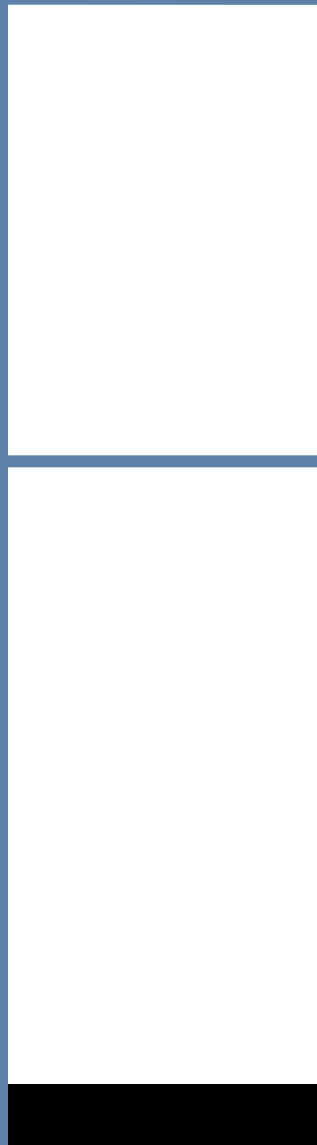




● **Abused Drug Testing**

What does your Positive Drug Test Tell You?

Pat Pizzo – Director of Toxicology, Alere
Toxicology Services

Who am I?

- Director of Toxicology at Alere
- In the field for 45 years
- Original training and experience was with the FBI crime laboratory in WDC
- Qualified as an expert in Forensic Toxicology in 20 states
- Guest speaker on many radio talk shows and featured in newspapers and magazines
- Authored and co-authored several articles that have appeared in the United States and abroad
- Member of International Organization to establish Drug testing Policies for the Oil and Gas Industry World wide
- Former Member of the Federal Drug Testing Advisory Board



Pat Pizzo

Overview of Drug Testing

Substance Abuse Testing Overview

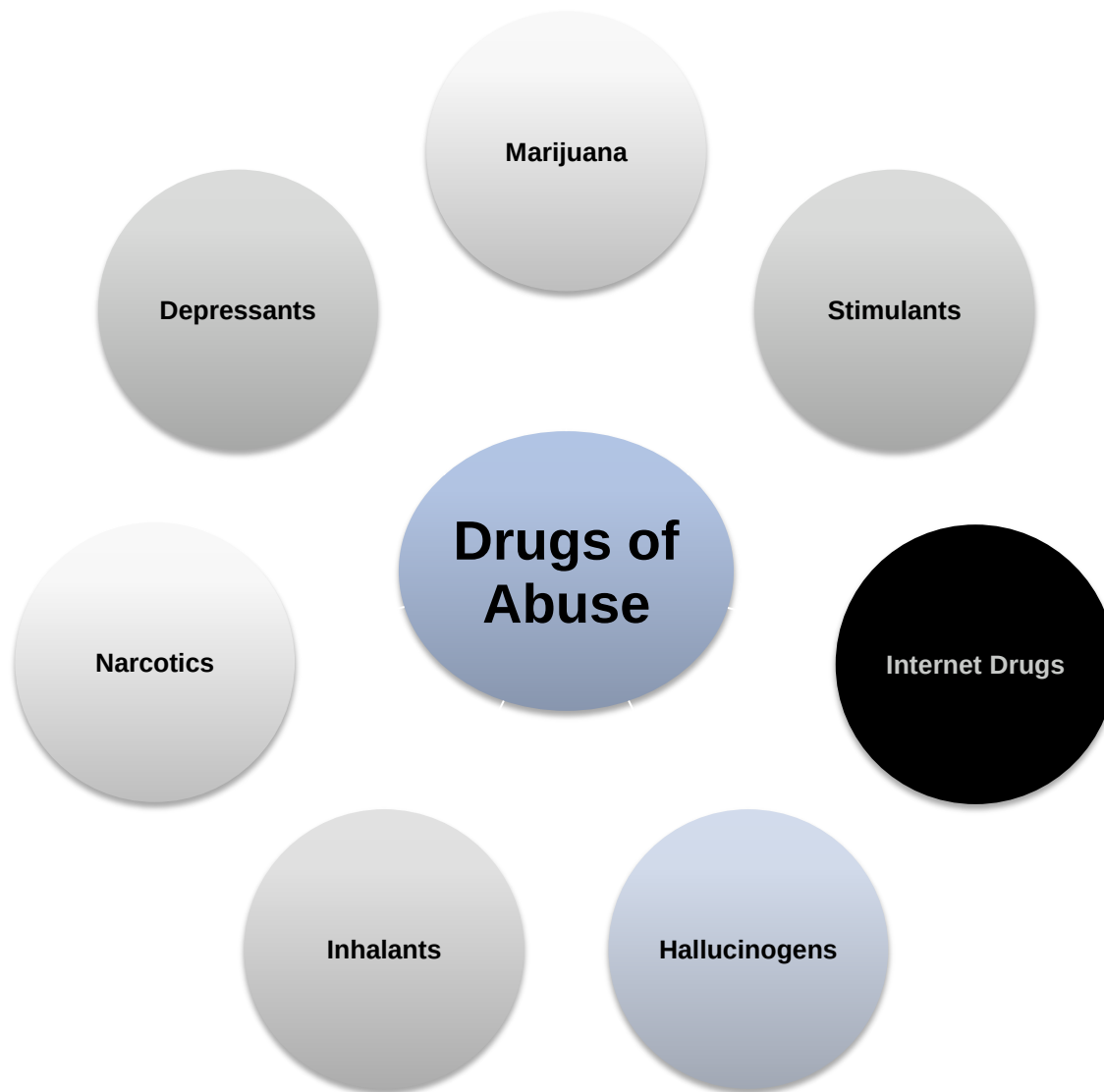
- Analysis is performed using a test panel.
 - The standard is a 5-drug test panel, which includes marijuana, cocaine, amphetamine, opiates and PCP.
 - Additional drugs can be request based on clients needs.
- Two-step process
 1. **Screening** – urine specimens are screened with the latest in immunoassay techniques using advanced computerization and automation. For newer drugs screening is also performed with LC/MS/MS.
 2. **Confirmation** – urine specimens are confirmed with GC/MS or LC/MS/MS, the definitive means to confirm the presence of a drug.

Definitions

- **Parent Compound** – The actual drug. Enters and exits as the same chemical structure
- **Metabolite** – Breakdown product of a drug. This occurs in the body. Enters as parent compound exits as a metabolite
- **Half – Life** – The amount of time it takes for the drug concentration in the urine or blood to decrease by one half

Abused Drugs

Drug Abuse



Marijuana Drug Information



Drug Information: Marijuana

- Tobacco-like substance produced by drying the leaves & flowering tops of the *cannabis sativa* plant
- Active chemical is delta-9-tetrahydrocannabinol (THC)
- Most commonly abused drug in the U.S.
- Contains over 400 chemical substances, including toxins and cancer-causing chemicals
 - More of the known carcinogen, Benzopyrene, than tobacco
 - 50% to 100% more tar than tobacco
- Medical uses
 - Treatment of glaucoma
 - Anti-emetic
 - Pain reliever
- Street Names: bud, cannabis, chronic, doobie, dope, ganja, grass, hash, herb, joint, Mary Jane, pot, reefer, weed

Drug Information: Marijuana

- History, used for thousands of years in medical and other clinical research
 - Ancient China, treat variety of ailments
 - 18th century, therapeutic use in England and U.S.
 - Since 1937, restricted through legislation
- Method of administration
 - Inhaled through smoking marijuana cigarettes, bongs, or pipes
 - Eaten through marijuana cooked/baked into food (marijuana brownies)
 - Drank through marijuana distilled in beer or other liquid



THC Sources

- Marijuana
 - Hashish
 - Sinsemilla
 - Hash Oil
- Prescription sources
 - Marinol
 - Sativex – Canada and UK only

Marijuana *Clearance*

- HALF LIFE – 48-72 hrs
- SOCIAL USE – 5-7 days
- MODERATE USE – 7-10 days
- CHRONIC USE – 4-6 weeks
- PEAK LEVEL – 6-8 hrs mean value = 125 ng/ml
- EXPEDITE – water, exercise

Passive Inhalation

- NOT A REALITY
- REALISTIC - < 5 NG/ML SCREENING
- FORCED - < 15 NG/ML GCMS
- Federal Guidelines 50/15



Marijuana Tax Act of 1937

(Act of Aug. 2, 1937, Public 238, 75th Congress) Effective Date
October 1, 1937.

b) The term "marihuana" means all parts of the plant *Cannabis sativa* L., whether growing or not; the seeds thereof; the resin extracted from any part of such plant; and every compound, manufacture, salt, derivative, mixture, or preparation of such plant, its seeds, or resin- but shall not include the mature stalks of such plant, fiber produced from such stalks, oil or cake made from the seeds of such plant, any other compound, manufacture, salt, derivative, mixture, or preparation of such mature stalks (except the resin extracted there from), fiber, oil, or cake, or the sterilized seed of such plant which is incapable of germination.

FOR MORE ON THE TAX ACT AND RELATED TOPICS:

<http://www.druglibrary.org/schaffer/hemp/taxact/mjtaxact.htm>

Hemp Products

- Not all products or even all lots will result in positives
- Hemp oil - POSITIVE
- Hemp beer - NEGATIVE
- Seedy sweeties - POSITIVE



Hemp Seed Vodka

- The first Hemp seed spirit in the United States was Purgatory. Now many brands are available. Will not cause a positive urine drug test.



