

Tar and Smoking

Smoking contributes to about 30 percent of all deaths from cancer in the United States. Smoking causes cancers of the larynx, oral cavity, pancreas, bladder, and esophagus; it is the principal cause of lung cancer. Most lung cancer deaths (87 percent) are directly attributed to smoking. Lung cancer kills more Americans than any other type of cancer.

Smoking causes lung cancer when over years of smoking, tar collects and forms a sticky layer on the cells inside the bronchi. This tar is just like the tar that they put on the road that can cause gooey black spots on your car. As more smoke is inhaled, this sticky layer retains more of the harmful carcinogens. Gradually, the top layer of cells in the lungs is damaged. The cells then flatten out. Other cells multiply at high rates in an attempt to replace the damaged cells. Some of the fast-multiplying cells are cancerous. Cancer cells multiply and replace healthy ones. In the early stages, the cancer remains just in the lungs. But if cancer cells burst through the lining of the lung, the cancer can spread throughout the body.

The National Cancer Institute has concluded that using “light” or “low tar” cigarettes does not result in lower risks of smoking-related disease.

Activity

Materials Needed:

- 1 cup of thick, dark syrup or molasses
- Tall, thin, clear container
- 12 books

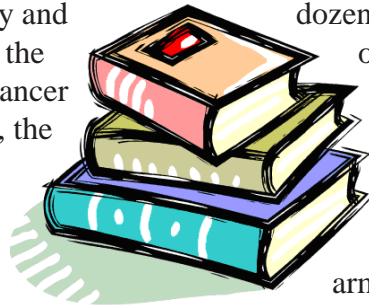
Show the amount of tar that a pack-a-day smoker would inhale in a year (approximately 1 cupful, according to the American Cancer Society). Pour 1 cup of thick, dark syrup or molasses slowly into a tall, thin, clear container. Let 4-H members guess when you will stop pouring.



Ask the members:

- Were you surprised at the amount of tar inhaled by a pack-a-day smoker? Why or why not?
- What would happen if this were a 2-pack-a-day smoker?

Now have members form a line and quickly pass a dozen books, bucket-brigade style from one end of the line to the other. Tell 4-H members to pretend they are standing shoulder-deep in gooey tar. To show how difficult the task would be, provide some resistance by holding students' arms as they pass the books.



Ask the members:

- How does this affect your energy level?
- Would you want to walk from your car to a store feeling like this?



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Secondhand Smoke

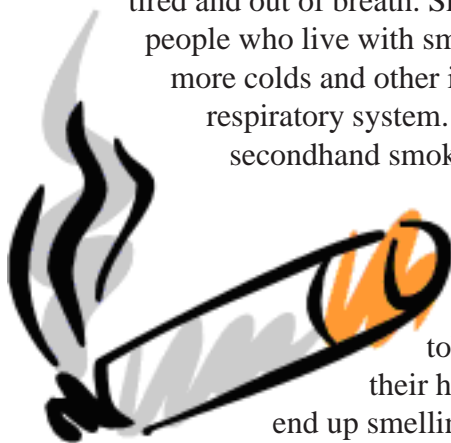
The smoke nonsmokers breath when they are around smokers is called secondhand smoke. Environmental tobacco smoke, or ETS, is the smoke that is in the air when tobacco is being smoked. Tobacco smoke contains poisons. Tar, nicotine, and other harmful substances in tobacco smoke are a health threat to nearby nonsmokers, even family pets. The hot smoke dries the linings of the airways and makes them sore. Smoke causes eyes to become red and watery.



Tobacco smoke contains carbon monoxide, which crowds oxygen out of the blood resulting in feeling tired and out of breath. Smokers and people who live with smokers have more colds and other infections of the respiratory system. Exposure to secondhand smoke is called

“passive smoking.”

Also for anyone around tobacco smoke, their hair and clothes end up smelling bad.



Activity

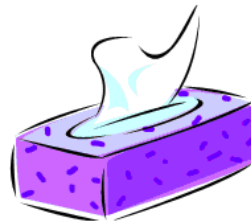
Materials Needed: Spray bottle filled with water



Spray water from a spray bottle into the air as you move among the club members.

1. Ask 4-H members how they would react if they thought you were spraying perfume.
2. What if you were spraying a deadly poison? A virus? Tobacco smoke?
3. Where are some places that you find secondhand smoke? How can you avoid it?

