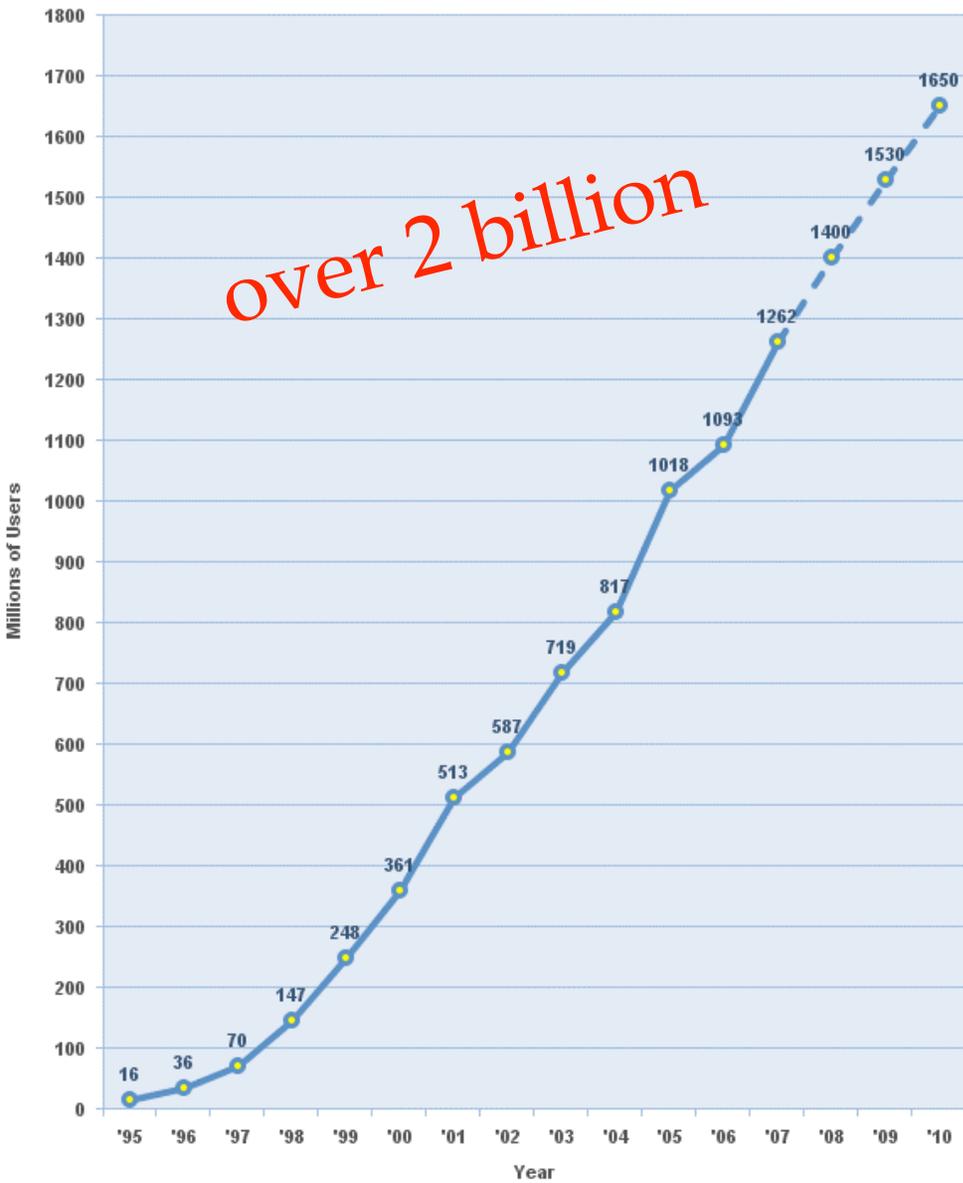
Growth of Designer Drugs

What's different today then in the 1970's when the drug Ecstasy (MDMA) was popularized?

What has changed to fuel the rapid development and distribution of designer drugs?

Internet!

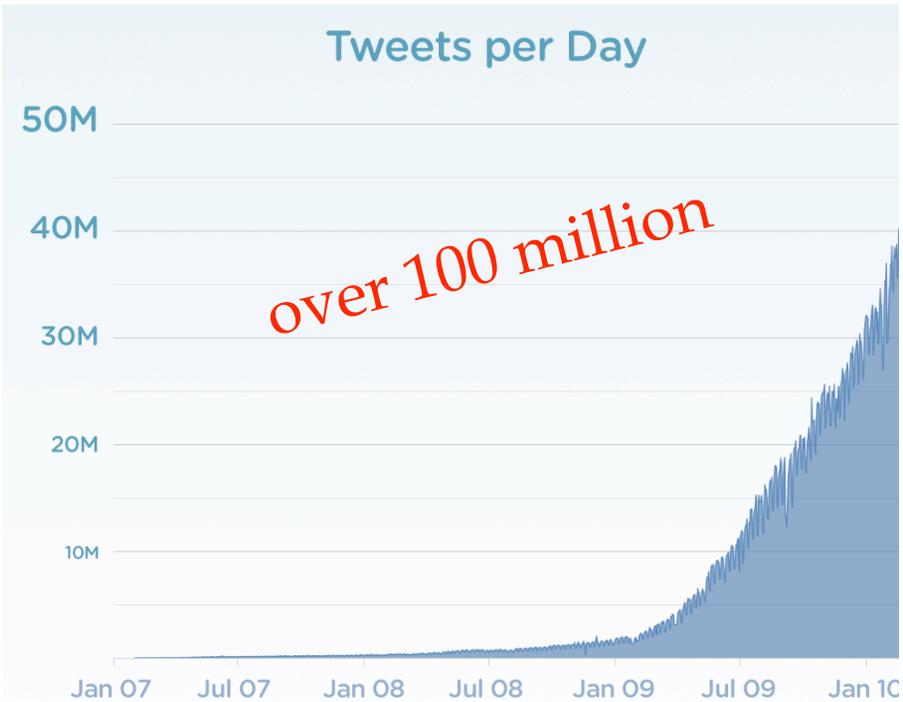
Internet Users in the World Growth 1995 - 2010