Reason for Marijuana Positive

- Cannabis Vodka
- Not legal in the U.S.
- Legal in Mexico and Canada
- Can it result in a positive test? Yes



Cannabis Ice Cream

- Flavors
 - TRIPle Chocolate Brownie
 - Banannabis Foster
 - Straw-Mari Cheesecake
- Cost
 - \$15 per half pint
- Contains the equivalent of 2-4 joints



Marijuana Bakeries

More than just cookies and brownies

- Cake balls: 420 mg THC
- Cup cake: 200 mg THC
- Hard Candy: 120 mg THC/oz
- Rice Krispie Treats: 85 mg THC
- Party Mix: 60 mg THC
- Sugar Free Suckers: 30 mg THC
- Chocolate bouquet: 50 mg THC ea



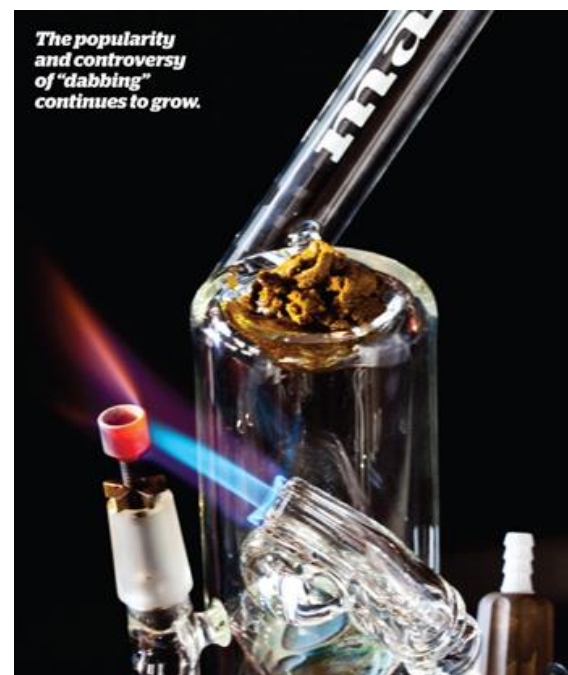
Marijuana Sodas

- 35-65 mg THC/bottle
- \$10 to \$15 per bottle
- Available in California and Colorado
- Flavors similar to:
 - Dr. Pepper
 - Grape
 - Orange
 - Lemon Lime
 - Cola



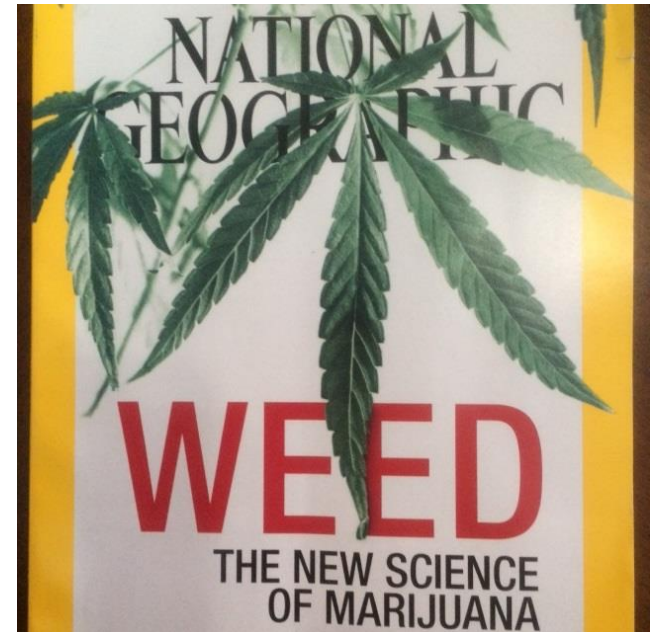
Marijuana Wax

- What is MJ wax – It is a highly concentrated product made by extracting plant material.
- Dabbing – the method used – This involves vaporizing the MJ wax.
- High times has an entire article on the pros and cons of using this product.
- They do recommend you not attempt to make MJ wax unless you are experienced or trained to do the extractions.



CBD Oil – Will you test positive?

- **What is CBD oil?** Cannabidiol is a compound in cannabis that is reported to have medical effects but does not create the psychoactive effects of THC.
- **Will the use of CBD result in a positive urine drug screen test?**
Screening – Possibly
Confirmation - No



Legalized Marijuana

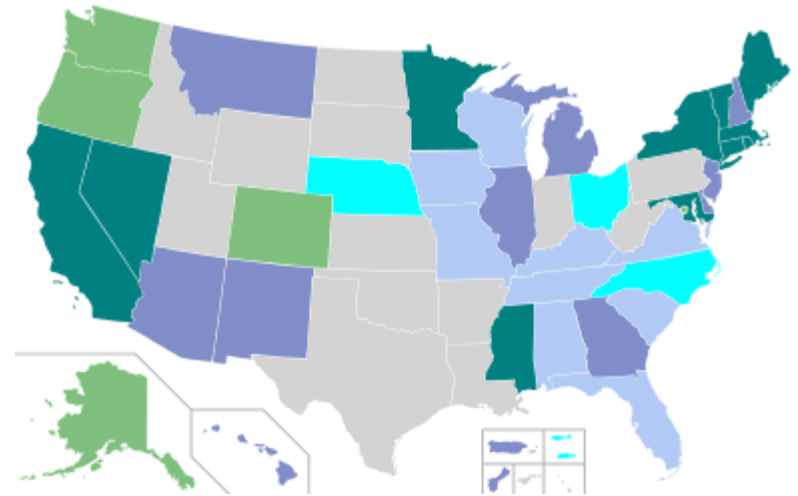
- **States**

1. Colorado
2. Washington
3. Oregon
4. Alaska

- **District of Columbia**-but recreational commercial sale is currently blocked by Congress

- **Cities**

1. Portland
2. South Portland



- Green – Legalized
- Dk Green – Medical and Decriminalized
- Turquoise- decriminalized
- Purple – legal psychoactive medical marijuana
- LT Blue -legal non-psychoactive medical cannabis.
- Grey -cannabis prohibition

Colorado Stats Published August 2014

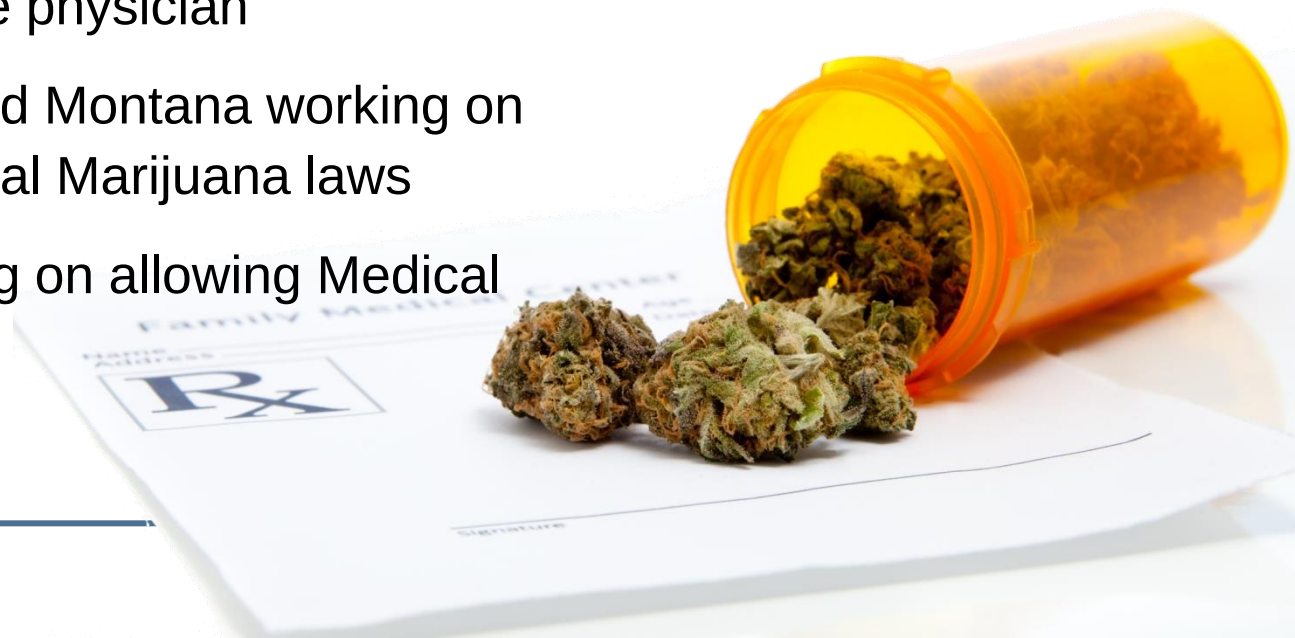
- Traffic fatalities involving operators testing positive for marijuana have increased 100 percent from 2007 to 2012.
- In 2012, 10.47 percent of youth ages 12 to 17 were considered current marijuana users compared to 7.55 percent nationally. Colorado, ranked 4th in the nation, was 39 percent higher than the national average.
- From 2011 through 2013, there was a 57 percent increase in marijuana-related emergency room visits.
- Hospitalizations related to marijuana have increased 82 percent from 2008 to 2013.
- Highway interdiction seizures of Colorado marijuana destined to 40 other states increased 397 percent from 2008 to 2013.
- U.S. Mail parcel interceptions, with Colorado marijuana destined for 33 other states, increased 1,280 percent from 2010 to 2013.

