

# Inhalant Prevention Education

## A School-Based Program



Photos: National Inhalant Prevention Coalition

## Introduction to Inhalant Prevention Education

The 2006 NSDUH Survey noted that 604,476 twelve-eighteen year olds used inhalants for the first time. According to the 2006 Monitoring the Future report, even though many drugs showed a decline in use, inhalants did not. Abuse can start in elementary years and peaks in middle school. Inhalant abuse is dangerous and education should start before abuse peaks in eighth grade.

Inhalants are not actually drugs. They are breathable chemical vapors or gases, (toxins) that produce psychoactive effects when misused. Most inhalants are readily available, inexpensive or free, and usually legal to purchase and possess. Many youth do not perceive them as harmful and don't understand the consequences. To learn more about inhalants prior to teaching this lesson, please take the 15-minute, free, online training at [www.inhalantabusetraining.org](http://www.inhalantabusetraining.org) . For more information about inhalants contact your poison center at 1-800-222-1222.

This set of lessons is designed to introduce inhalant prevention education as part of a health or science curriculum that touches on the negative effects of pollution. There is some thinking that including inhalants in a drug prevention course may increase experimentation. For this reason, these lessons address inhalant prevention from a science perspective. There are three lessons:

1. Poison Prevention (Grade 4)
2. Body Pollution (Grade 5)
3. Danger! Toxic Chemicals (Grade 6 and above)

Lesson 3 is the only time inhalants are actually discussed and should not be presented in the 4<sup>th</sup> or 5<sup>th</sup> grade.

A combination of the above the lesson plans (4. Toxic Chemicals and Poison Prevention) is also included to be used as a solo presentation in grades 6 and above.



Photo credit: [www.drugabuse.gov](http://www.drugabuse.gov)

## Lesson 2. Body Pollution

**Grade level** 5

**Duration** 45 minutes

### Description

This lesson will equate body pollution with environmental pollution, and demonstrate ways to protect the body from pollution (toxins). Many every day household products can be dangerous when not used according to the directions. We have included a parent/student homework activity to get everyone used to reading product labels (Appendix E).

### Subjects covered

- Science (anatomy and physiology)
- Safety
- Injury prevention
- Substance abuse prevention

### Utah State Board of Education Utah Core State Standards for Health Education

Strand 4. Substance Abuse Prevention (SAP): Empower students to resist peer pressure and substance use by identifying practices that promote a lifestyle free from alcohol, tobacco, nicotine, and other drugs.

Standard 5.SAP.3: Evaluate how the use of alcohol, tobacco, nicotine and other substances can cause illness, injury, and complications with body development, overall health, and behavior.

### Goal

Students will recognize that many useful chemicals can be poisonous if not used in the correct manner.

### Objectives

By the end of the lesson, students will be able to

1. **list 3 things that are most crucial to survive.**
2. **define 'poison'.**
3. **list 4 ways toxins can enter the body.**
4. **list at least 3 organs that can be harmed by body pollution.**
5. **recall at least 4 ways to protect their body from toxins.**

**Materials**

- Six to ten empty liter soda bottles
- Coffee stir sticks (narrow straws)
- Piece of an extension cord
- Pencils for each student
- Lung and brain pictures – Appendix A
- Brain MRI image – Appendix B
- Neuron picture – Appendix C
- **Make copies** for the students of the
  - Word search game – See Appendix D
  - The take home assignment – Body Pollution Worksheet – Appendix E
- Run live during class presentation - ALA Macromedia: “Learn About Your Respiratory System” (runtime 3+ minutes) <http://www.lungusa.org/your-lungs/how-lungs-work> . If you do not have computer or internet access during the class period, you can drop this activity from the lesson.
- **Call the poison center** at 1-800-222-1222 or visit [www.utahpoisoncontrol.org](http://www.utahpoisoncontrol.org) to order Poison Control stickers and magnets.
- **Make copies** of the Take home assignment – Body Pollution Worksheet – Appendix E
- Pictionary Clues – Appendix F

