

# Drugs and Toxins



**POISON**  
**Hel****p**<sup>®</sup>  
**1-800-222-1222**



# Introduction

**Forensic toxicology** helps determine  
cause-and-effect relationships

between

- Exposure to a drug or other substance  
and
- Toxic or lethal effects from that exposure



# Introduction

People can be exposed to toxic substances:

- intentionally—  
by treating illness or relieving pain
- accidentally—  
by harmful combinations or overdoses
- deliberately—  
by harming or killing others, or by suicide



# Poison—*Murder, Accidental Overdoses, and Drug Offences*

- Poisoning causes less than ½ of 1% of all homicides
- Accidental drug overdoses are more common
- Drug offenders
  - More than 50% of the federal prison population
  - About 20% of the population in state prisons



# Main Categories of Controlled Substances

Copy these:

1. Hallucinogens
2. Narcotics
3. Stimulants
4. Anabolic steroids
5. Depressants



# *Controlled Substances* *—Hallucinogens*

- Often derived from plants
- The effect and intensity of response to these drugs varies from person to person.
- Affects the user's perceptions, thinking, self-awareness, and emotions



# *Controlled Substances* *—Hallucinogens*

- Affects of an overdose often include
  - Increased heart rate
  - Increased blood pressure
  - Panic attacks, anxiety, or psychosis



# Controlled Substances —Hallucinogens

**WRITE  
JUST  
THE  
NAME  
OF EACH  
DRUG IN  
YOUR  
NOTES**

<b>Drug</b>	<b>Characteristics of Drug Overdose</b>
<b>MDMA (ecstasy)</b>	Increased heart rate and blood pressure, muscle cramps, panic attacks, seizures, loss of consciousness, stroke, kidney failure, death
<b>Mescaline</b>	Hallucinations, euphoria, dizziness, vomiting, increased heart rate, dilated pupils, diarrhea, headaches, anxiety, irrationality of thoughts
<b>LSD</b>	Dilated pupils, loss of appetite, sleeplessness, increase in body temperature, increased heart rate and blood pressure, sweating, dry mouth, tremors, confusion, distortion of reality, and hallucinations
<b>PCP</b>	Increased heart rate and blood pressure, convulsions, sweating, dizziness, numbness, and possibly death from heart failure. Drowsiness, which can lead to accidents. Users sometimes exhibit psychosis (completely losing touch with reality (that can last for weeks.)





# Controlled Substances

## —Narcotics

- The term narcotic originally referred medically to any psychoactive compound with any sleep-inducing properties
- Now “narcotics” typically refers to any drug or other substance affecting mood or behavior and sold for nonmedical purposes, esp. an illegal one.



# Controlled Substances —Narcotics

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Drug	Characteristics of Drug Overdose
Opium	Difficulty breathing, low blood pressure, weakness, dizziness, confusion, loss of consciousness, coma, cold clammy skin, small pupils
Heroin Codeine Morphine	Difficulty breathing, low blood pressure, coma, spasms of the stomach or intestines, constipation, nausea, vomiting, sleepiness, blue fingernails and lips, death
Methadone	Difficulty breathing, drowsiness, coma, low blood pressure, muscle twitches, blue fingernails and lips
Oxycodone	Slow, difficult breathing, seizures, dizziness, weakness, loss of consciousness, coma, confusion, tiredness, cold clammy skin and small pupils



# *Controlled Substances*

## *—Stimulants*

- Increases feelings of energy and alertness
- Suppresses appetite
- Afterwards, depression often results
- Overdose affects include high blood pressure, agitation, confusion, seizures
- Stimulants tend to be highly addictive



# Controlled Substances —Stimulants

Drug	Characteristics of Drug Overdose
Amphetamines (speed)	High blood pressure, rapid heart rate, agitation, irregular heartbeats, stroke, seizures, coma, death
Cocaine/ crack cocaine	Dangerous rise in body temperature, sweating, tremors, seizures, irregular heartbeats, stroke, confusion, heart attack, bleeding in the brain, death
Methamphetamines	Dangerous rise in body temperature, profuse sweating, confusion, rapid breathing, increased heart rate, dilated pupils, high blood pressure, kidney failure, bleeding in the brain, death

