



## Grade 8 Sample Lesson Plan: Unit 2 – The 411 on Drugs

### SOLs

- 8.1. I Describe the short- and long-term health issues related to alcohol, tobacco, and other drug use, including inhalants, marijuana, cocaine, stimulants, methamphetamines, and opiates.
- 8.2.H Analyze how family and peer pressure influences tobacco, alcohol, marijuana and other drug use.

### Objectives/Goals

- The student will identify and explain essential health concepts about drugs and how they can affect personal health
- The student will apply the health skill of analyzing influences when it comes to drug use and peer pressure.

### Materials

- [Substance Abuse Worksheet](#) (for research)
- [Analyzing Influences - Drugs, Peer Pressure & You](#) assessment

### Procedure

- Brainstorm or Review Activity - Ask students, *What do you think are the most commonly abused drugs? Can a person abuse legal drugs? How?* (taking more than the prescribed dosage; taken a medicine that is not prescribed for them or taking a medicine to feel its effects)

Higher or Lower activity - Tell students you are going to read a risky behavior statement with a statistic in it. Have them decide if the correct number for that risky behavior is higher or lower. Decide without discussing this with a neighbor, then stand if you think the number is higher and sit if you think the number is lower. After giving the class the correct answer and statistic for each statement, process each statement so students understand the stats

better. For example, 20% of high school students binge drink in the last 30 days, would be 1 out of every 5 high school students...meaning, the majority do not. It is very important to get student to understand how perceptions can influence health behavior.

*SOURCE: Youth Risk Behavior Survey - CDC - 2015*

- a. 75% of high school students ever drank alcohol in their lifetime. (Answer: 63%)
  - b. 20% of high school students drank 5 or more drinks in a row within two hours at least one time in the last 30 days. (Answer: 17%)
  - c. 25% of high school students currently use marijuana. (Answer 22%)
  - d. 10% of high school students ever took a prescription drug without a doctor's prescription (Answer: 17%)
  - e. 15% of high school students were offered, sold, or given an illegal drug on school property. (Answer: 22%)
- Ask students...*Which statement(s) surprised you the most? Explain. It is very common for teens to over-estimate drug use by peers and adults. It is very common for adults to under- estimate drug use by teens...why do you think that is the case?*
  - Tell students that today we are going to discuss the use and abuse of prescription medicines, non-prescription medicines, and illegal drugs. By the end of the lesson you will be able to describe the short- and long-term health issues related to alcohol, tobacco, and other drug use, including inhalants, marijuana, cocaine, stimulants, methamphetamines, and opiates.
  - Jigsaw Cooperative Learning Activity - Divide students into groups of six ahead of time. Each student will be assigned a different drug. Within each group, assign each student one of the drugs discussed in this lesson. The drug groups include 1. Alcohol, 2. Prescription & Over-the-Counter Medications - Opioids and CNS Depressants, 3. Prescription and Over- the-Counter Medications - Stimulants and Dextromethorphan (DXM) 4. Marijuana, 5. Methamphetamines, 6. Spice (synthetic marijuana) and Bath Salts. Feel free to change out drugs that are more prevalent in your community.
  - Have students fill out the [Substance Abuse Worksheet](#) that has the following questions
    - a. What type of drug is it? (its classification and examples)
    - b. What are the slang names for this drug?
    - c. How is the drug taken?
  - Is this drug legal or illegal?
    - d. Does this drug cause addiction?
    - e. What are the short-term effects of this drug?

- f. What are the long-term effects of this drug?
- g. Are there other interesting facts or information about this drug that your classmates should know?
- Tell students your job will be to become an “expert” on the drug that is assigned to you. Your job a little bit later will be to “teach” the other students in small groups about your assigned drug. Read your “fact sheet” silently and take notes about your drug answering the following questions above. You will have 10 minutes to read about your drug and take notes.
- While students are working circulate around the room and help answer any questions that might come up.
- Now, regroup the students by drugs. For example, put all the students together who were researching alcohol and tell them the following: *Now that you are with students who have been assigned the same drug as you, spend the next 10 minutes discussing the answers to the drug you were assigned. Take additional notes if you need to. You will in a few minutes teach this to your original small group.*
- Regroup students into their original jigsaw groups and give each group member 3-5 minutes to teach their small group about each drug.
- When students are done presenting, use “[The 411 on Drugs](#)” slideshow to have a group discussion.
- Finally, it is ideal to get students to apply the information they have learned in a practical way. Have students analyze influences in their life when it comes to substances and choosing to use them or not. See the assessment below. You can first frame this assessment by asking the following questions to the class:
  - a. Why do you think some young people use illegal drugs or abuse illegal medications?
  - b. What influences a person’s decision to abuse drugs? (family, peers, media, etc.)
  - c. Now have students complete the assessment and think about their own individual influences. Get them to think about whether it is an internal vs. external influence and whether the message is positive or negative.

### Assessment Idea

- See Analyzing Influences Assessment at the bottom

### Handout

The next page includes a handout for the lesson. The handout is designed for print use only.

## Alcohol Fact Sheet

<http://www.cdc.gov/alcohol/fact-sheets/alcohol-use.htm>

<http://www.nhtsa.gov/>

[http://www.aacap.org/cs/root/facts\\_for\\_families/teens\\_alcohol\\_and\\_other\\_drugs](http://www.aacap.org/cs/root/facts_for_families/teens_alcohol_and_other_drugs)

There are approximately 79,000 deaths attributed to excessive alcohol use each year in the United States. This makes excessive alcohol use the 3rd leading lifestyle-related cause of death for the nation. In the single year 2005, there were more than 1.6 million hospitalizations and more than 4 million emergency room visits for alcohol-related conditions. What is alcohol?