**Procedure**

**(Bold text is spoken)**

*Objective 1*

**What are 3 things our bodies need to survive?** Write responses on the board. You are looking for the following items:

- Food
- Water
- Air (oxygen)

Circle air (or oxygen) and tell the class we will focus on oxygen today. **Oxygen is so important to us that we could only live 3-5 minutes without it.**

Explain that **our lungs** (lung picture in Appendix A) **are among the body's primary points of contact with the outside world. We breathe in an estimated 15,000 liters of air every day, approximately 6 to 10 liters every minute, drawing life-giving oxygen across 600 to 900 square feet of surface area in tiny sacs inside the lung.** Show the empty soda bottles to demonstrate the quantity our lungs take in each day.

To demonstrate how important oxygen is to us, have the class put one end of a `stir stick' in their mouth and close their lips tightly. Suck in air through the straw. Ask the class if they could perform

any activities if this was all the air they could breathe in. This helps to demonstrate how important healthy air and lungs are to everyday living.

If you have internet access, play the video for the class - ALA Macromedia: "Learn about Your Respiratory System"

Show ALA Macromedia – reinforce concepts in video with questions after video

- 1) Q - What do the hairs that line the nasal canal do?  
A - Cleanse the air we breathe
- 2) Q - Where does the air we breathe through our mouth and nose go?  
A - Into the windpipe (trachea)
- 3) Q - Air passes through \_\_\_\_\_ before it reaches each lung.  
A - Bronchial tubes

**Today we're going to discuss toxic chemicals, or poisons, and their effect on living things and the environment.**

### *Objective 2*

Have the students break up into small groups and report back their answers to the following questions:

**Does anyone know the definition of 'poison'?**

A poison is any product that can be harmful if used in the wrong way, in the wrong amount, or by the wrong person. [Give examples: diabetic medicines given to a healthy person or window cleaner sprayed in eyes.] **Toxin is another word for poison. Pollution is poison to the environment.**

### *Objective 3 & 4*

Have students remain in groups.

**How does pollution get into our body?** [Have student write responses on the board; through eyes, mouth, nose, skin.] **Harmful substances and fumes can enter the body even when we don't know it.** (Show MRI of brain damage, Appendix B) **What do toxins and poisons do to our major organs?** This is not a complete list, but do cover the main points. Note: students may also come up with other, non-inhalant specific answers.

- Lungs: reduce oxygen absorption & reduce lung function.
- Heart: disturb heart rhythm & can stop heart entirely
- Brain: impair memory/learning, painful headaches, trouble with coordination, neural coating destroyed. Show a picture of a neuron and where the myelin sheath is. (See Appendix C) Hold up an extension cord and tell the class how the protective covering protects the wires so the cord can transmit electricity. Without the protective covering it

would not work correctly. That is the same with the neural coating on the brain.

- Eyes, ears, mouth: affect smell and taste & cause problems with eyes and ears

### *Objective 5*

This can be done in group brain storming or as a class activity.

Tell students that they are responsible for protecting their bodies from pollution caused by toxins.

Ask the students to share ways they can protect themselves from body pollution. **What are some safety rules or safety concepts you can do to protect your body?** [Have a student write the responses on the board. Students may suggest ideas related to air pollution; such as not exercising outdoors if the air quality is bad or recycling and get involved in Earth day. Try to direct them to the safety concepts listed below.]

- Do not touch, taste, or smell any products unless they are safe, or a trusted adult says it's okay.
- Always read direction for proper usage.
- Only use products as the directions recommend.
- Do not put anything on your skin unless a trusted adult says it's safe.
- Use chemical products in well-ventilated areas.
- Wear protective clothing, masks, glasses, and gloves.