Demonstration



Show members a handkerchief or tissue through which a smoker exhaled tobacco smoke. Explain that the tar in the tobacco smoke made the

stains. The smoke in the handkerchief has already been in the lungs of the smoker. What does that tell nonsmokers about exhaled smoke from smoker? (It is harmful to everyone.)

Note: If your community does not have a smoke-free policy, 4-H members can write letters to local government officials, restaurant owners, or other local establishments to encourage smoke-free policies.



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Tobacco and Your Spending Money



We know that using tobacco products is not good for your health. Not only is it bad for your physical health, but consider what it does to your financial well being. It costs around \$3.25 a day for a package of cigarettes. It costs about the same for dip or snuff. If you multiply \$3.25 by 365 days, you have \$1,186.25 per year. What would you rather have? Cigarettes, dip, or is there something else?

Activity

Give each member \$1,200 in play money. On index cards write a consumer item and the estimated cost. Have multiples of the cards for each item so all members can choose from them and select more than one per item. Examples of items to include are:

George Strait Concert ticket	\$50
Leann Rimes Concert ticket	\$50
Travis Tritt Concert ticket	\$35
Mark Chestnut Concert ticket	\$10
Alison Krauss Concert ticket	\$35
Ipod	\$300
Disney on Ice ticket	\$20
Dallas Mavericks ticket	\$25
Ft Worth Stockyards Champion Rodeo ticket	\$10
Houston Rodeo ticket	\$20
Circus Gatti ticket	\$10
CD of choice	\$15
DVD of choice	\$15
Movie ticket of choice	\$5
Pair of boots	\$100
Designer purse	\$75
Acrylic nails	\$20

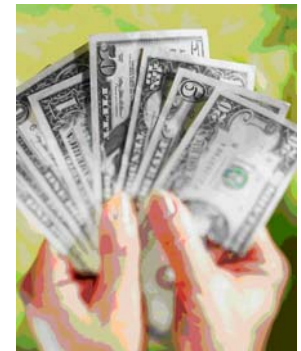
Acrylic nails maintenance	\$10/visit
Game Boy player	\$50
Game Boy games	\$15/game
Cell phone use for 1 year	\$420
Camera phone	\$75
Amusement park ticket (Six Flags, etc.)	\$35
Fast food meal	\$5/meal
Savings for college fund	\$100
Fill-up of gasoline for vehicle	\$25/fill-up
4-H camp	\$150

Prices for items will vary. For the latest in concert tickets, participants may check

www.ticketmaster.com.

(Have blank cards for members to make their own item cards.)

Give each member a grocery bag, and instruct them to collect enough items they want up to \$1,200.



After members have collected items and examined what they would have purchased, offer them a sack of empty cigarette packages, snuff containers, or tobacco pouches (or a facsimile of them), and ask which they would rather have. Point out that the cigarettes would mean additional cost years later due to the increase in number of cigarettes smoked and the possible health costs. For individuals on limited budgets, these are choices that they might have to make.



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Nicotine Makes the Heart Work Harder

There are consequences to using tobacco that one needs to know about before starting to smoke. This is especially true since once a tobacco habit begins, it is very hard to stop because it is so addictive and hard to quit. Tobacco is not only harmful to your lungs and many other parts of your body, it is bad for your heart, too. To understand what nicotine does to your heart, try the following activity.

Activity

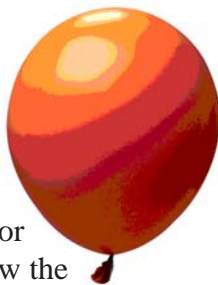
Show members how to take their wrist pulse (place cushion part of two fingers from opposite hand over wrist just below thumb; do not mash too hard or you will feel nothing). Time the members for 30 seconds while they count the pulse beats. Have them take that number and multiply by 2. This will give them how many heart beats they have in a minute. Determine the average heart rate for the group. (For middle school students, the average pulse rate is 80 beats per minute.)