Ethyl alcohol, or ethanol, is the active ingredient in distilled spirits (liquor), wine and beer. Alcohol is a depressant drug.

### The Standard Measure of Alcohol

In the United States, a standard drink is any drink that contains 0.6 ounces (13.7 grams or 1.2 tablespoons) of pure alcohol. Generally, this amount of pure alcohol is found in

- 12-ounces of regular beer or wine cooler.
- 8-ounces of malt liquor.
- 5-ounces of wine.
- 1.5-ounces of 80-proof distilled spirits or liquor (e.g., gin, rum, vodka, whiskey).

These amounts are usually referred to as “one” drink because they contain the same amount of alcohol. Even though the beverages differ, the alcohol’s effect on the body by volume is the same.

### Immediate Effects of Alcohol

The immediate effects of alcohol include:

- impaired judgment - drinking even in small amounts impairs judgment and can lead to risky behaviors
- reaction time - drinking alcohol slows down reaction time
- reduced sensitivity to pain, taste and odor
- impaired vision – which includes a reduced field of vision, reduced glare resistance and less color sensitivity
- impaired attention and memory
- disturbed sleep

### Definitions of Patterns of Drinking Alcohol

- Binge drinking
  - o For women, 4 or more drinks during a single occasion.
  - o For men, 5 or more drinks during a single occasion.

- Heavy drinking
  - o For women, more than 1 drink per day on average.
  - o For men, more than 2 drinks per day on average

**Excessive drinking** includes heavy drinking, binge drinking or both. Alcohol poisoning is a medical emergency that results from high blood alcohol levels that suppress the central nervous system and can cause loss of consciousness, low blood pressure and body temperature, coma, respiratory depression, or death.

**Heavy drinking** can cause addiction. Alcoholism is the term used for alcohol addiction. It is estimated that 20 million adults in the United States abuse alcohol. More than half of these alcoholics started drinking heavily when they were teenagers. Teens that begin drinking before the age of 15 are five times more likely to become dependent on alcohol as adults than those who do not begin drinking until age 21. There are 3 million teenage alcoholics in the U.S.

Does Alcohol Impair Driving? Approximately 42,000 people are killed each year in motor vehicle crashes in the U. S. More than 16,000 of these deaths are alcohol or drug related. Since 1990, alcohol-related fatalities have been reduced by 25%, from 22,084 in 1990 to 16,694 in 2004. Then the fatalities increased in 2005 and 2006 to 17,941. This accounts for 41% of the deaths in car crashes. In the U.S., one person is killed every 30 minutes in an alcohol-related car accident.

Teens are at far greater risk of death in an alcohol-related crash than the overall population, despite the fact that they are below the minimum drinking age in every state. Each year more than 10,000 young people in the United States are killed and 40,000 injured in alcohol-related automobile accidents. Among 15- to 20-year-old drivers involved in fatal crashes in 2006, 31 percent of the drivers who were killed had been drinking. Nationally in 2006, 25 percent of the young drivers ages 15-20 who were killed in crashes had blood alcohol concentration (BAC) levels of .08 or higher at the time of the crash.

**Drinking alcohol does affect a person's driving ability.** It affects a person's:

- Vision: Alcohol relaxes eye muscles, which make it harder to focus and see clearly. Blurred vision is often a result of drinking alcohol.
- Reaction Time: Drinking alcohol slows down reaction time.
- Coordination: Drinking alcohol affects a person's ability to do motor skills, such as catching a ball, walking a straight line.
- Judgment: drinking even in small amounts impairs judgment and can lead to risky behaviors, such as speeding or taking risks while driving.

**Immediate Health Risks Alcohol** use has immediate effects that increase the risk of many harmful health conditions.

- Unintentional injuries, including traffic injuries, falls, drownings, burns, and unintentional firearm injuries.

- Violence, including spouse abuse and child abuse. About 35% of victims report that offenders are under the influence of alcohol. Alcohol use is also associated with 2 out of 3 incidents of spouse abuse. Studies have also shown that alcohol is a leading factor in child abuse and neglect cases, and is the most frequent substance abused among these parents.

- Miscarriage and stillbirth among pregnant women, and fetal alcohol syndrome, a combination of physical and mental birth defects among children that last throughout life.

**Long-Term Health Risks** Over time, excessive alcohol use can lead to the development of chronic diseases, neurological impairments and social problems. These include but are not limited to:

- Neurological problems, including dementia, stroke and neuropathy.
- Cardiovascular problems, including myocardial infarction, cardiomyopathy, atrial fibrillation and hypertension.
- Psychiatric problems, including depression, anxiety, and suicide.
- Social problems, including unemployment, lost productivity (which includes missing work), and family problems.
- Cancer of the mouth, throat, esophagus, liver, colon, and breast. In general, the risk of cancer increases with increasing amounts of alcohol.
- Liver diseases, including
  - Alcoholic hepatitis.
  - Cirrhosis, which is among the 15 leading causes of all deaths in the United States.
  - Among persons with Hepatitis C virus, worsening of liver function and interference with medications used to treat this condition.
- Other gastrointestinal problems, including pancreatitis and gastritis.