### **Assessment**

- Discussion wrap-up. Reinforce the ways toxins can harm the body and ways to protect it.
- Ask the students to take home the stickers and magnets and be sure to put them near telephones.
- Ask the students what three things they learned about poisons today. They can write their answer or you may select a couple of students to share out loud.
- Have the students complete the word search (Appendix D)
- Pictionary – Cut up the clues (Appendix F), break the students into groups, and have team members draw clues on the board for their teammates to guess.

### **Homework**

Have the students complete the take home assignment (Appendix E) with the help of an adult.

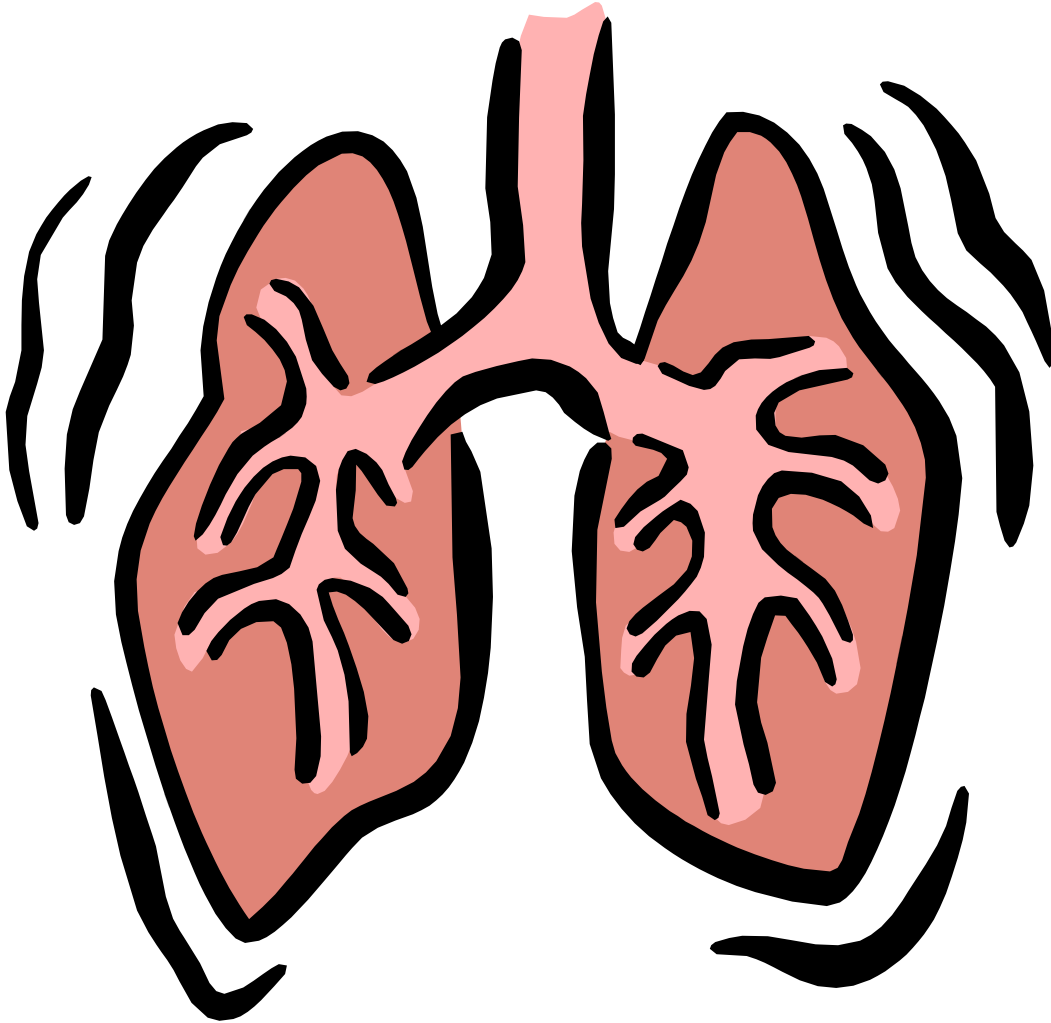
### **Take the lesson one step further**

- Have the students design ads (print, radio or TV script) that include the important safety information.
- Have the group break up into groups and design a poster to answer the question in Objective 5 - What are some safety rules or safety concepts they can do to protect their body?