Demonstration

Materials needed:

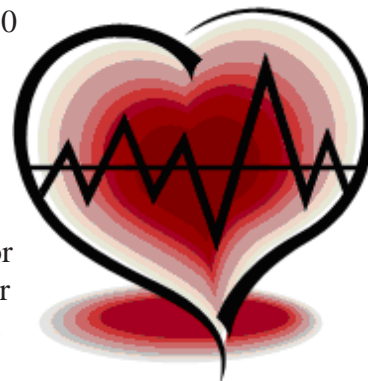
- water balloon(s)
- watch with a second hand.

The leader takes a small, sturdy water balloon with room for expansion. Squeeze it to show how the



heart works. Do this 80 times in one minute to show how hard the heart must work.

Next have 4-H members do the same with water balloons, or they may squeeze their empty hand. Continue to squeeze until the members tire. (Hint: it may be better to do this outside in case a water balloon breaks.)



Explain that nicotine is a stimulant drug that makes the heart beat 10 times per minute faster, or about 90 beats per minute for a middle school student. Have the members try squeezing 90 times in a minute.

Note: Smoking also decreases the amount of oxygen in the blood. This gives smokers an increased pulse rate. All of this can result in high blood pressure, which leads to an increased risk of heart attack and stroke. When a person exercises, the heart rate increases, and this is okay. It is different when the heart rate increases from smoking because the body is not getting help from other body muscles to move blood through the body. Making the heart work harder means it will wear out sooner.



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What Would Aliens Think?

Divide 4-H club members into five groups. Each group should pretend they are aliens from another planet visiting Earth. As aliens, they have never seen tobacco products being used. Assign each group one of the following tobacco products:

Cigarettes
Cigar
Pipes

Snuff
Chew tobacco

Ask each group to write a letter to the people of their home planet. In that letter, have them describe how people on Earth use the tobacco



product assigned to their group and what it is like to be around when they use it. Once the letters are completed, have one member of each group read their group's letter back to all of the club members.

Group Discussion Questions

- From the description of how tobacco is used, does it sound like something glamorous?

- Using your sense of smell, how glamorous is tobacco?
- Did you describe anything different about people who were older and used the tobacco products for many years?
- Do you think smoking is glamorous? Why or why not?
- People who spit or use snuff leave a trail of tobacco when they spit or remove it from their mouth. How glamorous is this?
- Have you ever had to clean up cigarette butts or tobacco spit? If yes, was that fun?



Note: People who smoke or use tobacco products may have yellowed, tobacco-stained teeth. Smokers have smoker's breath, and their clothes can smell like an ashtray. Smokers also tend to have more wrinkles at younger ages.

Sources:

Tobacco Comprehensive Health for the Middle Grades

"7 Great Reasons to Quit Smoking Right Now!"



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Nicotine and Your Heart

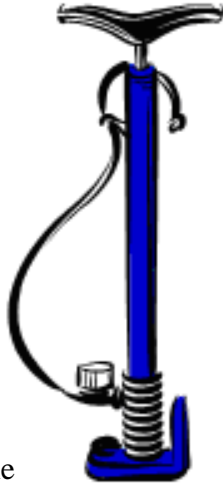
Nicotine is a poisonous, water-soluble alkaloid found in tobacco leaves and used as an insecticide. One cigarette contains approximately 8 milligrams of nicotine. Nicotine increases the heart rate, and blood pressure rises when the blood vessels constrict. Nicotine affects the body in only three and a half seconds, and the effects last approximately 90 minutes.

Activity

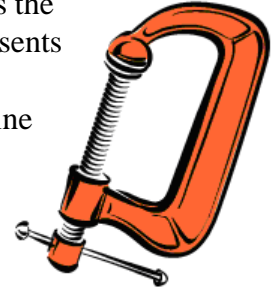
Materials Needed:

- Small C-clamp
- Bicycle pump

Ask for three volunteers. One person will pump the bicycle pump. The second person will then tighten the C-clamp on the pump hose. The third person will ask the person who is pumping the bicycle pump to “pump faster.”



Emphasize to the group that this demonstration illustrates how nicotine affects the heart. The bicycle pump represents the heart, and the C-clamp represents nicotine. The nicotine makes the heart beat faster as the blood vessels get smaller, which causes blood pressure to rise.



