DRUG TESTING TRENDS

- What Your Policy May Not Cover!

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Drug Arrests

Alaska

	2010	2011	2012
Alcohol	363	392	284
Marijuana	1040	1211	817
Methamphetamine	185	194	182
Cocaine	145	108	74
Heroin	82	118	146

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Prescription Drugs Seized

Alaska

	2010	2011	2012
Hydrocodone	627	1051	141
Oxycodone	5,958	1,836	609
All other prescriptions	2,668	2,548	2,839
in dosage units			

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Alaska's Statistics

Trust for America's Health, October 7, 2013

Alaska has the 29th highest drug overdose mortality rate in the United States, with 11.6 per 100,000 people suffering drug overdose fatalities, according to a new report, *Prescription Drug Abuse: Strategies to Stop the Epidemic*.

Alaska has the highest Illicit Drug Use Rate in the Nation, according to a new Report based on SAMHSA's National Survey on Drug Use and Health (NSDUH).

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Standard Drug Testing Panels

- Amphetamine/Methamphetamine
- Barbiturates
- Methadone
- Opiates (Codeine/Morphine)
- Phencyclidine (PCP)
- Heroin
- Oxycodone
- Cocaine
- Benzodiazepines
- Methaqualone
- Propoxyphene
- Cannabinoids (THC)
- Alcohol

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Extended Panels

- Tramadol
- Meperidine
- ETG/ETS
- Buprenorphine
- Bath Salts
- Fentanyl
- Carisoprodol/Meprobamate
- Nicotine
- Synthetic Cannabinoids

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Designer Drugs

Designer Drugs are Legal Synthetic Alternatives to Illicit Drugs

Taken to:

- Avoid detection of drug use in routine drug tests
- Experiment with a new drug

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Designer Drugs

Potential Dangers:

Potency & dose are unknown

Acute & chronic toxicity are unknown

Presence of toxic contaminants are unknown

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Designer Drugs

European Monitoring Center for Drugs & Drug Addiction (EMCDDA) identified more than 200 new designer drugs

Coming our way!

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Designer Drugs

US Legislation:

- Dec 8, 2011: Synthetic Drug Control Act 2011
- July 9, 2012: Synthetic Drug Abuse Prevention Act
- July 2012: CP 47,497, CP 47,497-C8, JWH-018, JWH-019, JWH-073, JWH-081, RCS-4 JWH-122, JWH-200, JWH-203, RCS-8 JWH-250, JWH-398, AM2201
- May 2013: AKB-48, STS-135, XLR-11
- Feb 2014: ADB-PINACA, AB-FUBINACA, PB-22, 5F-PB-22

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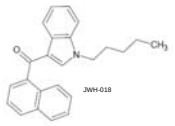
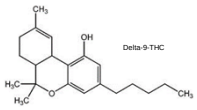
Synthetic Cannabinoids

Commonly known as SPICE



JWH-018



Delta-9-THC

Bind to Cannabinoid Receptors triggering similar Euphoric Symptoms as THC

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Synthetic Cannabinoids

DEFINITION

THC binds to CB-1 and CB2 receptors in the brain

Synthetic Cannabinoids are any compounds that bind to the CB-1 receptor

Many synthetic cannabinoids bind with up to 100 times greater affinity to these receptors

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Synthetic Cannabinoids

12 Synthetic Cannabinoid Classes

- Adamantoylindole
- Benzoylindoles
- Cyclohexylphenols
- Classical dibenzopyrans
- Indazole based
- Naphthoylindoles & WIN 55,212-2
- Naphthylmethylindenes
- Phenylacetylindoles
- Quinolinyl ester (indole based)
- Tetramethylcyclopropyl ketone indoles
- Naphthoylpyrroles
- Naphthylmethylindoles

- New synthetic cannabinoids constantly emerging

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Synthetic Cannabinoids

- JWH-018, JWH-018 5/6-hydroxyindoles, JWH-018 N-hydroxypentyl, JWH-018 N-pentanoic
- JWH-019, JWH-019 5-hydroxyindole, JWH-019 N-hydroxyhexyl
- JWH-073, JWH-073 5/6-hydroxyindoles, JWH-073 N-hydroxybutyl, JWH-073 N-butanoic
- JWH-081, JWH-081 N-hydroxypentyl
- JWH-122, JWH-122 N-hydroxypentyl
- JWH-200, JWH-200 5/6-hydroxyindoles
- JWH-210, JWH-210 N-5-carboxypentyl, JWH-210 5-hydroxyindole, JWH-210 N-hydroxypentyl

CP47,497-C7 & CP47,497-C7 C7-hydroxy
CP47,497-C8 & CP47,497-C8 C8-hydroxy
HU-210, AM694, JWH-203, RCS-8, HU-210
AKB-48, XLR-11, UR-144 . . . . . .