- Plant seeds in a clean air environment and plant other seeds in a polluted area - [www.eduref.org/Virtual/Lessons/Science/Environmental\\_Education/ENV0003.html](http://www.eduref.org/Virtual/Lessons/Science/Environmental_Education/ENV0003.html)
- Hazardous Substance Poster – The students design a poster to educate others about the harmful effects of a hazardous substance. [www.healthandwelfare.idaho.gov/ Rainbow/Documents/hazardous\\_substance\\_poster.pdf](http://www.healthandwelfare.idaho.gov/Rainbow/Documents/hazardous_substance_poster.pdf)
- Our Air: The Quest for Quality - The intent of this lesson is to illustrate the relationship between air quality and its critical role in personal health concerns. <http://www.learningtogive.org/lessons/unit379/lesson1.html>

## Resources

- Utah Poison Center 1-800-222-1222 [www.utahpoisoncontrol.org](http://www.utahpoisoncontrol.org)
- American Lung Association, Air Pollution and Exercise - [www.lungusa.org/site/pp.asp?c=dvLUK9O0E&b=36292](http://www.lungusa.org/site/pp.asp?c=dvLUK9O0E&b=36292)
- U.S. National Library of Medicine - Tox Town Website: [www.toxtown.nlm.nih.gov](http://www.toxtown.nlm.nih.gov)
- SAMHSA [https://www.samhsa.gov/data/sites/default/files/report\\_3095/ShortReport-3095.html](https://www.samhsa.gov/data/sites/default/files/report_3095/ShortReport-3095.html) , Lipari, R.N. *Understanding adolescent inhalant use*. The CBHSQ Report: June 13, 2017. Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration, Rockville, MD.