Colorado Stats Continued

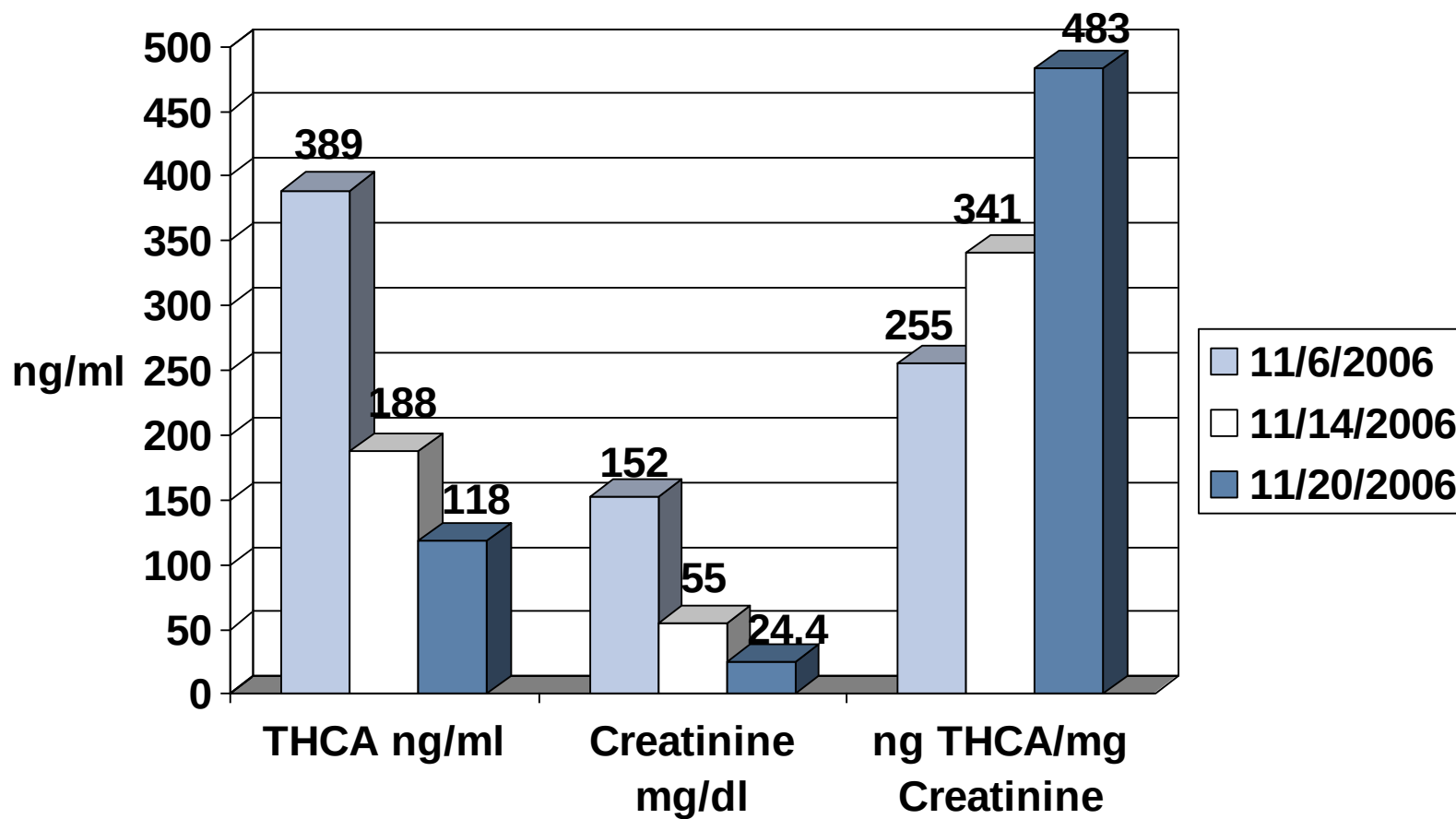
- In 2013, there were 12 THC extraction lab explosions and in the first half of 2014; the amount more than doubled.
- Overall, crime in Denver increased 6.7 percent from the first six months of 2013 to the first six months of 2014.
- The number of pets poisoned from ingesting marijuana has increased four-fold in the past six years.
- Colorado estimates for annual revenue from the sale of recreational marijuana varies from \$65 million (0.6 percent of all expected general fund revenue) to \$118 million (1.2 percent of all expected general fund revenue).
- The majority of counties and cities in Colorado have banned recreational marijuana businesses.
- THC potency has risen from an average of 3.96 percent in 1995 to an average of 12.33 percent in 2013.

Medical Marijuana

- Raich v. Gonzales – Supreme court ruling upheld federal law allowing medical marijuana users to be charged with use
- 18 states and DC currently allow the use of medical marijuana. Oregon has >15,000 card carrying users
- Can be prescribed for any reason at the discretion of the physician
- New Mexico and Montana working on repeal of Medical Marijuana laws
- 4 states working on allowing Medical Marijuana



New or Residual



Marijuana: Signs of Abuse

- Duration of Effects = 2 to 8 hours
- Effects
 - Moderate use
 - - Euphoria & sexual arousal
 - - Sedation, temporal distortion, & altered perceptions
 - - Difficulty thinking & problem solving
 - - Reduced concentration & coordination
 - - Red, dilated eyes
 - - Increased heart rate, blood pressure, & body temperature
 - - Increased appetite
 - - Diarrhea
 - Heavy use / Overdose
 - - Hallucinations, paranoia, & psychosis
 - - Rapidly fluctuating emotions
 - - Impaired short-term memory or memory loss
 - - Chronic bronchitis
 - - Cancer
 - - Suppression of the immune system

What will cause a positive marijuana result?

- Screening
 - Protonix, Nexium
 - Aids medications
 - NSAID
 - Prilosec
- GC/MS will pick up
 - Marijuana/Marinol



Synthetic marijuana compounds

- Over 450 synthetic marijuana compounds exist.
- The potential to make more is real.
- Federal guidelines have banned 27.
- January 10, 2014 -The Deputy Administrator of the Drug Enforcement Administration (DEA) issued a notice of intent to temporarily schedule four synthetic cannabinoids into Schedule I pursuant to the temporary scheduling provisions of the Controlled Substances Act (CSA). The substances are:

PB- 22; QUPIC, 5-fluoro-PB-22; 5F-PB-22AB-FUBINACA and ADB- PINACA.



Reasons for synthetic marijuana popularity

- Chemical compounds mimic effects of THC, but may be 4 to 100 times stronger than marijuana
- Easily modified chemical structures allow “chemists” to stay in front of DEA regulations

Some newer gen products still legal.

- Easily distributed and accessible online
- Not typically ordered on routine lab test panel
- Redwood Toxicology Laboratory averaged a 10% positive rate in 2013



Synthetic Marijuana also known as K2/Spice. Product names continually change. Some common names include: K2, Spice, K3 Legal, Serenity, Bizzaro, Cloud-9, Avalanche, Sonic Zero, Warped, Haze, Myster, Rain, and many more.

Duration of effect

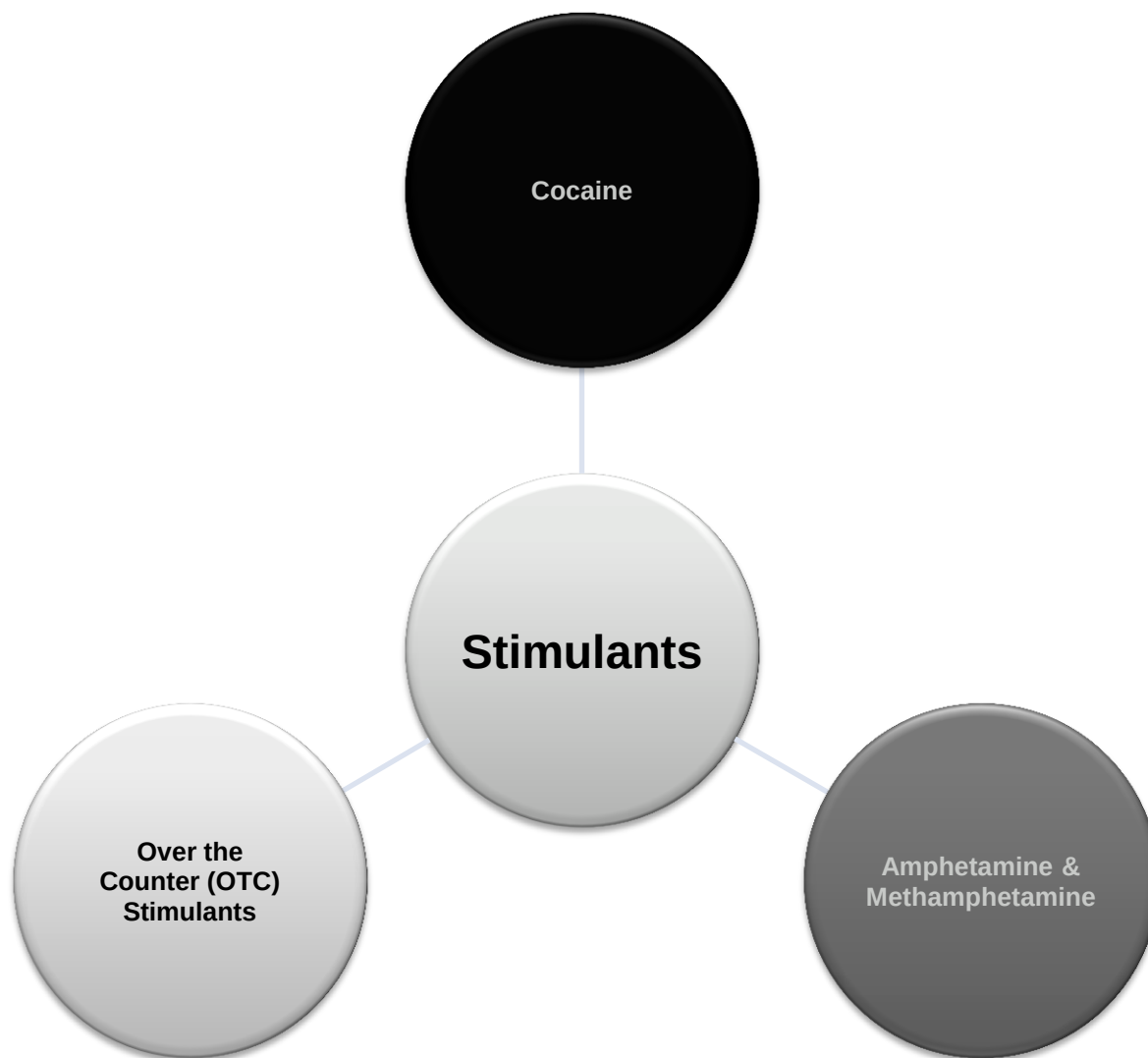
Compound	Duration of Effect
THC- Marijuana	2-4 hours
JWH-018	1-2 hours
CP47,497	5-6 hours
HU-210	~24 hours

Dr. Robert Kronstrand, SPFT WS9, Oct 2013 (1)

What are the effects?

