WebQuest:
Drugs, and their effects on the body

Introduction:
A **drug** is any chemical taken into the body that alters normal body processes. There are many reasons to take a "drug" into your body, some of them good and some of them bad. **Medications** are licensed drugs taken to cure or reduce symptoms of an illness or medical condition. **Street names** are slang names given to a drug other than its popular or chemical name. Street names drastically change from place to place and time to time, and no absolute reliance should ever be placed on them.

There are three "main" drug classifications based on what they do to the body:
- **Stimulants**
- **Depressants**
- **Hallucinogens**

**Drug abuse** is the excessive use of any drug. **Drug addiction** is a dependence on a drug. Addiction involves a physical or mental reaction to lack of the drug, known as **withdrawal**. Most people that are addicted to a drug will build up a **tolerance** to the drug as the body becomes less and less responsive, requiring more and more of the drug to achieve the desired results.

There are actually two type of addiction:
- Psychological addiction - is an emotional dependence.
- Physical addiction - is a dependence caused by changes in body chemistry.

A **drug overdose** is essentially a type of poisoning due to the concentrations of drug in the body.

**WebQuest Tasks**

- Task 1: **Caffeine**
- Task 2: **Nicotine**
- Task 3: **Alcohol**
- Task 4: **Methamphetamine**
- Task 5: **Cocaine**
- Task 6: **Narcotics**
- Task 7: **Hallucinogens**
- Task 8: **Inhalants**
- Task 9: **Marijuana**
- Task 10: **Energy vs Sports Drinks**
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- WebQuest Application
Task 1:

Use this Caffeine webpage to answer the following questions.
http://en.wikipedia.org/wiki/Caffeine

1. What purpose does caffeine serve for the living plant containing it?
2. Caffeine acts on the central nervous system as what class of drug?
3. List five other names for caffeine.
4. What is the world's primary source of caffeine?
5. Why does dark roast coffee have less caffeine than lighter roasts?
6. How much chocolate would you have to eat to get the same amount of caffeine found in two cups of regular coffee?
7. What happens when caffeine is used in combination with other medicines?
8. How fast is caffeine absorbed by the body?
9. One of the metabolic products of caffeine is theobromine. What are the two main effects of theobromine in the body?
10. What is the minimum lethal dose of caffeine for a human?
11. What are the symptoms of caffeine intoxication?
12. Why does a high usage of caffeine lead to peptic ulcers, erosive esophagitis, and gastroesophageal reflux disease?
13. One of the "withdrawal" symptoms from caffeine is a headache. What causes this headache?
14. What are the symptoms of extreme cases of caffeine withdrawal?
15. Why is benzene no longer used to extract caffeine from plants?
Task 2: Nicotine

Use this [Nicotine](http://en.wikipedia.org/wiki/Nicotine) webpage to answer the following questions.

1. Nicotine is found in the nightshade family of plants. Name two plants in this family.
2. Why is nicotine used in many insecticides?
3. In low doses, nicotine acts like what class of drug?
4. In high doses, nicotine acts like what class of drug?
5. Nicotine is a carcinogen, but it does not promote the development of cancer in healthy cells. What does it do?
6. What effect does nicotine have on heart rate and blood pressure?
7. How much nicotine is considered a lethal dose for humans?
8. Nicotine is physically addictive. What are its withdrawal symptoms?
9. How long do the withdrawal symptoms last?
10. Why does chewing tobacco release much more nicotine in the body than smoking tobacco?
11. How many seconds after entering the body does nicotine reach the brain?

Task 3: Alcohol

Part 1 - Use this [Alcohol](http://en.wikipedia.org/wiki/Alcoholic_beverage) webpage to answer the following questions.

1. There are many types of alcohol. What type of alcohol is found in alcoholic beverages?
2. The concentration of alcohol in a beverage may be given in the units ABV. What do these letters stand for?

3. The amount of alcohol in beverages is commonly expressed in "proof" units. What is the ABV for a beverage that is listed as 100 proof?