- JWH-250, JWH-250 N-5-carboxypentyl, JWH-250 N-hydroxypentyl, JWH-250 5-hydroxy-indole
- JWH-398, JWH-398-N-hydroxypentyl, JWH-398 N-pentanoic
- AM2201, AM2201 6-hydroxyindole, AM2201 N-hydroxypentyl
- MAM2201, MAM2201 N-hydroxypentyl, MAM2201-N-pentanoic
- RCS-4, RCS-4 N-hydroxypentyl, RCS-4 M9, RCS-4 M10, RCS-4 N-5-carboxypentyl
- UR-144, UR-144 N-hydroxypentyl, UR-144 N-pentanoic

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Synthetic Cannabinoids

Challenges

- Large amount of analytes
- Constant change of what is in the market
- Lack of information about human urinary metabolites
- Higher potency producing lower metabolite concentrations
- Common metabolites for different analytes

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Synthetic Cannabinoids

Rollitup.org Make Your Own Spice!

Can of Acetone
Metal or glass dish/pan
1G JWH-018
0.2 oz mullein
0.8 oz Damiana
Metal or glass cup

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Synthetic Cannabinoids

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Synthetic Cannabinoids

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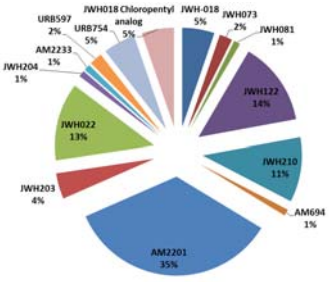
Synthetic Cannabinoids

2012 Synthetic Cannabinoids



Synthetic Cannabinoids

Efficacy is the maximum biological effect a drug can have based on its receptor binding.

Potency is a measure of the amount of drug needed to achieve a predefined biological effect.

Synthetic Cannabinoids

Compound	CB_1 Ki	CB_2Ki/CB_1Ki	Compound	CB_1 Ki	CB_2Ki/CB_1Ki
JWH-18	9.0	0.32	XLR-11	24	0.09
JWH-019	9.8	0.57	UR-144	29	0.01
JWH-250	11	3.00	THC	41	0.88
JWH-210	.061	1.5	JWH-208	179	3.18
AM-411	6.9	7.50	JWH-313	422	0.86
JWH-073	8.9	4.27	JWH-201	1064	0.42
JWH-302	17	5.24	JWH-207	1598	2.33

CB_1Ki – the lower the number the more tightly it binds to receptor

Ratio – A high ratio indicates preference for the CB_1 receptor

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Bath Salts

Usually Labeled "Not For Human Consumption"

Drone

Vanilla Sky

Cloud 9

Meow Mewo

Plant Food

Phone Screen Cleaner

Jewelry Cleaner

Scarface

Bliss

Meph

Bloom

White Lightning

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Bath Salts

The Drug That Never Lets Go – PBS NewsHour

'Bath Salts' A Deadly New Drug With A Deceptively Innocent Name - Forbes

"It Felt So Evil" – Former Bath-Salts Addict

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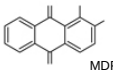
Bath Salts



MDPV

We didn't ask, 'Are you seeing monsters and aliens?'
They were telling us that.

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Bath Salts

Negative Side Effects:

Racing Heart	Paranoia
High Blood Pressure	Hallucinations
Chest Pains	Panic Attacks

Serious Side Effects:

Dehydration	Breakdown of Skeletal Muscle Tissue
Kidney Failure	

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How It Works

Imagine the space between the nerve cells as a kitchen sink and the water as dopamine. In the brain's natural state, the faucet, or nerve cell endings, are always leaking some dopamine, and the drain is always slightly open, vacuuming some of the chemical back into the cell. Methamphetamine turns the faucet on high. Cocaine closes the drain. Bath salts do both at the same time.