## **Methamphetamine Fact Sheet**

(<http://www.nida.nih.gov/infofacts/methamphetamine.html>)

Methamphetamine is a central nervous system stimulant drug that is similar in structure to amphetamine. Due to its high potential for abuse, methamphetamine is classified as a Schedule II drug and is available only through a prescription that cannot be refilled. Although methamphetamine can be prescribed by a doctor, its medical uses are limited, and the doses that are prescribed are much lower than those typically abused. Most of the methamphetamine abused in this country comes from foreign or domestic superlabs, although it can also be made in small, illegal laboratories, where its production endangers the people in the labs, neighbors, and the environment.

### **How Is Methamphetamine Abused?**

Methamphetamine is a white, odorless, bitter-tasting crystalline powder that easily dissolves in water or alcohol and is taken orally, intra-nasally (snorting or sniffing the powder), by needle injection, or by smoking.

### **How Does Methamphetamine Affect the Brain?**

Methamphetamine increases the release and blocks the reuptake of the brain chemical dopamine, leading to high levels of the chemical in the brain. Dopamine is involved in reward, motivation, the experience of pleasure, and motor function. Methamphetamine's ability to release dopamine rapidly in reward regions of the brain produces the intense euphoria, or "rush," that many users feel after snorting, smoking, or injecting the drug.

Chronic methamphetamine abuse significantly changes how the brain functions. Noninvasive human brain imaging studies have shown alterations in the activity of the dopamine system that are associated with reduced motor skills and impaired verbal learning. Recent studies in chronic methamphetamine abusers have also revealed severe structural and functional changes in areas of the brain associated with emotion and memory, which may account for many of the emotional and cognitive problems observed in chronic methamphetamine abusers. Some of these changes persist long after methamphetamine abuse is stopped. Reversal of some of the changes, however, may be observed after sustained periods of abstinence. Repeated methamphetamine abuse can also lead to addiction.

### **What Other Adverse Effects Does Methamphetamine Have on Health?**

Taking even small amounts of methamphetamine can result in many of the same physical effects as those of other stimulants, (such as cocaine or amphetamines), including increased wakefulness, increased physical activity, decreased appetite, increased respiration, rapid heart rate, irregular heartbeat, increased blood pressure, and hyperthermia, (very high temperature). Long-term methamphetamine abuse has many negative health consequences, including extreme weight loss, severe dental problems ("meth mouth"), anxiety, confusion, insomnia, mood disturbances, and violent behavior. Chronic methamphetamine abusers can also display a number of psychotic features, including paranoia, visual and auditory hallucinations, and

delusions (for example, the sensation of insects crawling under the skin).

Transmission of HIV and hepatitis B and C can be consequences of methamphetamine abuse. The intoxicating effects of methamphetamine, regardless of how it is taken, can also alter judgment and inhibition and can lead people to engage in unsafe behaviors, including risky sexual behavior. Among abusers who inject the drug, HIV/AIDS and other infectious diseases can be spread through contaminated needles, syringes, and other injection equipment that is used by more than one person. Methamphetamine abuse may also worsen the progression of HIV/AIDS and its consequences. Studies of methamphetamine abusers who are HIV-positive indicate that HIV causes greater neuronal injury and cognitive impairment for individuals in this group compared with HIV-positive people who do not use the drug.

## **Marijuana Fact Sheet**

(<http://www.nida.nih.gov/infofacts/marijuana.html>)

Marijuana is the most commonly abused illegal drug in the United States. It is a dry, shredded green and brown mix of flowers, stems, seeds, and leaves derived from the hemp plant *Cannabis sativa*. The main active chemical in marijuana is delta-9-tetrahydrocannabinol, THC for short.

### **How is Marijuana Abused?**

Marijuana is usually smoked as a cigarette (joint) or in a pipe. It is also smoked in blunts, which are cigars that have been emptied of tobacco and refilled with marijuana. Since the blunt retains the tobacco leaf used to wrap the cigar, this mode of delivery combines marijuana's active ingredients with nicotine and other harmful chemicals. Marijuana can also be mixed in food or brewed as a tea. A more concentrated, resinous form is called hashish, and as a sticky black liquid, called hash oil. Marijuana smoke has a pungent and distinctive, usually sweet-and-sour odor.

### **How Does Marijuana Affect the Brain?**

Scientists have learned a great deal about how THC acts in the brain to produce its many effects. When someone smokes marijuana, THC rapidly passes from the lungs into the bloodstream, which carries the chemical to the brain and other organs throughout the body.

THC acts upon specific sites in the brain, called cannabinoid receptors, kicking off a series of cellular reactions that ultimately lead to the "high" that users experience when they smoke marijuana. Some brain areas have many cannabinoid receptors; others have few or none. The highest density of cannabinoid receptors are found in parts of the brain that influence pleasure, memory, thoughts, concentration, sensory and time perception, and coordinated movement. Marijuana use can cause distorted perceptions, impaired coordination, difficulty in thinking and problem solving, and problems with learning and memory. Research has shown that marijuana's adverse impact on learning and memory can last for days or weeks after the effects of the drug wear off.

Research on the long-term effects of marijuana abuse indicates some changes in the brain similar to those seen after long-term abuse of other major drugs. For example, cannabinoid withdrawal in chronically exposed animals leads to an increase in the activation of the stress-response system and changes in the activity of nerve cells containing dopamine. Dopamine neurons are involved in the regulation of motivation and reward, and are directly or indirectly affected by all drugs of abuse.

### **Addictive Potential**

Long-term marijuana abuse can lead to addiction. Long-term marijuana abusers trying to quit report irritability, sleeplessness, decreased appetite, anxiety, and drug craving, all of which make it difficult to quit. These withdrawal symptoms begin within about 1 day following abstinence, peak at 2–3 days, and decrease within 1 or 2 weeks when a person stops using marijuana.