4. Most yeasts stop growing when the alcohol concentration reaches what percentage?

5. What is the name of the process that makes high levels of alcohol possible in beverages?

6. How are wines "fortified"?

7. What is the difference between "well" drinks, "premium" drinks, and "top shelf" drinks?

8. Although 15% is the typical limit for beer and wine, what is the highest percentage of alcohol brewers have reached?

9. When was the alcohol "still" invented and by who?

10. How does the U.S. Department of Agriculture define "moderate" drinking?

11. What are the "statistical" health benefits for moderate alcohol consumers?

12. What name is used to indicate a chemical dependency to alcohol?

13. A "Blue Law" restricts the sale of liquor. What is this restriction?

14. What grain is usually fermented to produce beer?

15. What grain is usually fermented to produce bourbon whisky?

16. What grain is usually fermented to produce sake?

17. What plant is usually fermented to produce vodka?

18. What is the main characteristic of vodka?

19. What type of berries are used to add flavor to gin?
Part 2 - Use this Effects of Alcohol webpage to answer the following questions. http://en.wikipedia.org/wiki/Effects_of_alcohol_on_the_body

1. Alcohol has a "biphasic" effect on the body. What does that mean?

2. What percent of alcohol in the blood will kill most people?

3. Generally, at what blood alcohol percentage does a person appear to be "drunk"?

4. What is the most significant health problem for alcoholics?

5. Alcohol does actually cause the death of brain cells. An increase in the concentration of what element in the intracellular space causes this?

6. What two metabolic characteristics of women cause them to become drunk faster than men?

7. Why are people of East Asian descent less susceptible to alcoholism?

8. Why does someone drinking numerous alcoholic beverages become dehydrated?

9. What are the symptoms of a "hangover"?

10. What are the two basic causes of a "hangover"?

11. What is the cause of the hangover headache?
12. What is the best way to prevent or lessen the effects of a hangover?

13. Although the effects of alcohol are not always the same on people, there is a general progression of effects, based on the "dose". This progression is shown below. What is the range of BAC for each of these?

A. Euphoria - the person becomes more self-confident or daring, attention span shortens, and judgement is not good.

B. Excitement - the person may become sleepy, not react to situations as quickly, and body movements are uncoordinated.

C. Confusion - profound confusion, dizziness, staggering, aggressive, and vision and speech are impaired.

D. Stupor - movement is severely impaired and lapses in and out of consciousness.

E. Coma - unconsciousness sets in, breathing is slow and shallow, heart rate drops, and death may occur.

F. Death - alcohol causes the central nervous system to fail.

14. Moderate doses of alcohol stimulates the brain cortex, hippocampus, and nucleus accumbens. What two things are controlled by these brain parts?

15. On casual inspection, what type of coma can be mistaken for severe drunkenness?

Part 3 - Use this Fetal Alcohol Syndrome webpage to answer the following questions. http://en.wikipedia.org/wiki/Fetal_alcohol_syndrome

1. What causes fetal alcohol spectrum disorder (FASD)?

2. What is the main effect of fetal alcohol exposure?

3. What are the features of FASD?

4. How many babies are estimated to be born in the U.S. every year with FAS?
5. How can FASD be prevented?

6. In 1981, the Surgeon General that women should not drink even while planning a pregnancy. Why?

Task 4: Methamphetamine

Use this [Methamphetamine](http://en.wikipedia.org/wiki/Methamphetamine) webpage to answer the following questions.

1. What class of drug is methamphetamine?

2. Name a prescribed drug that is pure methamphetamine?

3. Methamphetamine was first synthesized from ephedrine using what two chemicals?

4. Methamphetamine was prescribed to the American public in the 1950s for what disorders?

5. How much hazardous waste is produced for every pound of methamphetamine produced?

6. One of the effects of meth use is "formication". Describe formication.

7. What is "meth mouth"?

8. Why does use of meth cause long-term cognitive impairment?

9. What does meth use do to the immune system?
10. What side effect does meth use have on the cardiovascular system of the body?

11. What side effect does meth use have on the endocrinial system of the body?

12. Chronic use of meth can cause severe damage to what two body organs?

13. What is the major reason prolonged use of methamphetamine causes the user to become irritable?

14. The common belief that methamphetamine gives people super-human strength is not true. What effects of the drug cause people to believe this?