- Euphoria
- Sedation
- Perceptual distortions
- Appetite stimulation
- Depressed locomotion (URL44)
- Hypothermia (URL44)
- Hallucination and delusions
- Tachycardia
- Elevated blood pressure
- Nausea and vomiting
- Seizures – loss of consciousness
- Red eyes
- Dry mouth
- Increased pulse
- Thought disruption
- Kidney failure (XLR11)

Stimulants



Cocaine



Cocaine: Drug Facts

- Bitter, white, odorless, naturally occurring drug found in the evergreen coca plant from South America
- Classified as a stimulant, but pharmacologically a local anaesthetic
- Creates the illusion of well-being, confidence, & invincibility
- Medical uses: Anaesthesia and vasoconstrictor
- Crack
 - Paste or rock form of cocaine that is smoked through a pipe
 - Baking soda or water added to regular cocaine, heated, & then cooled
 - Cooking makes white to tan pellets, often sold in small vials
- Street Names
 - Cocaine: blow, coke, nose candy, snow
 - Crack: devil's smoke, freebase, hard rock, ice cube, paste, rock, tweak



Cocaine: Drug Facts

- History
 - 2500 BC, first used by Incas of South America
 - 1800s, refined by healthcare industry as treatment for various ailments
 - Added to wines, received rave reviews from Pope Pius X & Grand Rabbi of France
 - Sigmund Freud recommended it to treat morphine & alcohol addiction
 - Sherlock Holmes was a cocaine user
 - Coca-Cola – “elixir” that combined coca plant with kola nut
 - Early 1900s, addictive nature apparent
- Method of administration
 - Cocaine = snorted
 - Crack = smoked
- Clearance (detected as benzoylecgonine metabolite): 24 to 48 hours

Cocaine & Crack: What's the difference?

- Crack is cheaper than cocaine.
 - Cocaine costs \$80 to \$100 per gram
 - Crack cost \$5 to \$20 per rock
- Crack produces a faster high than cocaine.
 - Cocaine reaches brain in a minute or two, and its high lasts for about 20 minutes
 - Crack reaches brain in less than 8 seconds, and its high peaks at 10 to 15 seconds, lasting for 15 minutes
- Crack is more addictive than cocaine.
 - Cocaine takes 6 months to 2 years for a user to become addicted
 - 95% of crack users are psychologically addicted after the first use

Cocaine/Benzoylecgonine

- Moderate Use

- Produces brief but intense feelings of euphoria
- Stimulates the central nervous system
- Increases pulse, blood pressure, body temperature, and respiratory rate
- Causes extreme excitability and anxiety
- Produces sleeplessness and chronic fatigue

- Heavy Use/Overdose

- Bleeding and damage to nasal passages
- Paranoid psychosis, hallucinations and mental abnormalities
- Impaired driving ability
- Death caused by heart or respiratory failure

Passive Inhalation

- Controlled studies
 - DR. ED CONE - 22-123NG/ML GC/MS
- Reports from ER
 - Positives detected on infants and children with no control of introduction of drug—believed to be passive
 - Could be oral, forced inhalation, or absorption



Dermal Absorption

- Baselt-5 mg free base applied to skin resulted in GC/MS level 55 - 9 ng/ml 12 to 84 hrs after exposure
- Frederick-2 mg cocaine HCl applied to skin resulted in 100 - 200 ng/ml 3 hrs after exposure
- Elsohly-hands and money immersed in 70% cocaine powder resulted in low level positives



Ingestion of Cocaine

- Oral ingestion of 25 mg cocaine - equivalent to a line of cocaine
- Single test subject
- 48 hrs = 360 ng/mL
- 72 hrs = 58 ng/mL
- Consistent with excretion patterns observed for intranasal and intravenous use

Coca Tea

- Health Inca Tea — each tea bag contains cocaine
- Can the use of coca teas cause a positive urine drug screen? Yes



Ingestion of Cocaine

- Ingestion of 1 cup of Health Inca Tea – containing 1.87 mg of cocaine
- 4 test subjects
- Peak urine concentration of Benzoylecgonine occurred 4-11 hrs after ingestion
- Concentration 140-280 ng/mL
- Screen positive for 21-26 hrs after ingestion



Red Bull Cola

- Made with coca-leaf extract
- Health Institute in German found 0.13 mcg of cocaine per can
- Germany prohibited sales in 6 states and recommend a nation-wide ban



Amphetamine, Methamphetamine, MDMA, MDA and MDEA: Signs of Abuse

- Duration of Effects = 2 to 4 hours
- Moderate use effects
 - Increased energy & hyperactivity
 - Rapid speech & movement
 - Reduced appetite & weight loss
 - Insomnia
 - Hallucinations
 - Heavy perspiration
 - Dilated pupils
 - Increased respiration, pulse, & heart beat
- Heavy use or overdose effects
 - Paranoid psychoses, aggressiveness, combativeness, & violent outbursts
 - Seizures
 - Cardio-pulmonary arrest
 - Stroke



Methamphetamine: Drug Facts

- Most popular form = “Crystal Meth”
 - White or yellow-brown methamphetamine powder
 - Cleaned, purified, & placed in boiling water
 - Recrystallized into white or clear rocks
 - Increased “high” of 2 to 14 hours
- Street Names = crank, crystal, glass, ice, meth, redneck cocaine, super ice, working man’s cocaine
- History
 - 1970s; illicit production began in small-scale, illegal laboratories
 - 1990s; popular due to easy production & powerful, long-acting high
- Method of administration
 - Orally
 - Intravenously
 - Smoked, like crack cocaine, in a glass pipe
- Clearance = 24 to 72 hours



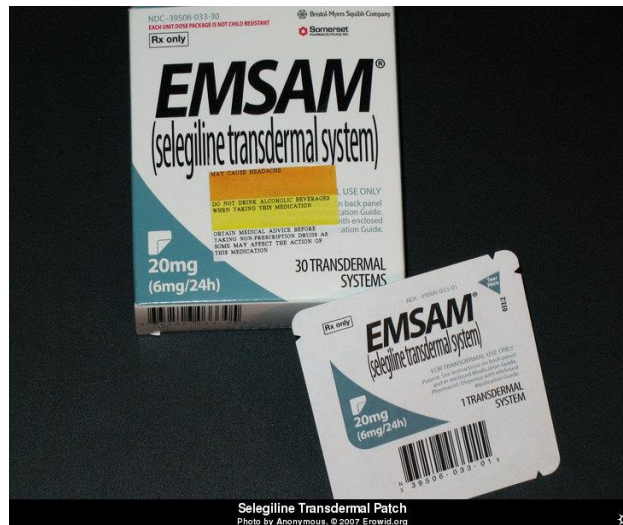
D-Methamphetamine

- Crystal meth, crank, ice
- CNS stimulant
- Highly addictive
- Clearance 24-48 hrs
- Metabolite — Amphetamine
- Legal sources — Desoxyn and Didrex



L-Methamphetamine

- Sources - Selegiline and Vicks stick inhaler
- Identify — D/L isomer analysis
- Performed on all methamphetamine positives
- Positive L = < 20% D-Methamphetamine



Amphetamine: Drug Facts

- Derived from a synthetic chemical manufacturing process
- Addictive stimulant for the central nervous system
- Medical uses (Desoxyn, Didrex, Deprenyl, Adderal, Dexedrine)
 - Obesity
 - Narcolepsy
 - Attention deficit disorders
- Street Names = black beauties, brain pills, bumblebees, dexies, pixies, road dope, speed, truck drivers, uppers
- History
 - 1887: produced as synthetic analogs of cocaine
 - 1940s: proclaimed “wonder drugs” for behavioral disorders and military use for fighting effectiveness
 - 1970: became Schedule II drug
- Method of administration = orally
- Clearance = 24 to 72 hours

Amphetamine

- Prescribed for ADD and weight control
- Metabolite of Methamphetamine
- Must be present to report a positive methamphetamine
- Routine Panel — At least 200 ng/ml amphetamine
- Confirmation Panel — At least 100 ng/ml amphetamine



Adderall abuse: The Good Grade Drug

- **How** - Oral, snort, inject and stuffing
- **Strongest effect** - inject, snort, oral, stuffing
- **Longest effect** - stuffing allows for the use of the most drug
- Teenagers say they get them from friends, buy them from student dealers or fake symptoms to their parents and doctors to get prescriptions.
- The number of prescriptions for ADHD medications has risen 26 % since 2007, to almost 21 million yearly, a number that experts estimate corresponds to more than two million individuals.
- Doctors and teenagers from more than 15 schools across the nation with high academic standards estimated that the portion of students who do Adderall ranges from 15 percent to 40 percent.



MDMA

- MDMA, Molly, XTC, Ecstasy, X
- Stimulant and hallucinogenic
- Legal in Europe 1914
- Schedule in U.S.
- 3,4-Methylenedioxy Methamphetamine
- The hug drug - Empathy for others, reduces inhibitions
- Dehydration - Drink water
- “Short circuit” signal to brain controlling the temperature
- Teeth grinding - Pacifiers
- Suppress need to eat or sleep
- OD - Hyperthermia body temps of 107-109
- Similar drugs MDA and MDEA
- Great Britain - Researchers are investigating the use of MDMA in various treatment regiments



MDMA tablet analysis

MDMA tablets purchased from the street and analyzed by an independent lab (EcstasyData.org) indicate the following results:

- Active ingredient not always MDMA
- Compound analysis detects wide range of drugs including other designer drugs, research chemicals, prescription drugs, stimulants, or designer stimulant compounds often associated with “bath salts”

- Methylone
- mCPP
- TFMPP
- 4-Fluoroamphetamine
- 4-MEC
- 2C-E
- Methamphetamine
- Zolpidem
- Caffeine
- DXM
- Metoclopramide
- 2C-B



MDA

- Psychedelic, stimulant recreational drug
- Appeared around 1963-1964
- Reported that MDA was the Mellow Drug of America in the 1960s
- 3,4-Methylenedioxyamphetamine



MDEA

- Psychedelic, stimulant recreational drug
- Street name EVE
- Hyperthermia associated with use
- 3,4-methylenedioxy-N-ethylamphetamine



Strawberry Methamphetamine

- Bright pink in color with a strawberry flavor
- Known as Strawberry Quick
- Started in California and moving east
- Targeted market - Middle and high school
- If they start young, they will be long-time buyers



Vyvanse

- Recently release to treat Attention-Deficit/Hyperactivity Disorder (ADHD)
- Lisdexamfetamine dimesalate
- Rapidly absorbed from the GI track and converted to D-amphetamine
- Urine drug screen for someone on this drug would result in a positive for D-amphetamine
- Abuse Potential - High

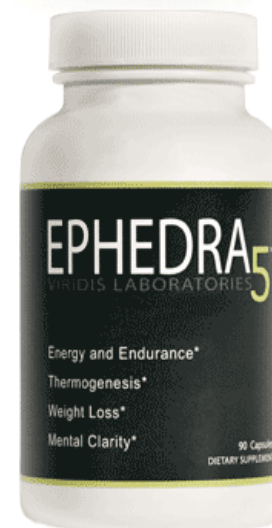


What will cause a positive for Amphetamines?