Resources:

Trunbull County Health Department, Ohio
<http://www.tarwars.org/PreBuilt/TobaccoEducationExperimentsAndActivities.pdf>



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Nicotine: The Most Deadly Addictive Drug

Nicotine speeds up the heart rate and raises blood pressure, which can lead to an increased risk of heart attack and stroke. When nicotine causes the heart rate to increase, the heart is usually not receiving help from the body's other muscles. During healthy exercise, the large muscles of the body are helping the heart move blood through the body. In smokers, nicotine is absorbed in the lungs. In users of chew and snuff, the nicotine is absorbed through the membranes of the mouth and nose. Within minutes, the nicotine levels in the blood are the same, whether the person is smoking or using smokeless tobacco.

Activity

The purpose of this activity is to simulate the effect of nicotine on the blood vessels. The following equipment is needed for the activity:

- 6 or more plastic styrofoam cups
- 3 or more large diameter straws
- 3 or more very small diameter straws (such as coffee stirrers)
- Water
- Stopwatch

Fill all six glasses with equal amounts of water. Place the large diameter straws in three of the glasses and the three very small diameter straws in the remaining three glasses. Ask for



six volunteers. On the word “go,” have the six volunteers drink the water as fast as they can, using the straws. Use the stopwatch to time how long it takes each person to drink the water. (It should take twice as long to drink the water using smaller straws.)



Emphasize to the group that nicotine constricts the blood vessels, which, in turn, decreases the blood flow and makes the heart have to work harder. It can affect the person who smokes in the following ways:

- Smokers are short of breath almost three times as often as nonsmokers.
- Smokers run more slowly and can't walk as far.
- Smoking reduces the amount of oxygen available for the muscles used during sports.

Resources:

- Krantzler, N.J., and W.M. Kane (2004). *Health Facts*, ETR Associates, Scotts Valley, CA.
- Scheer, J.K. (1996). *Tobacco Comprehensive Health for the Middle Grades*, ETR Associates, Santa Cruz, CA.
- Trunbull County Health Department, Ohio
<http://www.tarwars.org/PreBuilt/TobaccoEducationExperimentsAndActivities.pdf>




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Warnings against Smoking


The Surgeon General of the United States issues warnings against tobacco use that are placed on tobacco products.

Cigarettes have one of the four following warnings:


 **SURGEON GENERAL'S WARNING:**
Smoking Causes Lung Cancer, Heart Disease, Emphysema, and May Complicate Pregnancy.


 **SURGEON GENERAL'S WARNING:**
Quitting Smoking Now Greatly Reduces Serious Risks to Your Health.


 **SURGEON GENERAL'S WARNING:**
Smoking by Pregnant Women May Result in Fetal Injury, Premature Birth, and Low Birth Weight.

 **SURGEON GENERAL'S WARNING:**
Cigarette Smoke Contains Carbon Monoxide.

Smokeless tobacco requires one of the three following warnings:

 **WARNING:** This product may cause mouth cancer.

 **WARNING:** This product may cause gum disease and tooth loss.

 **WARNING:** This product is not a safe alternative to cigarettes.

Activity

All that is needed for this activity is a pencil and paper.



Tell participants that they have been given an assignment to write a warning on either cigarette packs or smokeless tobacco containers, and the message should be targeted to youth. The warning should be factual and effective in communicating the consequences of using either of these tobacco products. Encourage creativity in the messages. The messages should be limited to 25 words.



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Smokeless Tobacco: Oral Destruction

Smokeless tobacco includes chewing tobacco and snuff. These products contain dried tobacco leaves and a variety of sweeteners, flavorings, and scents. Plug and twist tobacco are chewed or held in the cheek or the lower lip, usually for several hours. A pinch of snuff is placed between the lip or cheek and gum for about 30 minutes at a time.

All forms of tobacco cause cancer. We know that smoking and lung cancer are connected. Chewing tobacco and snuff also cause cancer, such as mouth and throat cancer. It can also cause heart disease, and it stains the teeth and destroys the gums.

Activity

This activity will show how tobacco juice stains the entire mouth. This activity requires the following equipment:

- Clear glass jar
- Water
- Chewing tobacco

Fill the jar half full with water, and place a wad of tobacco the size of a golf ball in the jar. Pass the jar around the room. Allow members to shake the jar.

Emphasize the following points:

- Tobacco stains the whole mouth.
- Tobacco juice is full of nicotine and cancer-causing poisons.
- All forms of tobacco—including smokeless, or “spitting,” tobacco—are harmful to your health.