15. What are three serious physiological withdrawal symptoms experienced by meth addicts?

16. There are many "routes of administration" for taking methamphetamine into the body. Which route, in general, is the fastest way to raise the concentration of the drug in the blood?

**Task 5: Cocaine**

Use this [Cocaine webpage](http://en.wikipedia.org/wiki/Cocaine) to answer the following questions.

1. What plant does cocaine come from?

2. What class of drug is cocaine?

3. What does cocaine do to the appetite?

4. What soft drink, in its original 1886 recipe, had a "pinch of coca leaves"?

5. What caused the company to begin using "decozanized" leaves in 1906?

6. What U.S. company sold cocaine cigarettes in 1885?

7. Cocaine is the second most popular illegal recreational drug in the U.S. What drug is first?
8. Why is base cocaine not suitable for drinking, snorting, or injecting?

9. When smoking freebase cocaine, how long does it take the cocaine to reach the brain?

10. What substance makes freebase cocaine extremely flammable?

11. How did "crack" cocaine get its name?

12. What is the simplest way to administer cocaine?

13. What is the most common method of ingestion of recreational powder cocaine?

14. What two physical problems are caused by snorting cocaine?

15. What method of administration of cocaine provides the highest blood levels of the drug in the shortest time?

16. Why does smoking tobacco during cocaine use seem to enhance the euphoria?

17. How long after using cocaine can the metabolites be detected in urine?

18. How long can cocaine be detected in the air of regular users?

19. How many Americans were reported as using cocaine in 1999?

20. What country was the world's leading producer of cocaine in 1999?

Task 6: Narcotics

Use this Narcotics webpage to answer the following questions.
http://en.wikipedia.org/wiki/Narcotics

1. In the U.S. legal context, what drugs are referred to as "narcotics"?

2. What type of narcotics administration is referred to as "mainlining"?

3. Clinically, narcotics are used in the treatment of pain and acute diarrhea. What is another clinical use of narcotics for which you
may have had a prescription?

4. Withdrawal symptoms are usually experienced shortly before the time of the next scheduled dose. What are the early symptoms?

5. What are the next withdrawal symptoms to show up?

6. Without intervention, the physical symptoms of withdrawal will last for how long?

7. There are two major patterns of narcotic dependence seen in the U.S. Use one sentence to describe each of these two patterns?

Task 7: Hallucinogens

A hallucination is a sensory perception experienced in the absence of an external stimulus, as distinct from an illusion, which is a misperception of an external stimulus. Hallucinations may occur in any sensory mode - visual, auditory, olfactory, gustatory, tactile, or mixed. Use this Hallucinogens webpage to answer the following questions.
http://en.wikipedia.org/wiki/Hallucinogens

1. Most hallucinogens have some stimulating effects on the body, but these are not the reason they are used as recreational drugs. What are the three process of the brain that are altered by psychedelics?

2. One class of hallucinogen is psychedelic drugs. What is the primary action of these drugs?

3. Another class of hallucinogen is dissociative drugs. What do these drugs do?

4. Deliriants, or anticholinergics, are a special class of dissociative. What do these drugs do?

5. Who invented LSD and in what year?
6. How was LSD used in psychiatry to study psychotic disorders such as schizophrenia?

7. Some psychedelics are listed below. Answer the questions about each: Go to Wikipedia for the answers

A. LSD
   • What do the letters LSD stand for?
   • What is the lowest dose of LSD in which threshold effects can be felt?
   • Generally, how long do the effects of LSD last?
   • What is a "flashback"?

B. Peyote
   • Peyote is the name for what type of plant?
   • What is the principal drug in peyote?
   • What part of the plant is normally chewed?

C. Henbane
   • The name Henbane comes from an Anglo-Saxon word "hennbana". What does hennbana mean?
   • List the common symptoms of henbane poisoning in humans.
   • List the less common symptoms of henbane poisoning in humans.

D. Psychedelic mushroom
   • What are the two active drugs in psilocybin mushrooms?
   • List the physical effects of psilocybin/psilocin.
• List the sensory effects of psilocybin/psilocin.
• List the emotional effects of psilocybin/psilocin.
• List the intellectual effects of psilocybin/psilocin.