### **What Other Adverse Effect Does Marijuana Have on Health?**

Effects on the Heart Marijuana increases heart rate by 20–100 percent shortly after smoking; this effect can last up to 3 hours. In one study, it was estimated that marijuana users have a 4.8-fold increase in the risk of heart attack in the first hour after smoking the drug. This may be due to the increased heart rate as well as effects of marijuana on heart rhythms, causing palpitations and arrhythmias. This risk may be greater in aging populations or those with cardiac vulnerabilities.

### **Effects on the Lungs**

Numerous studies have shown marijuana smoke to contain carcinogens, (cancer causing) and to be an irritant to the lungs. In fact, marijuana smoke contains 50–70 percent more carcinogenic hydrocarbons than tobacco smoke. Marijuana users usually inhale more deeply and hold their breath longer than tobacco smokers do, which further increase the lungs' exposure to carcinogenic smoke. Marijuana smokers show dysregulated growth of epithelial cells in their lung tissue, which could lead to cancer; however, a recent case-controlled study found no positive associations between marijuana use and lung, upper respiratory, or upper digestive tract cancers. Thus, the link between marijuana smoking and these cancers remains unsubstantiated at this time.

Nonetheless, marijuana smokers can have many of the same respiratory problems as tobacco smokers, such as daily cough and phlegm production, more frequent acute chest illness, and a heightened risk of lung infections. A study of 450 individuals found that people who smoke marijuana frequently but do not smoke tobacco have more health problems and miss more days of work than nonsmokers. Many of the extra sick days among the marijuana smokers in the study were for respiratory illnesses.

### **Effects on Daily Life**

Research clearly demonstrates that marijuana has the potential to cause problems in daily life or make a person's existing problems worse. In one study, heavy marijuana abusers reported that the drug impaired several important measures of life achievement including physical and mental health, cognitive abilities, social life, and career status. Several studies associate workers' marijuana smoking with increased absences, tardiness, accidents, workers' compensation claims, and job turnover.

## **Prescription and Over-the-Counter Medicine Fact Sheet #1**

(<http://www.nida.nih.gov/infofacts/PainMed.html> )

It is estimated that 48 million Americans over the age of 12 have used prescription medicines for “non-medical” reasons. (National Institute on Drug Abuse) Prescription medications such as pain relievers, central nervous system (CNS) depressants (tranquilizers and sedatives), and stimulants are highly beneficial treatments for a variety of health conditions. Pain relievers enable individuals with chronic pain to lead productive lives; tranquilizers can reduce anxiety and help patients with sleep disorders; and stimulants help people with attention-deficit hyperactivity disorder (ADHD) focus their attention. Most people who take prescription medications use them responsibly. But when abused—that is, taken by someone other than the patient for whom the medication was prescribed, or taken in a manner or dosage other than what was prescribed—prescription medications can produce serious adverse health effects, including addiction.

Patients, health care professionals, and pharmacists all have roles in preventing the abuse of and addiction to prescription medications. For example, patients should follow the directions for use carefully; learn what effects and side effects the medication could have; and inform their doctor/pharmacist whether they are taking other medications (including over-the-counter (OTC) medications or health supplements), since these could potentially interact with the prescribed medication. The patient should read all information provided by the pharmacist.

Similarly, some over the counter medications, (OTC), such as cough and cold medicines containing dextromethorphan, have beneficial effects when taken as recommended, but over the counter medicines can also be abused and lead to serious adverse health consequences.

### **Commonly Abused Prescription Medications**

Although many prescription medications can be abused, the following three classes are most commonly abused:

- Opioids—usually prescribed to treat pain.
- CNS depressants—used to treat anxiety and sleep disorders.
- Stimulants—prescribed to treat ADHD and narcolepsy.

## **Opioids**

### **What Are Opioids?**

Opioids are pain-relieving medications. Studies have shown that properly managed medical use (taken exactly as prescribed) of opioid analgesics is safe, can manage pain effectively, and rarely causes addiction.

Among the compounds that fall within this class are Vicodin, OxyContin, Morphine, codeine, Darvon, Dilaudid, Demerol, and Lomotil. Morphine and fentanyl are often used to alleviate severe pain, while codeine is used for milder pain.

### **How Are Opioids Abused?**

Opioids can be taken orally, or the pills may be crushed and the powder snorted or injected. A number of overdose deaths have resulted from the snorting or injection, particularly with the drug OxyContin, which was designed to be a slow-release formulation. Snorting or injecting opioids results in the rapid release of the drug into the bloodstream, exposing the person to high doses and causing many of the reported overdose reactions.

### **How Do Opioids Affect the Brain?**

Opioids act by attaching to specific proteins called opioid receptors. When these compounds attach to certain opioid receptors in the brain and spinal cord, they can effectively change the way a person experiences pain. In addition, opioid medications can affect regions of the brain that mediate what one perceives as pleasure, resulting in the initial euphoria or sense of well-being that many opioids produce. Repeated abuse of opioids can lead to addiction (addiction is a chronic, relapsing disease characterized by compulsive drug seeking and abuse despite its known harmful consequences.)

### **What Adverse Effects Can Be Associated With Opioids?**

Opioids can produce drowsiness, cause constipation, and depending upon the amount taken, slow down breathing. Taking a large single dose could cause severe respiratory depression or death. These medications are only safe to use with other substances under a physician's supervision. Typically, they should not be used with alcohol, antihistamines, barbiturates, or benzodiazepines. Because these other substances slow breathing, their effects in combination with opioids could lead to life-threatening respiratory depression.