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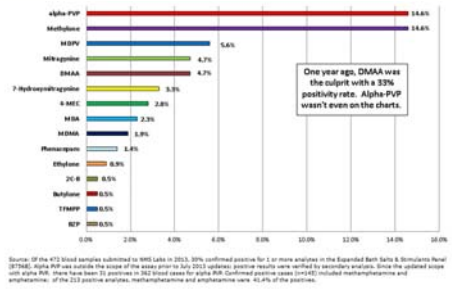
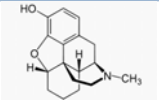
Bath Salts



NMS Labs Designer Drugs Trends Data

Krokodil – Also know as 'Zombie Drug'

Desomorphine



Know for the scaly skin it creates as it destroys the flesh where it is injected

Made from Codeine, Iodine, and Red Phosphorus

Replacing heroin in some areas of the world.

Krokodil

Krokodil

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Heroin

Heroin was first manufactured in 1898 by the Bayer pharmaceutical company of Germany and marketed as a treatment for tuberculosis as well as a remedy for morphine addiction.

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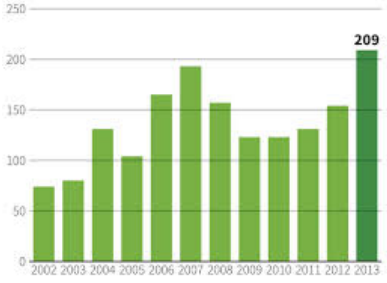
Heroin



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Heroin

Heroin reaches into rural Alaska communities

The associated Press April 28, 2014

ANCHORAGE, Alaska — Heroin has crossed beyond Alaska's urban centers, increasingly winding up in the state's more isolated, rural communities. State investigators say the highly addictive drug has become more common in all parts of the state, including villages, the Anchorage Daily News reported Saturday (http://is.gd/q0zy1K).

The state's annual drug report showed the drug's availability increased throughout Alaska in 2012 and 2013. The report concludes that heroin is no longer confined to urban areas. Authorities made 64 heroin-related arrests and charges in 2009. That number has since more than doubled, with 151 arrests and charges last year. In **Kodiak**, police seized more than 25 ounces of metham-phetamine and almost 2 ounces of high-grade heroin on April 19. It was the largest seizure in the police department's history.

In **Nome**, authorities began recognizing a growing heroin trend a couple of years ago when an officer found paraphernalia at a local hotel that appeared to be from intravenous drug use. "We're finding it in a lot of the villages out in western Alaska now," said Lt. Katherine Peterson of the Alaska Bureau of Investigations. "I can't tell you in every village. But it is certainly unlike years ago."

In the recent **Kodiak** drug seizure, police estimated a street value of about $35,000 for the heroin and $2.1 million for the methamphetamine. Kodiak Police Chief Ronda Wallace said that between the two types of drugs, the local upturn in heroin is more recent. "It's definitely a trend," Wallace said. "We've been seeing a lot more meth, but we've been noticing in the last few years that heroin is increasing." In Nome, Mayor Denise Michels said the town has seen wider use of heroin the last few years among residents in their 20s. That demographic includes her nephew, who is completing a drug rehabilitation program in Arizona for heroin addiction, she said. He entered the program in 2012 after telling his family he needed help. "Who would have ever thought that this would be here?" Michels said. "It happened so fast and so under the radar for the public."

Read more here: http://www.ledger-enquirer.com/2014/04/28/3077950/heroin-reaches-into-rural-alaska.html?sp=/99/392/#storylink=cpy

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Heroin

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Heroin

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Heroin

Opium

Contains 12% morphine, codeine, thebaine along with papverine and noscapine

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Heroin

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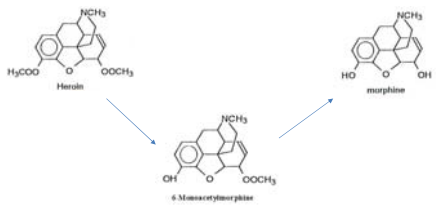
Heroin



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Liquefied Heroin Discovered In Fruit Juice Boxes In Florida
MIAMI -- Nearly 100 fruit juice boxes containing liquid heroin were intercepted Wednesday in a shipment from Colombia, federal officials said.

The 6-ounce boxes, labeled "Hit Fruit Drink," contained a total of 38 kilograms, or about 84 pounds, of heroin worth $1.7 million.

Customs agents said the juice was initially bought from a grocery store in Colombia, then emptied and refilled with heroin. The shipment was relabeled and five pallets of boxes were shipped alongside pallets of legitimate juice boxes, the agents said.