- Screening
 - Over the counter cold and cough medications
 - Prescription Meds - allergy, weight control, ADD, and cold/cough
- GC/MS - Didrix, Desoxyn, and Deprenyl
 - Amphetamine
 - Methamphetamine
 - MDMA/MDA/MDEA



OTC



Caffeine products

- Available on the Internet
- 33mg – 200 mg per dose
- K-Cup = 120 mg
- Cost \$2.99-\$10.99
- Effect – CNS stimulant
- High doses could cause death



Alpha-pyrrolidinovalerophenone (alpha-PVP)

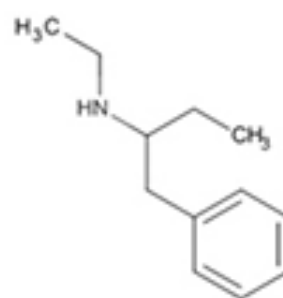
- Street name Flakka
- Real problem in Southern Florida
- CNS stimulant similar impact on the body as the use of methamphetamine and cocaine. Detection times should be similar to that of cocaine and methamphetamine 24-72 hours in urine.
- Studies on humans are not allowed in the US. A review of websites listing users stated effects resulted in the following list.
- Negative Effects: sweating, anxiety, heart rate increase, palpitations, sleeplessness, unpleasant crash, minor vasoconstriction, addictive behavior and urge to re-dose.



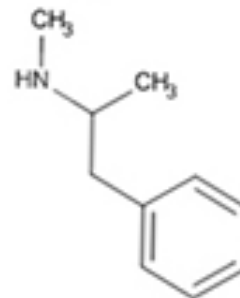
Craze

A popular and controversial sports supplement widely sold in the USA and other countries is secretly spiked with a chemical similar to methamphetamine that appears to have its origins as an illicit designer recreational drug.

There's a very good reason for that: There is a methamphetamine-like stimulant in Craze, a synthetic drug called N,α diethylphenylethylamine, that has never been tested on humans, alleges research paper from NSF International, Harvard Medical School and the National Institute for Public Health and the Environment in the Netherlands. The synthetic drug is not listed in the product's ingredients, the researchers note.



N,α-diethylphenylethylamine
Chemical structure of emerging and potentially harmful contaminant *N,α*-diethylphenylethylamine (N,α-DEPEA)



methamphetamine
Chemical structure of methamphetamine, an illicit drug of abuse



Gravel (aka Flakka)

Knoxville, TN

- Identified bath salts, methamphetamine and Klonopin

Columbus OH

- Identified bath salts, methamphetamine and rat poison



Kingsport, TN

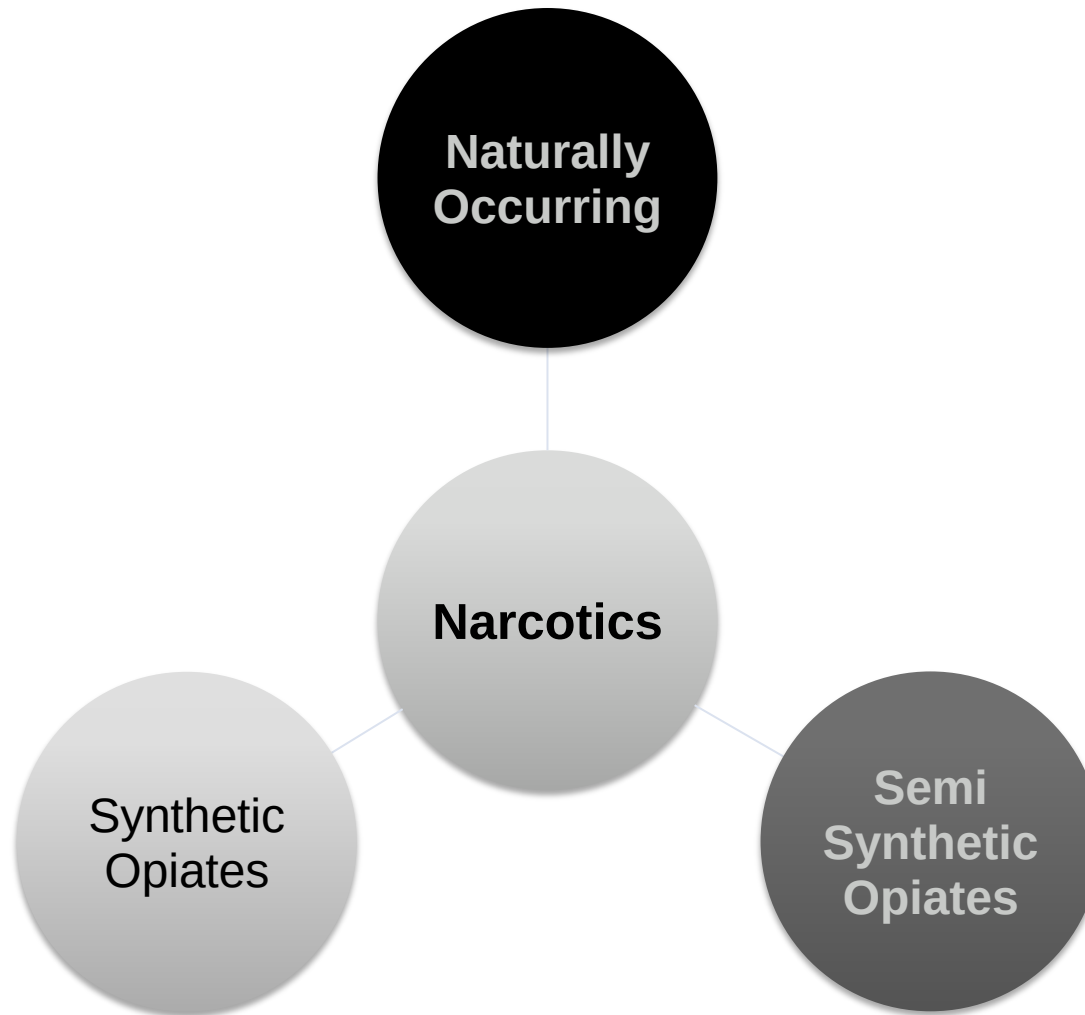
- Identified alpha-Pyrrolidinopentiophenone (Alpha PVP) a synthetic stimulant
- Ingested similarly to the synthetic drug bath salts, through smoking or injection
- Quote from Kingsport PD “We’re not seeing the crazy rages (like with bath salts), but the paranoia is the worst we’ve seen from any drugs.”

SMILES - 2C-I NBOMe

- Marketed as 2C-I but believed to be 2C-INBOMe a different, newer more potent chemical
- Phenethylamine
- 2C-I is a DEA Schedule 1
- 2C-INBOMe is not DEA Scheduled
- Also sold under the name N-Bomb
- At least 14 confirmed deaths reported thought-out the US



Opiates



Narcotics



Facts from DTAB meeting

- 48.3% of Americans use 1 drug daily
- Most prescription drug use over 60 yrs of age
- Enough hydrocodone prescribed in 2011 that every person in the US should have received 27 units
- Methadone had a high increase in prescriptions
- 7M people $\geq$ 12 yrs of age abuse drugs
- Most illegal use of prescription drugs comes from friends and family
- Opiates account for $>40\%$ of unintentional drug deaths in 2008

Info from SOFT meeting

- 402% increase in hydrocodone prescriptions from 1997-2011
- US consumes 90% of Hydrocodone produced in the world
- Medicaid patients have 6 times more opiate OD's than non-Medicaid patients
- 15,000 opiate OD's annually second only to MVA

Naturally occurring opiates

- **MORPHINE:** Prescription medications Atramorph PF, Oramorph SR, Infumorph solution, Duramorph, MSIR MS Contin, Roxanol and Morphine Sulfate. Nonprescription medications contain opium which will be detected as morphine in urine: Amogel PG, Ciabismul, Donnagel-PG, Infantol Pink, Kaodene with Paregoric, Paregoric and Quiagel PG
- **OPIUM:** Non-prescription medications Amogel PG, Ciabismul, Donnagel-PG, Infantol Pink, Kaodene with Paregoric, Paregoric and Quiagel PG
- **HEROIN:** Illicit drug obtained from the opium poppy which is native to Turkey
- **CODEINE:** Non-prescription medication Kaodene with Codeine



Naturally occurring opiates

CODEINE – Prescription medications: Acetaminophen and Codeine, Codeine Phosphate Oral Solution, Phenergan VC w/Codeine Syrup, Phosphate Oral Solution USP, Codeine Sulfate Tablet Phenergan w/Codeine Syrup, Acetaminophen and Codeine, Promethazine Hydrochloride, Fiorinal w/Codeine Capsules, Codeine Phosphate Syrup, Acetaminophen and Codeine, Guaifenesin Syrup w/Codeine, RMS Suppositories CII, Halotussin AC Syrup, Robitussin A-C Syrup, Acetaminophen and Codeine, Halotussin DAC Syrup, Robitussin-DAC Syrup, Kadian Capsules, Codeine Phosphate Capsules, Soma Compound w/Codeine Tablets, Capital and Codeine Oral, Tussi-Organidin, Codeine Phosphate and Acetaminophen, Tylenol w/Codeine Elixir, Codeine Phosphate in Tubex, Phenaphen w/Codeine Capsules, Tylenol w/Codeine Table, Actifed with Codeine, Codimal PH Syrup, Dimetane-DC Cough Syrup, Emprin with Codeine, Triaminic with Codeine and Tussar-2