### **What Happens When a Patient Stops Taking Opioids?**

Patients who are prescribed opioids for a period of time may develop a physical dependence (addiction) on them. Repeated exposure to opioids can cause tolerance, (having to use more of the drug is needed to achieve the desired effect), and withdrawal symptoms upon abrupt cessation of drug use. Thus, individuals taking prescribed opioid medications should not only be given these medications under appropriate medical supervision, but they should also be medically supervised when stopping use in order to reduce or avoid withdrawal symptoms.

## **CNS Depressants**

### **What Are CNS Depressants?**

Central Nervous System depressants (tranquilizers, sedatives) are medications that slow normal brain function. In higher doses, some CNS depressants can be used as general anesthetics or preanesthetics.

CNS depressants can be divided into three groups, based on their chemistry and pharmacology:

- Barbiturates, such as Mebaral and Nembutal, are used as preanesthetics, promoting sleep.
- Benzodiazepines, such as Valium, Xanax, and ProSom, can be prescribed to treat anxiety, acute stress reactions, panic attacks, convulsions, and sleep disorders.
- Newer sleep medications, such as Ambien, Sonata, and Lunesta, are now more commonly prescribed to treat sleep disorders.

### **How Are CNS Depressants Abused?**

CNS depressants are usually taken orally, sometimes in combination with other drugs or to counteract the effects of stimulants.

### **How Do CNS Depressants Affect the Brain?**

Most of the CNS depressants have similar actions in the brain: they enhance the actions of a neurotransmitter, (brain chemical), that produces a drowsy or calming effect.

### **What Adverse Effects Can Be Associated With CNS Depressants?**

Despite their beneficial effects for people suffering from anxiety or sleep disorders, barbiturates and benzodiazepines can be addictive and should be used only as prescribed. CNS depressants should not be combined with any medication or substance that causes drowsiness, including prescription pain medicines, certain OTC cold and allergy medications, and alcohol. If combined, they can slow both heart rate and breathing, which can cause death.

### **What Happens When a Person Stop Taking CNS Depressants?**

Discontinuing prolonged use or abuse of high doses of CNS depressants can lead to serious withdrawal symptoms. Because the drug works by slowing the brain's activity, when one stops taking a CNS depressant, this activity can rebound to the point that seizures can occur. Someone who is either thinking about ending use of a CNS depressant, or who has stopped and is suffering withdrawal should seek medical treatment.

## **Prescription and Over-the-Counter Medicine Fact Sheet #2**

(<http://www.nida.nih.gov/infofacts/PainMed.html> )

It is estimated that 48 million Americans over the age of 12 have used prescription medicines for “non-medical” reasons. (National Institute on Drug Abuse) Prescription medications such as pain relievers, central nervous system (CNS) depressants (tranquilizers and sedatives), and stimulants are highly beneficial treatments for a variety of health conditions. Pain relievers enable individuals with chronic pain to lead productive lives; tranquilizers can reduce anxiety and help patients with sleep disorders; and stimulants help people with attention-deficit hyperactivity disorder (ADHD) focus their attention. Most people who take prescription medications use them responsibly. But when abused—that is, taken by someone other than the patient for whom the medication was prescribed, or taken in a manner or dosage other than what was prescribed—prescription medications can produce serious adverse health effects, including addiction.

Patients, health care professionals, and pharmacists all have roles in preventing the abuse of and addiction to prescription medications. For example, patients should follow the directions for use carefully; learn what effects and side effects the medication could have; and inform their doctor/pharmacist whether they are taking other medications (including over-the-counter (OTC) medications or health supplements), since these could potentially interact with the prescribed medication. The patient should read all information provided by the pharmacist. Similarly, some Over the Counter medications, (OTC), such as cough and cold medicines containing dextromethorphan, have beneficial effects when taken as recommended, but over the counter medications can also be abused and lead to serious adverse health consequences.

### **Commonly Abused Prescription Medications**

Although many prescription medications can be abused, the following three classes are most commonly abused:

- Opioids—usually prescribed to treat pain.
- CNS depressants—used to treat anxiety and sleep disorders.
- Stimulants—prescribed to treat ADHD and narcolepsy.

## **Stimulants**

### **What Are Stimulants?**

Stimulants, (Adderall, Dexedrine, Concerta, Ritalin), increase alertness, attention, and energy. They also increase blood pressure and heart rate, constrict blood vessels, increase blood glucose, and open up the pathways of the respiratory system. Stimulants are prescribed for treating ADHD, narcolepsy, and, in some instances, depression that has not responded to other treatments.

**How Are Stimulants Abused?**

Stimulants may be taken orally, but some abusers crush the tablets, dissolve them in water, and then inject the mixture. Complications can arise from this because insoluble fillers in the tablets can block small blood vessels. Stimulants have been abused for both “performance enhancement” and recreational purposes (to get high).

**How Do Prescription Stimulants Affect the Brain?**

Stimulants have chemical structures that are similar to key brain neurotransmitters (dopamine and norepinephrine). Their therapeutic effect is achieved by slow and steady increases of dopamine that are similar to the natural production of this chemical by the brain. The doses prescribed by physicians start low and increase gradually until a therapeutic effect is reached. However, when taken in doses and ways other than those prescribed, stimulants can increase the brain’s dopamine levels in a rapid and highly amplified manner, disrupting normal communication between brain cells, producing euphoria, and increasing the risk of addiction.