**LUNGS**



Appendix A

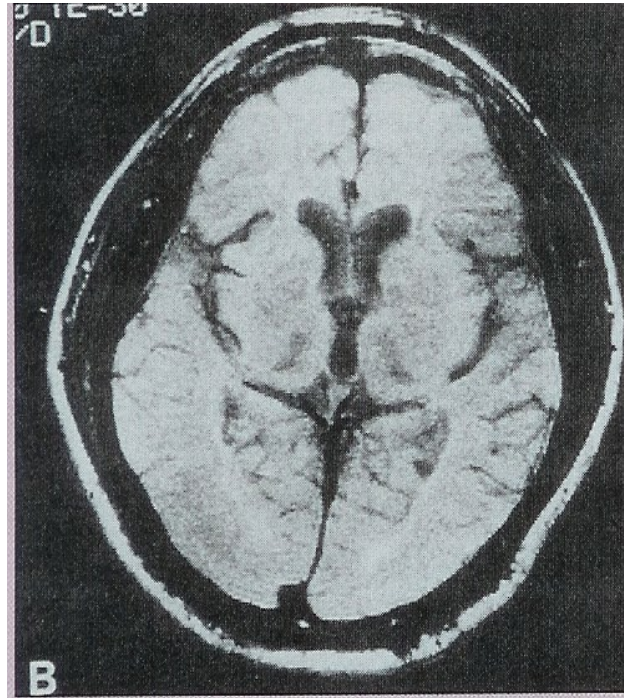


**BRAIN**

Appendix B

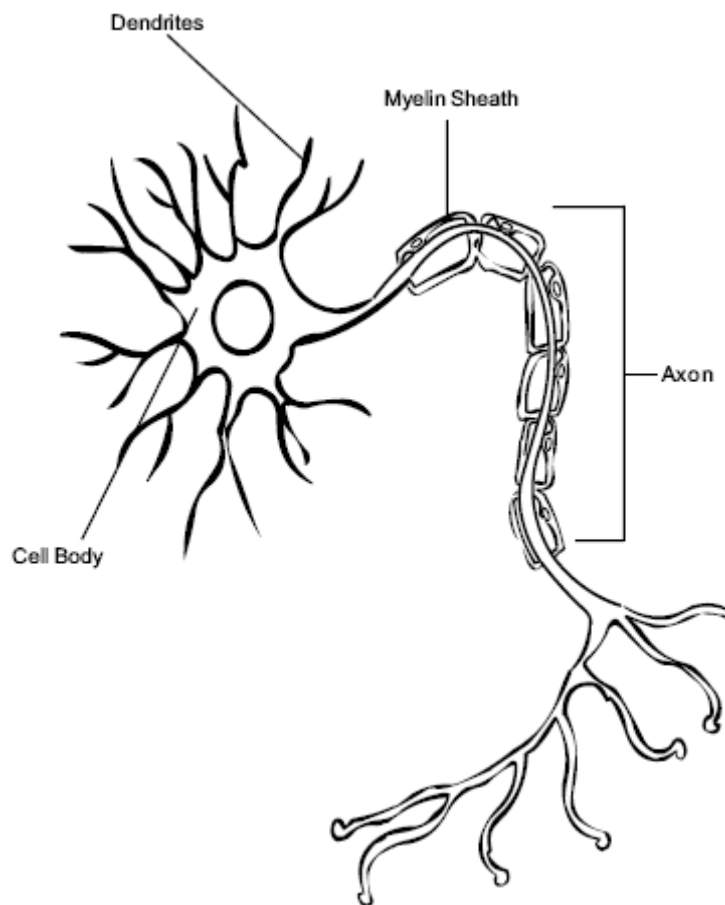


**HEALTHY BRAIN**



**UNHEALTHY BRAIN**  
**CHRONIC TOLUENE USER**

Credit: Neil Rosenberg, M.D.



## **NEURON (NERVE CELL)**

Credit: NIDA Junior Scientist

## Appendix D

## BODY POLLUTION

Try to find **all 15** words on this board.

C	G	O	X	N	N	I	A	R	B	P
X	K	P	S	O	F	X	A	V	R	O
U	S	W	K	S	M	Z	W	O	E	L
R	A	R	N	I	X	O	T	S	A	L
P	M	Y	R	O	M	E	M	G	T	U
F	W	E	S	P	C	H	E	N	H	T
U	A	E	T	T	V	M	T	U	E	I
M	Y	V	I	R	E	V	I	L	C	O
E	R	O	H	E	A	R	T	U	T	N
S	N	W	R	G	L	A	S	S	E	S
H	S	E	V	O	L	G	Z	X	X	H