Synthetic or semi-synthetic opiates

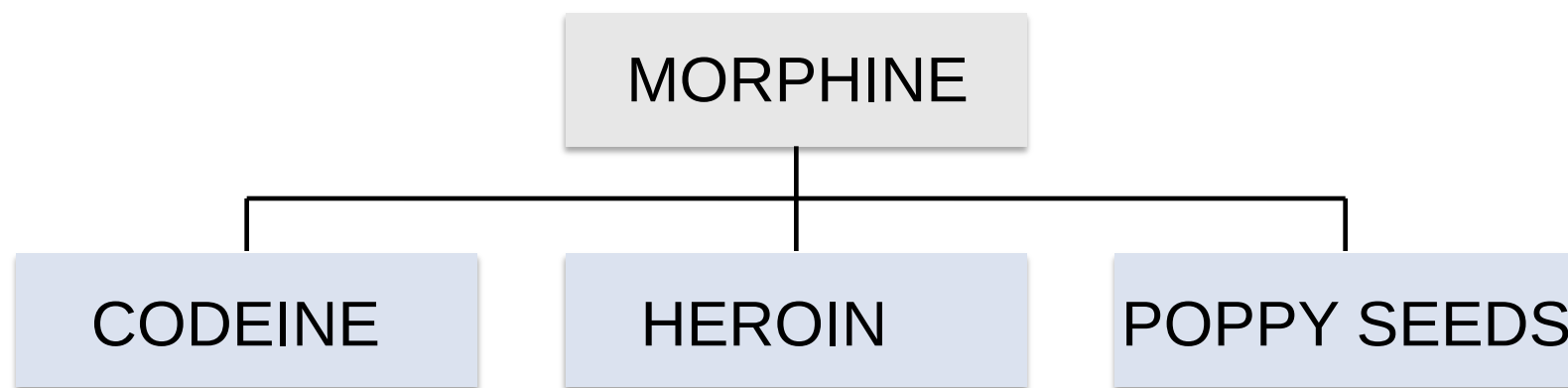
- alphaprodine (Nisentil®)
- hydromorphone (Dilaudid®)
- oxymorphone (Numorphan®)
- hydrocodone (Hycodan®, Lorcet-HD®, Vicodin®)
- dihydrocodeine (Synalgos®)
- oxycodone (Percodan®, Percocet®, Tylox®)
- propoxyphene (Darvon®)
- methadone (Dolophine®)
- meperidine (Demerol®)
- fentanyl (Duragesic®, Sublimaze®)
- pentazocine (Talwin®)
- buprenorphine (Buprenex®, Subutex®)

Opiates

Codeine, Morphine, Hydrocodone, Hydromorphone, Oxycodone, Oxymorphone and Methadone

- Moderate use
 - Drowsiness/mental clouding
 - Dizziness
 - Euphoria
 - Slowed and slurred speech
 - Low body temperature
 - Constipation, nausea, and vomiting
 - Pinpoint pupils
 - Insensitivity to pain
- Heavy use / Overdose
 - Weight loss
 - Convulsions
 - Low blood pressure
 - Bluish and cold, clammy skin
 - Infection of the heart lining and valves
 - Liver disease
 - Pneumonia
 - Respiratory depression
 - Coma

SOURCES OF MORPHINE

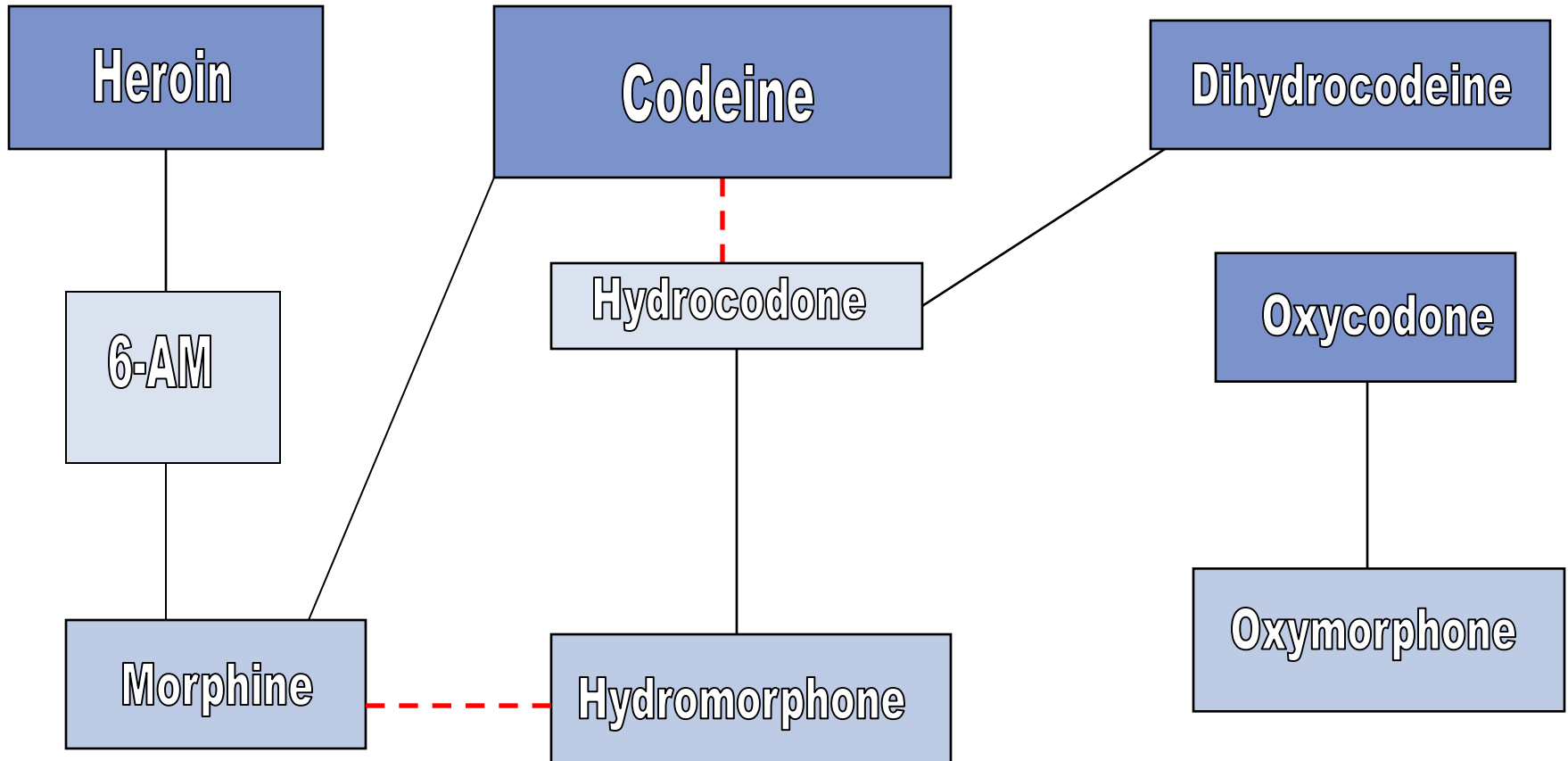


Perilous pastries

- Highest morphine - 11,571 ng/mL
- Highest codeine - 4,861 ng/mL
- Longest detection - 72+ hrs
- Most studies indicate concentrations of 200-3000 ng/mL
- Clearance - 24 hrs



Metabolism of opiates



Extended opiates: Drug facts

- Synthesized from natural opiates
- Clearance (can be drug & dose-dependent) = 72 to 96 hours
- Include
 - Hydromorphone = 2 to 8 times more potent than morphine
 - Hydrocodone = often combined with acetaminophen for pain relief (Vicodin)
 - Oxymorphone = 6 to 8 times more potent than morphine
 - Oxycodone = Percocet (combined with acetaminophen) & OxyContin (oxycodone only)
- Medical uses = pain relief & management
- Street Names
 - Hydrocodone = hydros, vikes
 - Hydromorphone = dillies, juice, D, footballs
 - Oxycodone = hillbilly heroin, OC, oxy, percs, poor man's heroin

Methadone: Drug facts

- Synthetically manufactured drug with some of the same affects as opiates
- Medical uses
 - Used in Methadone Maintenance Treatment (MMT) to treat those addicted to heroin
 - Pain relievers
- Street Names: dollies, meth, fizzies
- History
 - 1937: developed due to a shortage of morphine in Germany
 - 1947: introduced to the U.S
 - Today primarily used to treat people dependent upon heroin – MMT
- Method of administration
 - Orally
 - Intravenously
- Clearance: 72 to 96 hours

Cheese

- Starter heroin – Heroin mixed with Tylenol PM (Acetaminophen and diphendryamine)
- Targeted market: Middle and high school
- Highly addictive – Creates euphoria, disorientation, sleepiness and hunger
- Withdrawal could begin as soon as 12 hours after discontinuation of use
- Popular in the West and Southwest



Syrup and soda

- Also known as Sizzurp, Purple Drank and Lean
- Mixture of Promethazine and Codeine cough syrup, Jolly Ranchers and Sprite
- Popularized in rap culture particularly in Houston
- Texas, Louisiana, Mississippi and Florida are reporting an increase in misuse and deaths
- Effect - Euphoria and impaired motor skill



Fentanyl

- Approximately 4 times more powerful than morphine
- Duragesic patch - Favorite form of abuse - eaten or multiple patches
- Fentanyl Lollipops - Target children



What will cause a positive for opiates?