**What Adverse Effects Are Associated With Stimulant Abuse?**

Taking high doses of a stimulant can result in an irregular heartbeat, dangerously high body temperatures, and/or the potential for cardiovascular failure or seizures. Taking some stimulants in high doses or repeatedly can lead to hostility or feelings of paranoia in some individuals. Stimulants should not be mixed with antidepressants, which may enhance the effects of a stimulant or with OTC cold medicines containing decongestants, which may cause blood pressure to become dangerously high or may lead to irregular heart rhythms.

## Over-the Counter Medicines

### Dextromethorphan (DXM)

#### What Is DXM?

DXM is the active ingredient found in OTC cough and cold medications. When taken in recommended doses, these medications are safe and effective.

#### How Is DXM Abused?

DXM is taken orally. In order to experience the mind-altering effects of DXM, excessive amounts of liquid or gelcaps must be consumed. The cough suppressant DXM is found in more than 140 cough and cold medications that are available without a prescription in the United States and generally safe when taken at the recommended doses.

#### What Are the Consequences Associated With the Abuse of DXM?

In very large quantities, DXM can cause effects similar to those of ketamine and PCP because these drugs affect similar sites in the brain. DXM can produce hallucinations or dissociative, "out-of-body" experiences similar to those caused by the hallucinogens phencyclidine (PCP) and ketamine and can cause other adverse health effects. These effects can include impaired motor function, numbness, nausea/vomiting, and increased heart rate and blood pressure. On rare occasions, hypoxic brain damage—caused by severe respiratory depression and a lack of oxygen to the brain—has occurred due to the combination of DXM with decongestants often found in the medication.

According to the 2006 National Survey on Drug Use and Health, in 2006, about 3.1 million persons aged 12 to 25 (5.3 percent) had ever used an over-the-counter (OTC) cough and cold medication to get high and nearly 1 million (1.7 percent) had done so in the past year.

(<http://www.oas.samhsa.gov/2k8/cough/cough.htm>)

The availability and accessibility of these products make them a serious concern. Abuse of DXM among American youths aged 12 to 17 and young adults aged 18 to 25 has become a matter of concern in a number of States and metropolitan areas due to increased poison control calls involving DXM. Unlike the pattern for lifetime misuse, youths aged 12 to 17 were more likely than young adults aged 18 to 25 to have misused OTC cough and cold medications in the past year. Males and females aged 12 to 25 had the same rate of past year misuse of these medications. When examined separately for adolescents and young adults, however, the patterns varied by gender. Among youths aged 12 to 17, females were more likely than males to have misused OTC cough and cold medications in the past year. Among young adults aged 18 to 25, however, males were more likely than females to have misused these medications.

The rate of past year misuse of OTC cough and cold medications among whites aged 12 to 25 (2.1

percent) was about 3 times higher than the rate among blacks (0.6 percent) and was also higher than the rate among Hispanics (1.4 percent). Among persons aged 12 to 25 who had misused an OTC cough and cold medication in the past year, 30.5 percent misused a NyQuil product, 18.1 percent misused a Coricidin® product, and 17.8 percent misused a Robitussin® product. More than 40 percent of the users in this age group misused any of a wide variety of other OTC medications. (NSDUH - <http://www.oas.samhsa.gov/2k8/cough/cough.htm>)

### **Other Over-the-Counter Medications**

In addition to DXM, sleep aids (such as doxylamine, an ingredient in Unisom); antihistamines (such as diphenhydramine, found in Benadryl); and dimenhydrinates (in Dramamine) can be abused for their psychoactive effects.

***It is also important to note that OTC medications can produce dangerous health effects when taken in combination with alcohol.***

## **DrugFacts: Spice**

(Synthetic Marijuana) <http://www.drugabuse.gov/PDF/Infofacts/Spice.pdf>

“Spice” refers to a wide variety of herbal mixtures that produce experiences similar to marijuana (cannabis) and that are marketed as “safe,” legal alternatives to that drug. Sold under many names, including K2, fake weed, Yucatan Fire, Skunk, Moon Rocks, and others—and labeled “not for human consumption”—these products contain dried, shredded plant material and chemical additives that are responsible for their psychoactive (mind-altering) effects.

### **False Advertising**

Labels on Spice products often claim that they contain “natural” psychoactive material taken from a variety of plants. Spice products do contain dried plant material, but chemical analyses show that their active ingredients are synthetic (or designer) cannabinoid compounds. For several years, Spice mixtures have been easy to purchase in head shops and gas stations and via the Internet. Because the chemicals used in Spice have a high potential for abuse and no medical benefit, the Drug Enforcement Administration (DEA) has designated the five active chemicals most frequently found in Spice as Schedule I controlled substances, making it illegal to sell, buy, or possess them. Manufacturers of Spice products attempt to evade these legal restrictions by substituting different chemicals in their mixtures, while the DEA continues to monitor the situation and evaluate the need for updating the list of banned cannabinoids. Spice products are popular among young people; of the illicit drugs most used by high-school seniors, they are second only to marijuana. Easy access and the misperception that Spice products are “natural” and therefore harmless have likely contributed to their popularity. Another selling point is that the chemicals used in Spice are not easily detected in standard drug tests.

### **How Is Spice Abused?**

Some Spice products are sold as “incense,” but they more closely resemble potpourri. Like marijuana, Spice is abused mainly by smoking. Sometimes Spice is mixed with marijuana or is prepared as an herbal infusion for drinking.