Resources:

Scheer, J.K. (1996). *Tobacco Comprehensive Health for the Middle Grades*, ETR Associates, Santa Cruz, CA.

Trunbull County Health Department, Ohio

<http://www.tarwars.org/PreBuilt/>

[TobaccoEducationExperimentsAndActivities.pdf](#)



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Gross Mouths

Smokeless tobacco is commonly thought of as a safe alternative to cigarettes. Many people begin using chewing tobacco by thinking they can control the use of it, but they do not realize it has nicotine in it just like cigarettes. The nicotine makes chewing tobacco just as addictive as cigarettes. Traditionally, teenage boys have taken up the habit, but girls use it, too.

Some people use smokeless tobacco because they believe it makes them look cool. How cool is it to be on a date with someone who is spitting every five minutes? Not very cool. Chewing tobacco can also seriously disfigure your face and give you cancer of the mouth, spotty sores, receding gum lines, and rotting teeth.

Activity

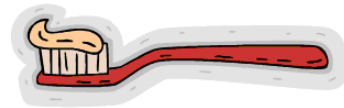
This activity will demonstrate how tobacco juice stains the teeth.

Materials Needed:

- 1 hard-boiled egg (preferably with a few cracks in it)
- Enough tobacco juice to cover the egg
- Toothbrush
- Toothpaste
- Latex gloves



At least two days before the meeting, soak the egg in tobacco juice and place it in the refrigerator. Prior to the meeting, put on the latex gloves and remove the egg; observe how stained it is after sitting in the tobacco juice. At the meeting, take the toothbrush and toothpaste and brush the egg—just like it was a tooth. Apply eight to ten strokes to the egg. Note that brushing is not able to remove all the stain, especially in the cracks.



Emphasize to the group that:

- Over time, tobacco juice badly stains teeth.
- Tobacco juice causes gums to recede and damages the person's lips.
- Tobacco use also causes bad breath.
- Tobacco does not make you a date magnet.

Resources:

Trunbull County Health Department, Ohio

<http://www.cda.org/articles/smokelesstobacco.htm>



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Make Your Own Spit Tobacco

Spit tobacco contains many ingredients that users may not be aware of. This activity illustrates some of the ingredients that go into making spit tobacco. Gross!

Purpose

To make users and potential users aware of the ingredients of spit tobacco.

Equipment

Water (formaldehyde)

Clear carbonated beverage, such as 7-Up (benzene)

Brown sugar (arsenic)

Gray cake-decorating balls (lead). Note: due to cake-decorating balls not always being available, silver glitter can be substituted. Neither one of these items should be ingested.

Shredded beef jerky (tobacco leaves)

Blender

Table

5 containers (to hold all 5 ingredients)

Labels for the containers: “Formaldehyde” “Benzene” “Arsenic” “Lead” “Tobacco” (Remember, you will only use harmless substitutes for these products.)



Activity

Put the five harmless ingredients into each of their own containers with labels on them. Place the ingredients to the left and right of the blender, which should be in the middle of the table.

Script

Hi, my name is _____ and I'm from _____ (name of group.)

Step right up and see what ingredients are in spit tobacco. Big Tobacco calls it “smokeless tobacco” so it sounds like it’s harmless. Guess again!

This is the story that Big Tobacco **doesn't** want you to hear. Look at these ingredients.

First, you start with tobacco. We've picked a beauty, “Copenhagen.” (Put beef jerky in the blender.)



But, Big Tobacco doesn't stop there.

You've got lead. That's right; lead is in spit tobacco. How many of you read every day about the dangers of lead poisoning? It can lead to brain damage and even death if taken in large quantities or over a long period of time.

(Put cake-decorating balls in the blender.)

But, Big Tobacco doesn't stop there.

Spit tobacco also contains benzene. Never heard of benzene?

Well, it is a highly flammable substance that is used in gasoline and paints...and long-term exposure is linked to leukemia. It can cause vomiting, rapid heart rate, and red blood cell reduction in your body.

(Add clear carbonated drink.)

But, Big Tobacco doesn't stop there.

Did you know that arsenic is also in spit tobacco? Arsenic. The chemical of choice for murderers and mystery writers. It's used in rat poison and can cause vomiting, abnormal heart rate, and death.

(Add brown sugar to blender.)

But, Big Tobacco doesn't stop there.