BRAIN

BREATHE

EYES

FUMES

GLASSES

GLOVES

HEART

LIVER

LUNGS

MASK

MEMORY

POISON

POLLUTION

PROTECTION

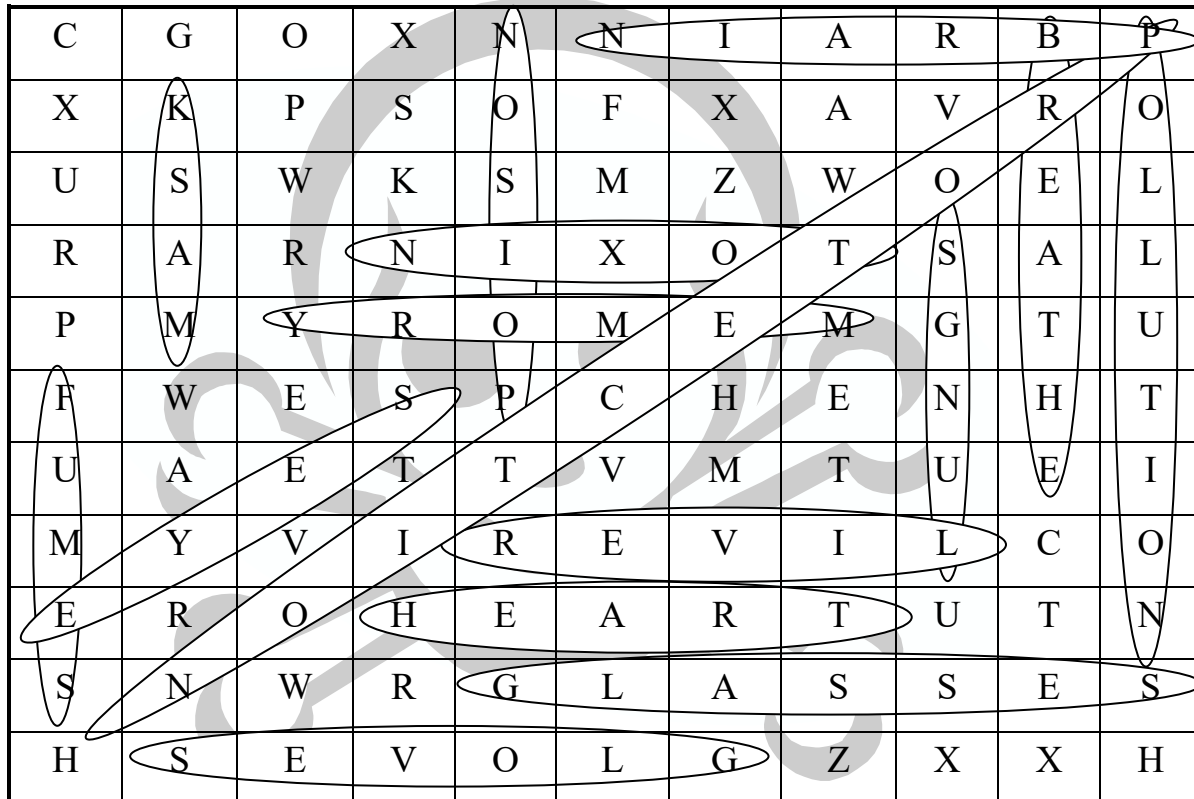
TOXIN



# BODY POLLUTION

## Answer Sheet

Try to find **all 15** words on this board.



BRAIN  
BREATHE  
EYES  
FUMES  
GLASSES

GLOVES  
HEART  
LIVER  
LUNGS  
MASK

MEMORY  
POISON  
POLLUTION  
PROTECTION  
TOXIN

## Appendix E

# Body Pollution

## Take Home Assignment

Many products that we use everyday can be harmful to us if they are not used correctly. With the help of an adult, find one example of each product in your home and write the safe use instructions in the box next to the product name.

Product	Safe Use
<b>Solvents</b> Product name _____ (Examples: Gasoline, Painter thinner, Lighters and lighter fluid, Carburetor cleaner, Correction fluid)	
<b>Aerosols</b> Product name _____ (Examples: Spray paint, Air freshener, Computer Cleaner, Deodorant)	
<b>Adhesives</b> Product name _____ (Examples: Rubber cement, Model airplane glue, PVC cement)	
<b>Food Products</b> Product name _____ (Examples: Cooking spray, Whipped cream in a can, Whippets)	



**Pictionary Clues**

<b>Food</b>	<b>Water</b>	<b>Air (Oxygen)</b>
<b>Medicine</b>	<b>Pollution</b>	<b>Heart</b>
<b>Brain</b>	<b>Chemicals</b>	<b>Lungs</b>
<b>Smell</b>	<b>Taste</b>	<b>Poison</b>
<b>Body</b>	<b>Ears</b>	<b>Eyes</b>
<b>Nose</b>	<b>Mouth</b>	<b>Label</b>
<b>Masks</b>	<b>Gloves</b>	<b>Phone</b>