### **How Does Spice Affect the Brain?**

Spice users report experiences similar to those produced by marijuana—elevated mood, relaxation, and altered perception—and in some cases the effects are even stronger than those of marijuana. Some users report psychotic effects like extreme anxiety, paranoia, and hallucinations.

So far, there have been no scientific studies of Spice’s effects on the human brain, but we do know that the cannabinoid compounds found in Spice products act on the same cell receptors as THC, the primary psychoactive component of marijuana. Some of the compounds found in Spice, however, bind more strongly to those receptors, which could lead to a much more powerful and unpredictable effect. Because the chemical composition of many products sold as Spice is unknown, it is likely that some varieties also contain substances that could cause dramatically

different effects than the user might expect.

### **What Are the Other Health Effects of Spice?**

Spice abusers who have been taken to Poison Control Centers report symptoms that include rapid heart rate, vomiting, agitation, confusion, and hallucinations. Spice can also raise blood pressure and cause reduced blood supply to the heart (myocardial ischemia), and in a few cases it has been associated with heart attacks. Regular users may experience withdrawal and addiction symptoms.

We still do not know all the ways Spice may affect human health or how toxic it may be, but one public health concern is that there may be harmful heavy metal residues in Spice mixtures. Without further analyses, it is difficult to determine whether this concern is justified.

## **Bath Salts**

Bath Salts are the newest drug scourge to hit the United States. Bath salts are drugs that are being produced by illegal street chemists. This drug is not what some people simply put into their bathtubs, like Epsom salts. The bath salts are MDPV (methylenedioxypropylvalerone) which is marketed with the name bath salts and labeled ‘not for human consumption.’”

Bath salts are a synthetic powder and may be sold under a variety of names, such as Ivory Wave, Purple Wave, Red Dove, Blue Silk, Zoom, Bloom, Cloud Nine, Ocean Snow, Lunar Wave, Vanilla Sky, White Lightning, Scarface, and Hurricane Charlie. The bath salts can be taken orally, by inhalation, or by injection. The worst outcomes have been associated with snorting or vein injections.

Bath salts are currently sold online, in gas stations, and convenience stores across the nation. In the first few months of 2011, poison control centers nationwide reported a record-breaking increase in emergency room visits related to bath salts. The American Association of Poison Control Centers reported that calls to poison centers about exposures to bath salts skyrocketed from a total of 303 calls during 2010 to 4,720 calls in the first eight months of 2011.

Taking this type of methamphetamine-like drug can cause agitation, paranoia, hallucinations, chest pain, high blood pressure, increased pulse and suicidality. A huge concern with the bath salts is the factor of suicide. Not only can it make someone feel suicidal, but also these feelings may linger even after the stimulatory effects of the drugs have worn off. The bath salts are also of particular concern because they present a high risk for overdose.

The name may sound innocent but the bath salt drugs are extremely dangerous not only to the user, but also to others around the user. The drugs can create an excited delirium condition that can make the user become violent and unpredictable. There have been several scary stories that have derived from the intense side effects of the drug. There have been reports where the bath salts have led to very dangerous behaviors where users have beaten people, even friends, to death. The feelings of suicide have also occurred and bath salts have been the influence of a man killing himself and his family.

These new street drugs are extremely dangerous and still somewhat under the radar. It is important to understand the dramatic and scary side effects bath salts can cause. This drug is certainly becoming known for its danger to the user and to people around the user. The U.S. Drug Enforcement Administration (DEA) made illegal the possession and sale of three of the chemicals commonly used to make bath salts. Since these drugs are created on the street they are continue to discover how to make such drugs in other ways. This makes it challenging to get the bath salts

completely eliminated and keep them off the market.

Questions:

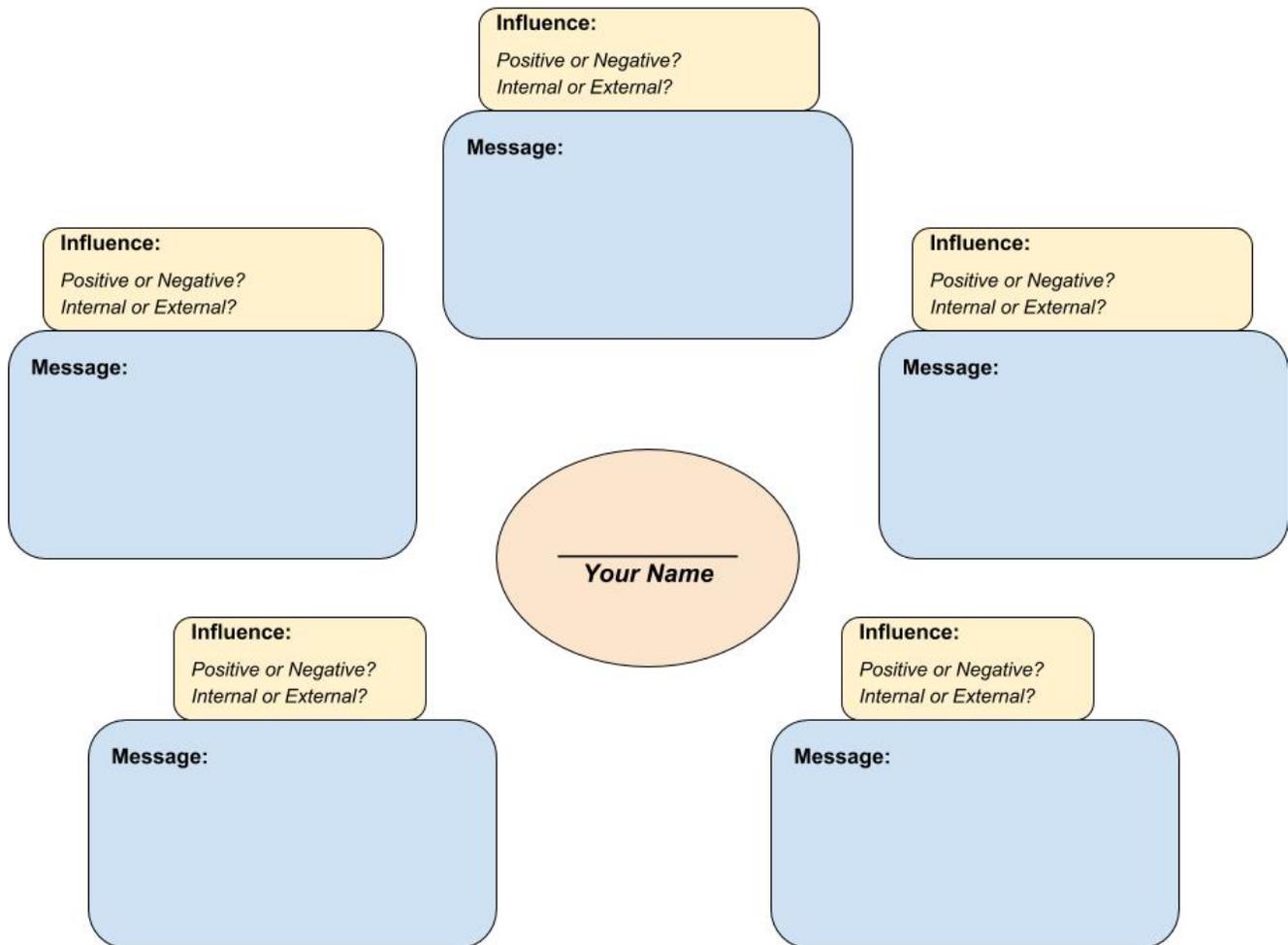
1. Why might the marketers call this drug “Bath Salts” and include a label that states it is not for human consumption?
2. What factors of these drugs are worrisome for the health of the public?
3. It is likely that they will permanently legalize the possession and sale of these chemicals and products. What impact do you think that will have?
4. Bath salts are the latest example of designer drugs. Where do you see this trend going?
5. Why might someone experiment with bath salts over a known drug such as heroine or cocaine?
6. Why is it important to have an understanding of this drug and the side effects it can have?

<http://www.webmd.com/mental-health/features/bath-salts-drug-dangers?page=2>  
<http://www.drugabuse.gov/about-nida/directors-page/messages-director/2011/02/bathsalts-emerging-dangerous-products>

# Analyzing Influences - Drugs, Peer Pressure & You

**Directions:** Create a web with your name and health issue in the center. Each spoke signifies an influence in your life (i.e. family, peers, social media, yourself, etc.) on whether or not to use drugs.

1. Identify at least 5 influences. Is it positive or negative? Is it Internal (you control) or something External (out of your control)?
2. Describe the message that you receive from each of those influences about drug use. Discuss HOW and WHY it influences you.
3. Draw a line connecting the source to yourself – the thicker and bolder the line, the more powerful you feel that influence is on your decisions and behaviors about this topic.



**Reflection** - Complete this after filling out the Web of Influence above...

*After completing this activity, what is one thing you learned about influences impacting your decision to use drugs or not? What did you learn (if anything)?*

## Analyzing Influences - Web Assessment Rubric

<b>Number of Connections</b>	I made 5 or more connections. (5 or more lines)	I made 4-5 connections. (4-5 lines)	I made 3 connections. (3 lines)	I made 2 or fewer connections. (0, 1, 2, lines)
<b>Quality and Depth of Connections</b>	<p>The connections I created are explained thoroughly. The HOW and WHY are described and the message is evident.</p> <p>I am able to “think outside the box” and make thoughtful connections to the influence and how it impacts me</p> <p>Reflection is thorough with specific example(s)</p>	<p>My connections are accurately explained The HOW and WHY are described in each connection and the message is mostly clear/evident.</p> <p style="text-align: center;">AND...</p> <p>Reflection is thorough with specific example</p>	<p>My connections are accurate, but are not explained in complete sentences. The how and why are not clear in most cases. The message is clear in some cases and lacking in some.</p> <p style="text-align: center;">AND/OR...</p> <p>Reflection is vague or not evident</p>	<p>My connections are inaccurate and are not clearly explained. Or, lacking evidence.</p>
<b>Assessment Level →</b>	<b>Wow! (10 pts)</b>	<b>Got It! (9 pts)</b>	<b>Getting There! (8 pts)</b>	<b>Not Yet! (5-6 pts)</b>

# Substance Abuse Research Worksheet

**Directions:** Today you are going to research and discuss the use and abuse of prescription medicines, non-prescription medicines, and illegal drugs. By the end of the lesson you will be able to describe the short- and long-term health issues related to alcohol, tobacco, and other drug use, including inhalants, marijuana, cocaine, stimulants, methamphetamines, and opiates. Answer the following questions about the substance you are supposed to become an expert on. Use the information provided by your teacher.

1. What type of drug is it? (its classification and examples)
2. What are the slang names for this drug?
3. How is the drug taken?
4. Is this drug legal or illegal?
5. Does this drug cause addiction?
6. What are the short-term effects of this drug?
7. What are the long-term effects of this drug?
8. Are there other interesting facts or information about this drug that your classmates should know?