You've got formaldehyde. This stuff is used to preserve dead animals. It's an embalming fluid and, you guessed it, it's in "spit" and "chew" products.

(Add water to your blender.)

Big Tobacco doesn't stop there. They add another 15 to 20 ingredients. Some we know about and some we don't, because they refuse to tell anyone what other ingredients are included in spit tobacco.

But, you wouldn't have a tobacco product if you didn't have this one last ingredient. What do you think it is?

Nicotine. It's not bad enough that all those dangerous chemicals are in spit tobacco. No, Big Tobacco has to hook you on it so they can slowly rot out your gums, throat, cheeks, and mouth.

(Blend ingredients and put the concoction into a "spit" container.)

So, why does Big Tobacco include so much bad stuff in "spit?" Why don't you ask them?

According to the national average, 15.1 percent of high school students say they've tried spit tobacco in the past 30 days. About 9 percent of all Texas public school students are current smokeless tobacco users. However, in the rural areas of Texas, tobacco use is higher.

Resources

Through With Chew Week 2007

Toolkit (as adapted from RAZE: Tearing Down Tobacco Lies)

1998 Texas Youth Tobacco Survey



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What Is in a Cigarette?

There are over 4,000 chemicals in a single cigarette and the smoke that is created when smoked. More than 40 of those cigarette ingredients are known to be human carcinogens. That means that they cause cancer. Some of those chemicals are listed below:

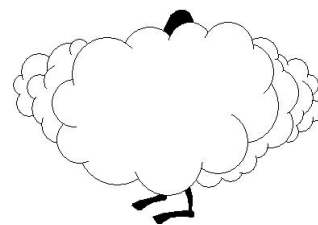
- Arsenic – used in rat poison
- Acetic Acid – found in vinegar, hair dye, and photo-developing fluid
- Acetone – main ingredient in paint thinner and finger nail polish remover
- Ammonia – a typical household cleaning fluid
- Benzene – found in rubber cement
- Butane – cigarette lighter fluid
- Cadmium – found in batteries and artists' oil paints
- Carbon Monoxide – a poisonous gas found in car exhaust, as well as from other sources
- DDT/Dieldrin – insecticides
- Formaldehyde – used to embalm dead bodies. This embalming fluid is often used to preserve small animals in biology classes.
- Hexamine – in barbecue lighter fluid
- Hydrazine – used in jet and rocket fuels



- Hydrogen Cyanide – used as poison in gas chambers
- Lead – a highly poisonous metal that used to be found in some paints
- Napthalenes – used in explosives, mothballs, and paint pigments
- Nitrobenzene – a gasoline additive
- Phenol – used in disinfectants and plastics
- Polonium-210 – a highly radioactive element
- Stearic Acid – found in candle wax
- Toluene – found in embalmer's glue

Purpose

To point out some of the dangerous ingredients found in tobacco products and secondhand smoke.



Equipment

Pencil and puzzle handout, which is located on next page. (The answer key is on page 89.)

Activity

Find some of the dangerous ingredients found in tobacco products and secondhand smoke in the "What Is in a Cigarette?" word search puzzle.