Source: www.internetworldstats.com - January, 2008
Copyright © 2008, Miniwatts Marketing Group



over 800 million users



Source: [twitl](#)

What does the Internet offer?

- improved accessibility
- increased affordability
- enhanced anonymity

Legal Status of Control Strategies

Federal Law:

JWH-018 *

JWH-073 *

JWH-200

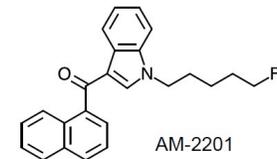
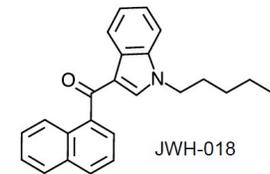
CP-47,497

CP-47,497 (C-8 homologue)

Federally Scheduled Drugs

Federal Analog Status

- substantially chemically similar
- equivalent pharmacological activity
- intended for human consumption



State Law (patchwork):

State Scheduled Drugs - varies

State Analog Status - varies

- substantially chemically similar
- equivalent pharmacological activity
- intended for human consumption

Unfortunate Truisms:

- legal controls that prohibit designer drugs will always lag behind their production
- drug detection methods for the identification of designer drugs may also not be available when these compounds become popular

Are There Other Control
Strategies (other than
Legal)?

Alternative Control Strategies:

- community supervision
- search & seizure
- deterrence (client contract)

Field Visits:

- frequent
- random
- announced & unannounced
- non-governmental hours

Court's Response:

- place specific design drugs prohibition in your client contract
- establish sanction severity
- perform testing if available
- select participants for testing where there are indications of use
- identify positive participants in court & sanction openly to enhance deterrent effect
- provide opportunity for participants to self-report

Client Prohibition Guidance:

- Any and all “designer drugs” that can be purchased legally, over the counter without a physician’s prescription are strictly prohibited.
- Any and all “smoking mixtures” (other than products specifically designated to contain only tobacco) are strictly prohibited.
- Any and all products sold or marketed under false pretenses with the warning “Not for Human Consumption” are strictly prohibited.

Outlook for the Rest of 2012 and Beyond

More of the Same

Latest

Pump It Pure Energy

\$24.99

Add to Cart

8 Ballz Zanzibars

\$11.99

Add to Cart



Original Chill Pill

\$12.99

Add to Cart



Best Buds Potpourri

\$22.95

Add to Cart



No Bull Powder Cleaner

\$29.95



Add to Cart



Rollin' Balls Shine

\$19.95



Add to Cart

Synthetic Cannabinoids

- evolving analogs
- redesigned molecules
- new products
- evolving mixtures/cocktails
- increased difficulty in detection
- increased legal strategies

Pump-it! Powder:

- methylhexanamine
- source - found naturally in the geranium plant
- it is not scheduled by the DEA - legal
- banned in athletics
- stimulant
- not widely studied

Bromo-DragonFLY

- psychedelic hallucinogenic drug
- related to the phenethylamine family
- extremely potent hallucinogen
- similar to LSD
- extended duration of action up to several days
- dosage is in micrograms

Good News ?

Brand New Law:

- signed by the President on July 10, 2012
- S. 3187: Food and Drug Administration Safety and Innovation Act
 - ◆ TITLE XI--OTHER PROVISIONS
 - ◆ Subtitle D--Synthetic Drugs
 - ◆ Sec. 1151-1153
 - ◆ Synthetic Drug Abuse Prevention Act of 2012
- Bans several dozens designer drugs

Operation Log Jam:

- operations in 30 states were raided
- 90 arrests at 29 manufacturing facilities
- 36 million in cash seized
- 4.8 million packets of synthetic cannabinoids
- confiscated chemicals sufficient to make 13.6 million additional packets
- 53 weapons seized
- 6 million in other assets

Designer Drugs:

- designer drugs are here to stay
- rapid evolving landscape
- testing will nearly always lag behind
- legal controls will be challenging and delayed
- growing evidence of adverse effects
- BE PROACTIVE!
- design client contract specifically address designer drugs
- build community supervision/expand search & seizure efforts

This is a race we
can't win, but a
challenge we can't
ignore.

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