E. *Psychoactive toad*

• What is the family name for the psychoactive substances produced by these toads?
• How do humans who want to get high administer the active drug from these toads?
• What is "toad licking"?

F. *Nutmeg*

• Nutmeg is the actual seed of what type of tree?
• What are the two chemical constituents responsible for the subtle hallucinogenic properties of nutmeg oil?
• In low doses, nutmeg produces no noticeable effect on the mind or body. What are the potential effects of ingesting 7.5 grams or more?
• What are the effects of ingesting 10 grams or more?
• Why is the recreational use of nutmeg unpopular?
• How long will it be after ingestion that the user will experience a peak effect?

**Task 8: Inhalants**

Use this [Inhalants](http://en.wikipedia.org/wiki/Inhalants) webpage to answer the following questions.

1. Inhalants are commonly found in hundreds of household products. All of these substances are composed of two types of chemicals. What are those two types?
2. Solvents are some of the most dangerous substances used recreationally. What damage do they do to the body?

3. What is "huffing"?

4. Why is inhalant abuse common among children and adolescents?

Task 9: Marijuana

Use this Marijuana webpage to answer the following questions. http://en.wikipedia.org/wiki/Marijuana

1. Cannabis is a psychoactive drug. What does that mean?

2. What newspaper baron was instrumental in promoting making marijuana use illegal?

3. How many states provide some legal protection for patients who use marijuana with the consent or recommendation of a doctor?

4. How much marijuana can an adult over 21 have in their possession in Denver, Colorado without being a crime?

5. The leaves of the plant Cannabis sativa are usually smoked after drying. What product is made from the leaves of the Cannabis indica plant?

6. The nature and intensity of the immediate effects of cannabis consumption vary according to the species of plant and the "set and setting". What does "set and setting" mean?

7. The effects of cannabis consumption varies from one person to another. Describe the basic effects of cannabis on each of the following:

   A. short-term memory
   B. appetite
C. appreciation of music
D. stress
E. heart rate
F. appearance of the eyes

8. Describe the basic therapeutic effects of cannabis consumption on each of the following:

A. pain
B. nausea
C. blood vessels
D. intra-ocular pressure in the eyes
E. sleep

9. Approximately how many different chemicals are found in cannabis?

10. The main active ingredient in cannabis is THC. What do those letters stand for?

11. Is there sufficient evidence to say that cannabis promotes or limits cancer?

12. What are the long-term effects of human cannabis consumption?

13. How is cannabis most often used medically?

14. How is cannabis used by chemotherapy patients?

15. What is the name of the prescription drug that is a synthetic version of THC?

16. Bhang is a special cannabis preparation. How is it consumed?

**Task 10: Energy Drinks vs Sports Drinks**

Use this [Sports Drink] webpage to answer the following questions.


1. Besides rehydrate, what are sports drinks designed to do?

2. What body system does "water intoxication" interfere with?

3. In what year was Gatorade introduced?
Use this Energy Drink webpage to answer the following questions.

1. What are energy drinks designed to do?

2. Besides caffeine and B vitamins, what are some common ingredients in energy drinks?

3. Caffeine is found in energy drinks in what other two forms?

4. Males make up approximately what percent of the market for energy drinks?

5. Why should people with epilepsy not use energy drinks?

6. What country has banned the sale of Red Bull?

7. What Scottish drink might be called the first energy drink and what year was it first produced?

8. Josta, by PepsiCo, was the first marketed U.S. "energy drink". In what year was it produced?

9. In what year was Red Bull introduced to the U.S.?

10. How much money was spent on energy drinks in the U.S. in 2005?

11. What is a "smart drink" supposed to do?

The Federal Controlled Substances Act of 1970, establishes five schedules of controlled substances defined below. Penalties for recreational use are generally most severe for schedule 1 substances and decrease as you go down the list.

- **Schedule I Substances**: Drugs in this schedule are those having a high potential for abuse, having no currently accepted medical use in the United States, or a lack of accepted safety. Some examples are: heroin, marijuana, LSD, peyote, mescaline, psilocybin, tetrahydrocannabinols, morphine methylsulfonate, and nicocodein.