What Is in a Cigarette? Word Search Puzzle



HIDDEN WORDS

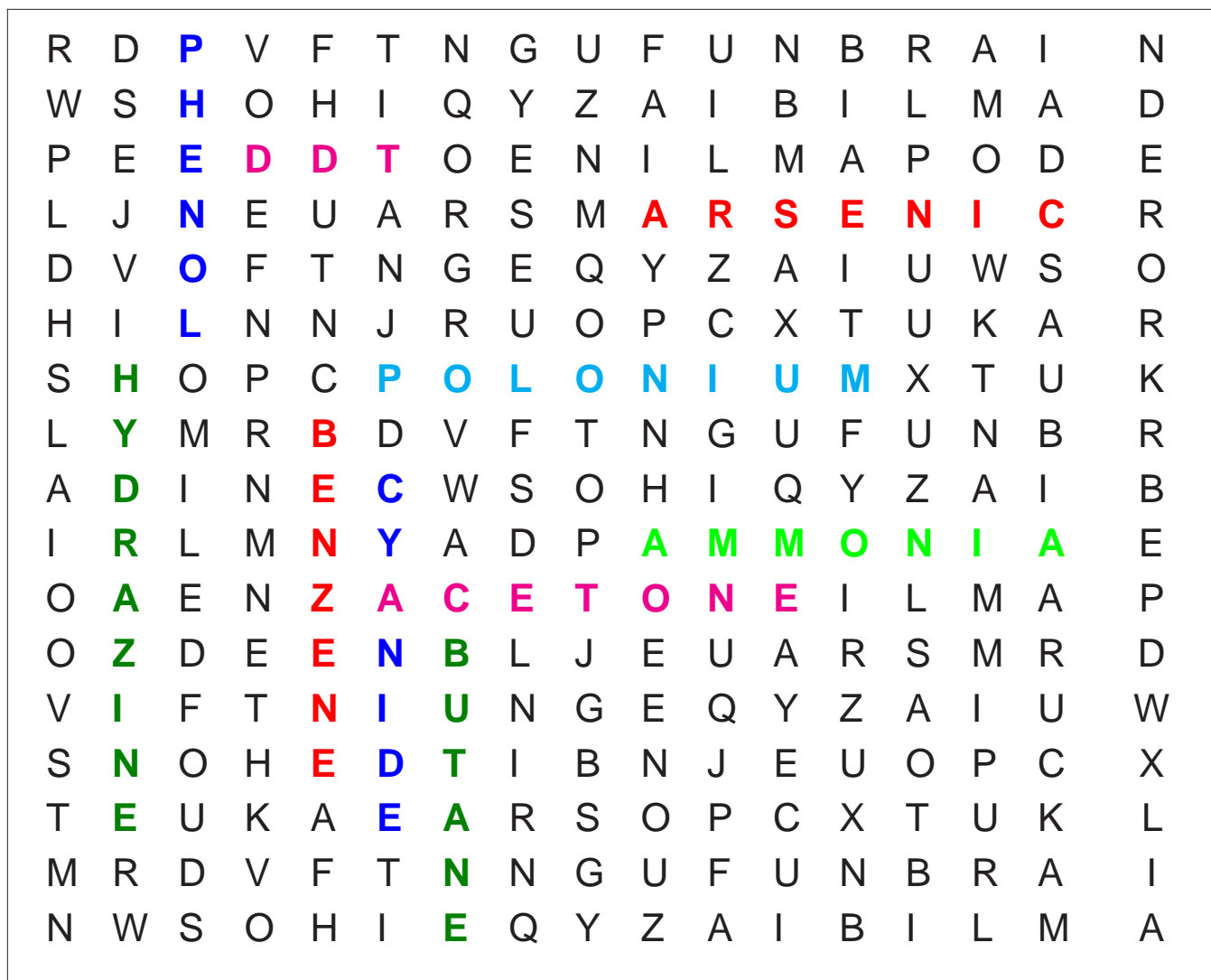
ACETONE	AMMONIA
BENZENE	POLONIUM
DDT	BUTANE
PHENOL	CYANIDE
ARSENIC	HYDRAZINE



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What Is in a Cigarette? Word Search Puzzle Key



HIDDEN WORDS

- | | |
|---------|-----------|
| ACETONE | AMMONIA |
| BENZENE | POLONIUM |
| DDT | BUTANE |
| PHENOL | CYANIDE |
| ARSENIC | HYDRAZINE |



What Are They Really Saying?

The big tobacco companies pay millions of dollars each year to advertise their products. They are clever, communicating messages about cigarettes that are not always true. Ads communicate that their brand of cigarette will make you sexy, beautiful, or even an independent woman. As a consumer, you need to know what is true about their product and what false information they are attempting to say to you.



Purpose

To analyze ads about tobacco products and learn to identify what the advertisers are telling you and if it is true.

Equipment

Tobacco ads from magazines. These ads may be difficult to find because the tobacco companies can't advertise in some magazines. For a resource of ads, go to <http://tobaccofreekids.org/adgallery/>.

Activity

Hold up a magazine ad for a tobacco product. Ask your audience to answer these questions:

- What product is being advertised?
- What message(s) are the pictures giving?
- What message(s) are the words giving?
- Do the pictures and words give the same message?
- What age person would like this ad the best?
- Are the messages true?

Points to Emphasize

- Tobacco companies target youth in their advertising messages.
- Some of the nonverbal messages given in tobacco ads are not true.
- Tobacco ads say things that people want to hear.



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