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# *Controlled Substances* *—Anabolic Steroids*

- A chemical structure similar to testosterone
- Promote cell and tissue growth increasing bone mass and body muscle.
- Popular with weightlifters, bodybuilders, and other athletes



# *Controlled Substances*

## *—Depressants*

- Affects the central nervous system by increasing GABA activity, a neurotransmitter
- Increased GABA causes drowsiness and slowed brain activity
- Relieves anxiety and produces sleep
- Side effects include slurred speech and loss of coordination
- Mixing depressants with alcohol and other drugs increases potency and health risks



# Controlled Substances —Bacterial Toxins

- **Tetanus** (also called *Lockjaw*)
  - Produced by the *Clostridium tetani* bacteria
  - Causes violent muscle spasms
- **Botulism**
  - Produced by *Clostridium botulinum*—botulism
  - Paralyzes muscles
  - Causes irreversible damage to nerve endings
  - Extremely deadly in very small amounts
  - Most poisonous biological substance



# Controlled Substances —Pesticides and Heavy Metals

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<b>Drug</b>	<b>Characteristics of Drug Overdose</b>
<b>Pesticides</b> (e.g., DDT, aldrin, dieldrin)	Interferes with the movement of nerve impulses and muscular contractions; anxiety, seizures, twitching, rapid heart beat, muscle weakness, sweating salivation, darrrhea, tearing, coma, and death
<b>Lead</b>	Nausea, abdominal pain, insomnia, headache, weight loss, constipation, anemia, kidney problem, vomiting, blue discoloration along the gum line, seizure, coma, and death
<b>Mercury</b>	Acute poisoning from inhalation causes flu-like symptoms, muschle aces, and stomach upset; chronic poisoning causes irritability, personality changes, headache, memory and balance problems, abdominal pain, nausea and vomiting, damage to the gums, nouth, and teeth. Long-term exposure can cause death.





# Controlled Substances —Pesticides and Heavy Metals

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Drug	Characteristics of Drug Overdose
Arsenic	Within 30 minutes of ingestion produces abdominal pain, severe nausea, vomiting, diarrhea, muscle cramps, convulsions, kidney failure, delirium, and death. Chronic exposure produces skin lesions, headache, personality changes, nausea, vomiting, diarrhea, convulsions, and coma.
Cyanide	Overdose can be fatal 6-8 minutes after ingestion. Rapidly causes weakness, confusion, coma, and pink skin from high blood oxygen saturation. Produces an almond-like odor.
Strychnine	Enters the body by inhalation or absorption through eyes or mouth. Produces, within minutes, body spasms, temperature rises, violent convulsions, and death.



# Controlled Substances —Bioterrorism Agents

## Ricin

- A poisonous protein in the castor bean
- Lethal in extremely small amounts
- Enters the body in various ways:
  - inhaled as a mist or a powder
  - ingested as food or drink
  - injected into the body
- Causes death within a few hours





# *Controlled Substances—Bioterrorism Agents*

## **Anthrax**

- Spreads to humans from infected animals
- Enters the human body through:
  - Inhalation; causing breathing problems that usually result in death
  - Ingestion; becoming fatal in 25% to 60% of cases
  - Absorption via the skin; leading to death in about 20% of untreated cases

## Drug Poster Directions

- You may work alone or with a partner
- Each rubric has a drug already assigned. You will need to research your drug and create a poster with the theme “SAY NO TO DRUGS”
- Include all information asked for in the rubric
- Some drugs are used for medical purposes. If you are having trouble finding information on your drug, include the words “ILLEGAL USE OF” in front of your drug’s name in the search bar
- Laptops should be in the store room. If not, ask Dr. Price for assistance in locating these.