- **Schedule II Substances**: The drugs in this schedule have a high...
potential for abuse, a currently accepted medical use in the United States, and their use may lead to severe psychological or physical dependence. Most of Schedule II Substances have been known in the past as Class A Narcotic Drugs. Some examples are: opium, morphine, codeine, dihydromorphinone (Dilaudid), methadone (Dolophine), pentopon, meperidine (Demerol), cocaine, oxycodone (Percodan). Also included in this Schedule is any compound which contains in any form the substance of methamphetamines as an injectable liquid.

**Schedule III Substances**: The drugs in this schedule have an abuse potential less than those listed in Schedules I and II, and include those drugs formerly known as Class B Narcotics, and non-narcotic drugs. Some examples are: glutethimide (Doriden), phenmetrazine (Preludin), methyprylon (Noludar), methylphenidate (Ritalin), nalorphine, and barbiturates (except phenobarbital, methylphenobarbital, and barbital). Paregoric is now listed in this schedule, as well as amphetamines and methamphetamines (except an injectable liquid).

**Schedule IV Substances**: The drugs in this schedule have an abuse potential less than those listed in Schedule III. Some examples are: barbital, phenobarbital, methylphenobarbital, chloral hydrate, ethchlorvynol (Placidyl), ethinamate (Valmid), meprobamate (Equanil, Miltown).

**Schedule V Substances**: The drugs in this schedule have an abuse potential less than those listed in Schedule IV, and consist of those preparations formerly known as Exempt Narcotics, with the exception of paregoric (Camphorated Tincture of Opium). Paregoric is now listed as a Schedule III Controlled Substance.
Part II
You live on a newly inhabited island 450 miles off the coast of Australia. The members of the island have decided to form a government. You and your comrades have been put in charge of laws of the land. The laws that you have been assigned will focus on marijuana use. Your duty will be to decide the laws that govern this intoxicant.

The Task
You will describe your new laws for marijuana for those that inhabit your island. It is necessary that you evaluate it's effects via the Internet, before you determine the laws that will be concerned. Be sure that you justify your reasoning for the island’s newly formed laws.

The Process

Island Laws Enforcement Agency

Recommendations
1. Name of your island _______________.

2. We believe it is best for the entire island to do the following with this drug.
   A. Completely Banned - no one should be allowed to use this drug.
   B. Restricted - some people may use this drug legally anywhere on the island, under some circumstances.
   C. Freely Allowed - anyone of any age should be able to use this drug at anytime.
   D. Other Suggestions - be specific about what will and will not be allowed with these drugs.

3. If you selected (A) above, explain your reasons below. Include a list of penalties for possession, sale or use of this drug on your island.

4. If you selected (B) above, explain in detail the following.
   Legal age for use ________________________________.
   a. Penalty for using before legal age. (Describe each)
   b. Penalty for driving/horseback riding under the influence of this drug.
   c. Penalty for using cars or horseback under the influence of this drug.
   d. Are there any other restrictions for using this drug? Selling underage, on school grounds, using on other islands, countries, etc.

5. If you selected (C) above, explain your specific reasons as to why this drug should have no restrictions in your island society.
6. If you selected (D) above, explain your specific reasons as to what other restrictions you would have for this drug on your island society.

Use the links below to help you get started. They will give you some important information and will guide you on your way. If you feel you need some more information go to the google search engine (www.google.com) and type in marijuana.

http://www.acde.org/youth/Research.htm
http://www.usdoj.gov/dea/concern/marijuana.html
http://www.factsontap.org/drugdeal/drugdeal.htm
http://www.drughelp.org/
http://www.cdc.gov/tobacco/issue.htm

For your information, marijuana is not legal in any country. However, it is decriminalized to an extent in the following areas:
1. Bilbao, Spain
2. Amsterdam to an extent: only legal for licensed coffee shops, more than 30g can get you a fine if you show it off on the streets, and grow up to around 20 plants for PERSONAL USE ONLY.
3. In Jamaica it’s very tolerated but they get pressured by other countries plus the police are very corrupt.
4. Ontario up to 15g (no singled out or scales, though)

WebQuest Application:

Has the information gained during this WebQuest changed your views on your personal use of any of the drugs described? If so, how?