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Opiates

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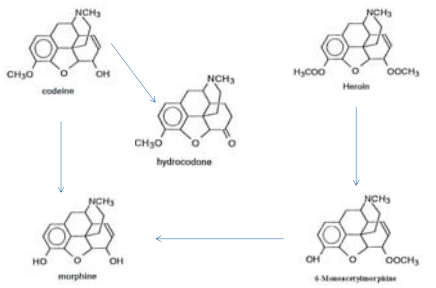
Opiates



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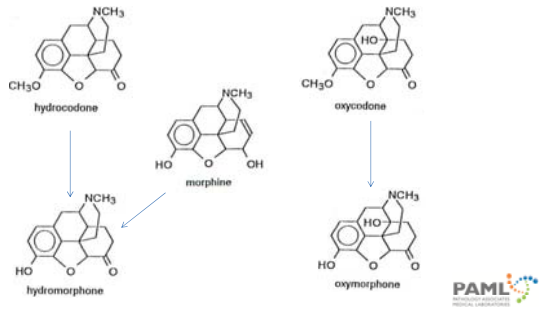
Opiates



Opiates

Drug	Duration	Half-Life	Threshold
Fentanyl	1 – 2 hrs	1.5 – 6 hrs	50ug/hr
Meperidine	2 – 4 hrs	3 – 4 hrs	NA
Oxycodone	4 – 6 hrs	3 – 4.5 hrs	80 mg/24hrs
Oxymorphone	3 – 6 hrs	7 – 9 hrs	40 mg/24hrs
Hydrocodone	4 – 8 hrs	3.3 – 4.5 hrs	120 mg/24hrs
Hydromorphone	4 – 5 hrs	2 – 3 hrs	30 mg/24hrs
Codeine	4 – 6 hrs	3 hrs	800 mg/24hrs
Morphine	3 – 6 hrs	1.5 – 3 hrs	120 mg/24hrs
Methadone	4 – 6 hrs	15 – 30 hrs	40 mg/24hrs
Levorphanol	6 – 8 hrs	12 – 16 hrs	
Propoxyphene	4 – 6 hrs	6 – 12 hrs	NA

Opiates

Factors influence drug metabolism:

Smoking – Cigarette smokers metabolize some drugs more rapidly than nonsmokers because of enzyme induction.
Pesticides – Industrial workers exposed to some pesticides metabolize certain drugs more rapidly than unexposed individuals
Diet – charcoal broiled foods and cruciferous vegetables are known to induce CYP1A enzymes, whereas grapefruit juice is known to inhibit the CYP3A metabolism of co-administered drug substrates.
Age – influences absorption, distribution, and elimination.
Sex – Clinical reports suggest that similar sex-dependent differences in drug metabolism exist for ethanol, propranolol, some benzodiazepines, estrogens, and salicylates.
Drug-Drug Interactions – Depending on the residual drug levels at the active site, they also may competitively inhibit metabolism of a simultaneously administered drug.

Opiates

CYP1A2
Amitriptyline
Desipramine
Imipramine
Lidocaine
Nortriptyline
Phenytoin

Inhibitors
Citalopram
Fluoxetine
Mexiletine

Inducers
Carbamazepine
Phenytoin
Smoking

CYP2C9
Celecoxib
Ibuprofen
Phenytoin
Topiramate

Inhibitors
Fluoxine

Inducers
Carbamazepine
Fluoxetine

CYP2D6
Amitriptyline
Bupropion
Codeine
Desipramine
Dextromethorphan
Doxepin
Fluoxetine
Hydrocodone
Oxycodone
Tramadol
Methadone

Inhibitors
Desipramine
Fluoxetine
Haloperidol
Sertraline

Inducers
Carbamazepine
Phenytoin

CYP3A4
Amitriptyline
Bupropion
Citalopram
Dextromethorphan
Fentanyl
Fluoxetine
Imipramine
Ketamine
Methadone
Venlafaxine
Benzodiazepines
Buprenorphine

Inhibitors
Erythromycin
Fluoxetine
Grapefruit
Sertraline
Ketoconazole
Clarithromycin

Inducers
Carbamazepine
Dexamethasone
Phenytoin

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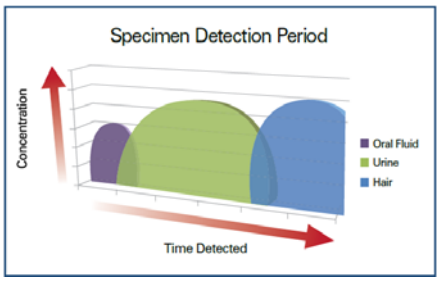

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Synthetic Urine

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?Questions?

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