- SCREENING
 - High levels of imipramine
 - High levels of (Ranitidine) Zantac
 - Cough suppressants
 - Benzodiazepines
 - Very high levels of Meperidine
- GC/MS
 - Codeine
 - Morphine
 - Hydrocodone
 - Hydromorphone
 - Oxymorphone
 - Oxycodone



Krokodil

- Actual drug – Desomorphine
- Made from codeine
- Kitchen labs – 3 steps use gasoline, paint thinner, hydrochloric acid, iodine and red phosphorous
- Appeared in Russia 2002 now in several European countries
- Usually an orange liquid - Injected like Heroin
- Short high – 1-1.5 hrs; Heroin 6-8 hr high
- Cheap – \$6-8; Heroin \$150 and up
- Takes about 30 minutes to make
- Causes a scaly green skin irritation, destruction of the skin at the injection site and eventually gangrene
- The drug that eats the user



Kratom

Found in Thailand and Malaysia

Powdered extract is \$66/per 2 g

Powdered leaf is \$15/per 28 g

Effects

Opiate like sedation high dose 20-50 g
to coca like stimulation low dose 10 g

Duration

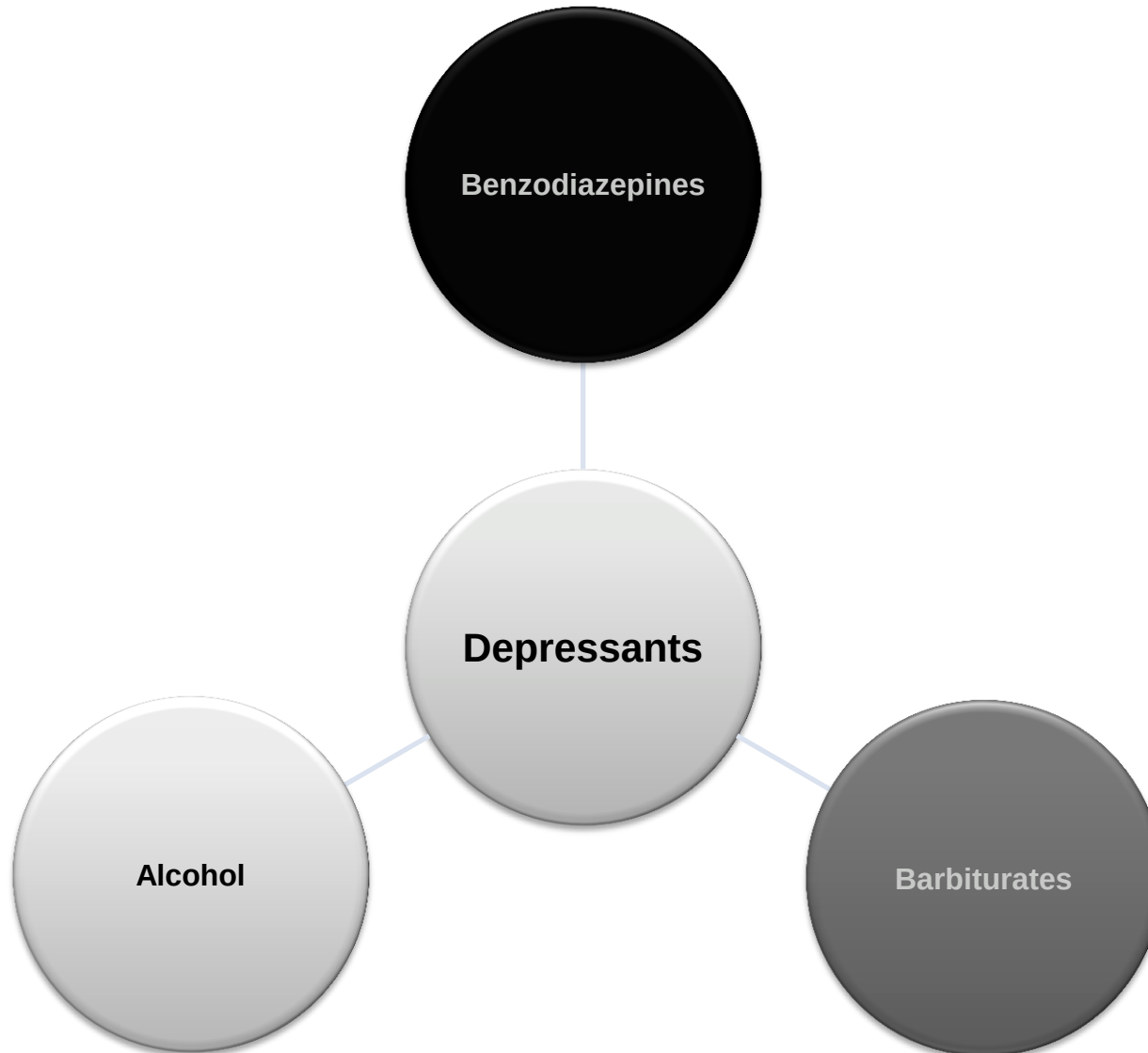
Initial effect in 5-10 minutes

Max effect in 15-20 minutes, but some effects
can be felt for 2-5 hours

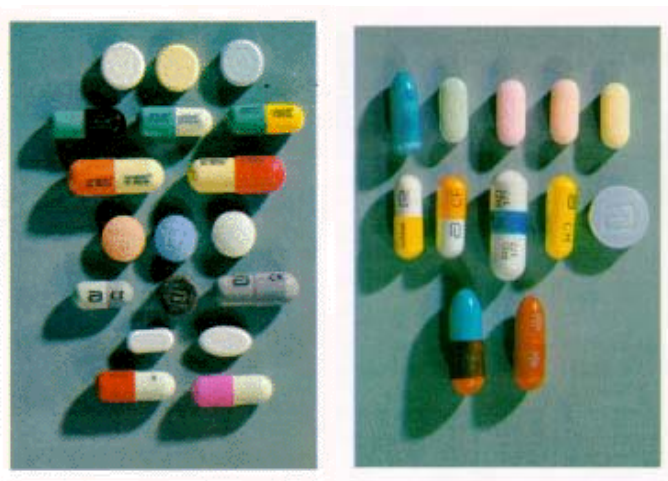
Tea is common delivery



Depressants



Depressants



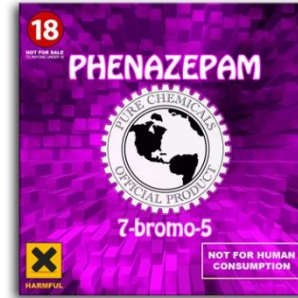
ALL PICTURES ARE THE PROPERTY AND COPYRIGHT OF THEIR RESPECTIVE OWNERS.

Benzodiazepines: Drug Facts

- Depressant in three forms
 - Short-acting
 - Intermediate-acting
 - Long-acting
- Brand Names
 - Restoril (temazepam)
 - Xanax (alprazolam)
 - Librium (chlordiazepoxide)
 - Valium (diazepam)
- Medical uses
 - Treatment of anxiety & insomnia
 - Pre-surgery sedative
 - Anticonvulsants
 - Muscle relaxants
- Less addictive & overdose potential vs. barbiturates
- Street Names: downers, tranks, V
- Clearance: 1-3 days or up to a week, depending upon type of drug and dosage

Phenazepam

- Developed in Russia
- Benzodiazepine
- Not Controlled under Federal Law – this is a non-scheduled drug available on the internet
- States can schedule this drug
- Louisiana and Arkansas have classified this drug as a schedule 1
- Dosage – 0.5 mg X3 daily max 10 mg
- 1 mg phenazepam = 10 mg Diazepam
- Cost – \$28.00/gram or .01 per dose
- Mr. Smiley Bars – \$5.99/pack
- Not currently being tested by labs



Barbiturates: Drug Facts

- Most commonly abused barbiturates include:
 - Amobarbital (Amytal)
 - Pentobarbital (Nembutal)
 - Secobarbital (Seconal)
- Medical uses
 - Epilepsy
 - Sleep disorders
 - Relief from anxiety, nervousness, & restlessness
- Generally replaced by safer alternative – benzodiazepines
- Street Names = barb, black beauty, blue, downer, pink, yellow jacket
- First synthesized on 1862, St. Barbara's Day
- Method of administration = orally by tablet
- Clearance
 - Short-acting = 24 to 48 hours
 - Medium-acting = 48 to 96 hours
 - Long-acting = 14 to 21 days

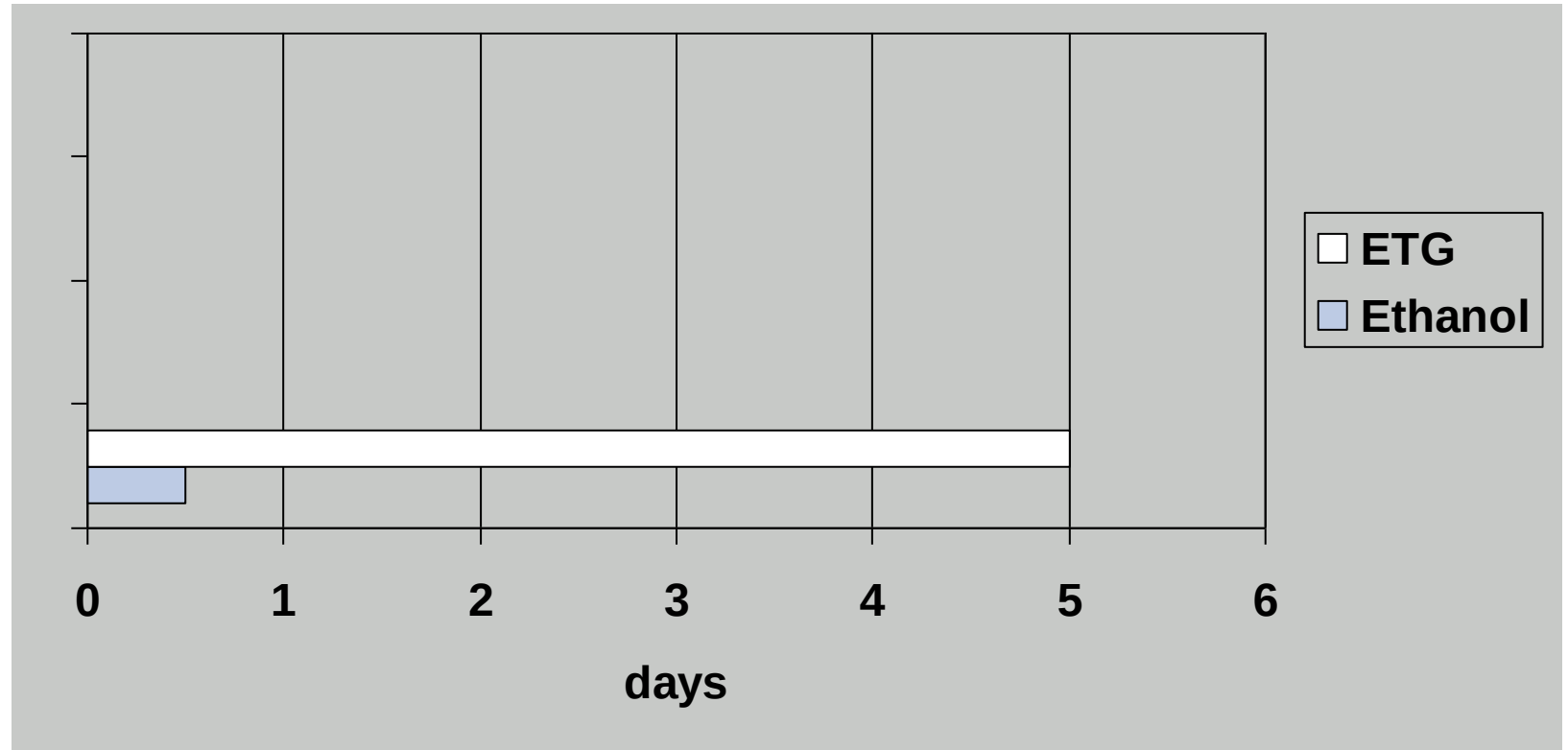
Why Screen For Alcohol?

- Cost the economy over 150 billion annually
- 80% of child abuse, domestic assaults and violent crimes are committed under the influence of alcohol
- > 1 million Americans have an alcohol addiction or abuse problem
- 110 million ER visits each year are related to alcohol use
- 39-44% of college students reported binge drinking
(*NIH study 045508, 2004*)
- 1.47 million Federal and State prisoners reported a history of alcohol abuse
(*Bureau of Justice Statistics, 2004*)

Why is Urine A Poor Choice?

- Glucose + yeast = production of ethanol
- Loss of ethanol due to evaporation
- Short detection window = 8 – 12 hours
- Does not indicate impairment
- Negative does not indicate the donor did not use only that the use was not recent

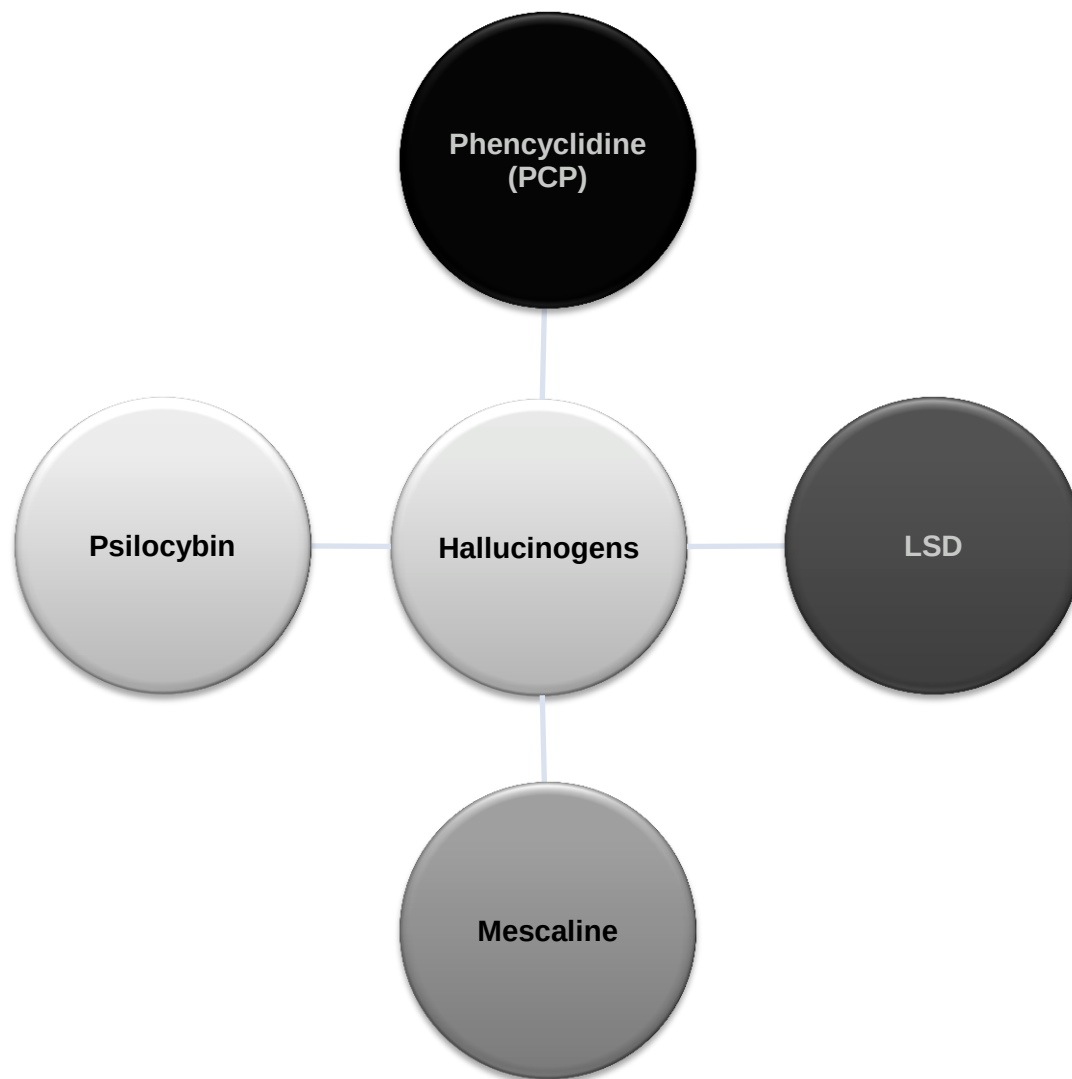
Detection Window



Is It Diabetes or Alcohol Intoxication?

	ALCOHOL	HYPOGLYCEMIA	KETOACIDOSIS
Dizziness	YES	YES	NO
Blurred vision	YES	YES	YES
Confusion	YES	YES	NO
Flushed face	YES	NO	YES
Combative	YES	YES	NO
Vomiting	YES	NO	YES
Pass Out/Coma	YES	YES	YES

Hallucinogens



Hallucinogens: Drug Facts

- No medical use
- Trips last up to 12 hrs
- Bad trips can end in death
- How are they taken: oral, smoked, injected, tea, snorted
- Street names
 - PCP – Angel dust, peace pill, hog
 - LSD – window panes, blotter acid, purple haze, cubes
 - Peyote – Big Chief, Mescaline, Mescal
 - Psilocybin – shrooms, magic mushrooms

Phencyclidine (PCP)



PCP: Drug Facts

- Synthetic chemical in the dissociate anaesthetic class
- Mind-altering drug causing bizarre physiological effects
- Pure PCP = white powder, but impurities can make it tan or brown with more gummy consistency
- Media portrays it as extremely dangerous chemical causing madness, psychotic reactions, and super human strength
- Forms
 - Tablets/capsules
 - Crystal/powder
 - Liquid (clear or yellow with distinctive chemical odor)
- Street Names = angel dust, embalming fluid, killer weed, lethal weapon, mint weed, peep, rocket fuel, stardust, supergrass

PCP: Drug Facts

- History
 - 1950s: synthesized as an intravenous anesthetic
 - More medically effective and safer, BUT with unexpected side effects, including confusion, delirium, agitation, excitement, and disorientation
 - Never approved for medical use
 - 1978: commercial manufacturing discontinued
- Street PCP = synthetically derived in illegal, makeshift laboratories
- Method of administration
 - Typically smoked by spraying or soaking plant material, marijuana, or cigarettes
 - Injected (liquid PCP)
- Clearance = 72 to 96 hours

PCP: Signs of Abuse

- Duration of Effects = 2 to 4 hours
- Moderate use effects
 - Lethargy & detachment
 - Sense of invulnerability
 - Disorientation & loss of coordination
 - Flushing & sweating
- Heavy use and overdose effects
 - Hallucinations
 - Speech difficulties
 - Agitation, combativeness, paranoia, & violence
 - Weight loss
 - Rapid, involuntary eye movements
 - Slight increase in breathing, blood pressure, & pulse rate
 - Nausea & vomiting
 - Seizures
 - Respiratory depression
 - Coma

What will cause a positive PCP?

- Screening
 - Diphenhydramine (Benadryl)
 - Dextromethorphan (DM in cough medications)
 - Effexor — antidepressant
- GC/MS
 - Phencyclidine



Three more research chemicals to add to the mix

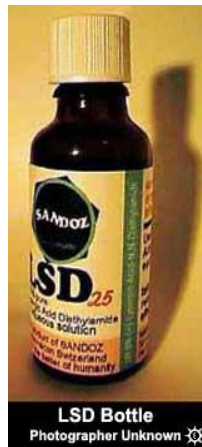
- MXE – methoxetamine
- 3-MeO-PCE – 3-methoxyeticyclidine
- 3-MeO-PCP – 3-methoxyphencyclidine
- Dissociative anesthetic “research chemicals”
- Hallucinogenic effects similar to PCP



Mescaline (peyote)



LSD



Psilocybin (mushrooms)



For more information, visit these sites:

- www.erowid.com
- www.dot.gov/ost/dapc
- www.drugfreeworkplace.gov
- www.samhsa.gov
- www.workplace.samhsa.gov
- www.whitehousedrugpolicy.gov
- www.usdoj.gov/dea/statistics.html

Questions?

Pat Pizzo

Director of Toxicology Alere

Pat.Pizzo@alere.com

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