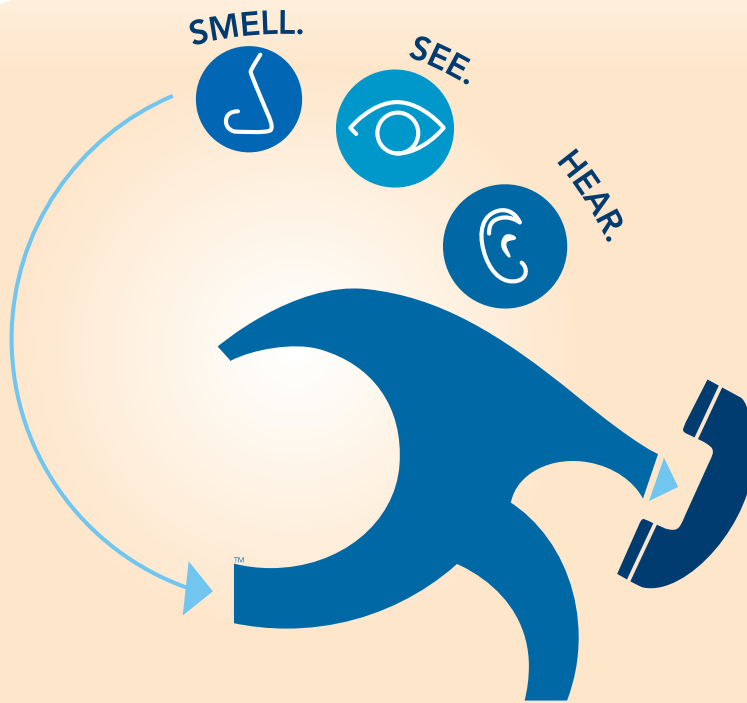


A GUIDE FOR TEACHERS



Suspect a natural gas leak?

First, move your feet!

Then call when you're down the street.

Promoting natural gas safety and awareness in the classroom

This safety awareness message is brought to you by the natural gas member companies of the Ohio Gas Association.

LESSON PLAN ACTIVITIES

FOR GRADES

3 THROUGH 5



A GUIDE TO PROMOTING NATURAL GAS SAFETY AND AWARENESS IN YOUR CLASSROOM

The Ohio Gas Association is pleased to present this comprehensive series of lesson plan activities, including science experiments, a crossword puzzle, a word find, diagrams and more, to help you teach your students about natural gas safety. We hope your students will share what they have learned with their parents, siblings, relatives and neighbors, building an even larger community of safety-conscious natural gas consumers.

The featured activities are designed to accommodate a one- to two-day lesson plan on natural gas awareness and safety. To continually reinforce this safety message, we have also included a classroom poster, homework assignments and certificate of knowledge to be signed by each student's parent.

BEFORE downloading the lesson plan materials, please take a moment to read through this guide. In it, you'll find a brief overview of natural gas history and safety, along with step-by-step instructions on how to implement each item in your classroom.

All lesson plan materials, can be downloaded from www.safegasohio.org.



ABOUT NATURAL GAS

The cleanest-burning fossil fuel, natural gas can heat your home, light your street and dry your clothes—all at the same time. According to the Public Utilities Commission of Ohio, over 3.6 million residential, commercial and industrial customers throughout our state depend on this substance to meet their energy needs.

Most of the natural gas we use today was formed more than 200 million years ago, from the buried remains of tiny plants and sea animals. Over time, thick layers of mud, sand, silt and rock settled over these remains, pushing them deeper and deeper into the earth's crust. As the layers of matter built up, pressure and heat from the shifting surface of the earth filled the resulting cracks and crevices with oil and natural gas.

Today, large pipes and wells are used to bring natural gas to the surface, where it is cleaned, processed and pressurized. It then travels through a long, underground pipeline system that crisscrosses the United States. (This pipeline system is buried underground not only for safety reasons, but also to protect it from the weather and ensure uninterrupted service.) Before natural gas reaches its destination, natural gas companies add a harmless chemical to make it easier to detect leaks. Many people describe the odor of this additive as similar to rotten eggs.

While it's unlikely that a problem will occur, incidents sometimes happen—usually due to lack of knowledge, not because natural gas itself is unsafe. That's why it's important for everyone to educate himself or herself about natural gas safety, including the proper steps to take if a natural gas leak is ever detected.

DETECTING A LEAK

When it comes to detecting a gas leak, it's best to trust your senses:

SMELL — To help you SMELL a leak from a gas line or appliance, a familiar odor like rotten eggs is often added to natural gas.

SEE — Near a gas leak, you might SEE blowing dirt, bubbling water or an unusual area of dead vegetation.

HEAR — A leaking pipeline might make a hissing sound you can HEAR.

If you recognize even one of the above signs, walk away, right away. When clear of the area, call your natural gas company or 9-1-1 for emergency response. If a child ever suspects a gas leak, he or she should tell an adult and leave the area immediately. Do not return to the area until the natural gas company tells you it is safe to do so.

For more information about natural gas, visit www.safegasohio.org.

LESSON PLAN ACTIVITIES



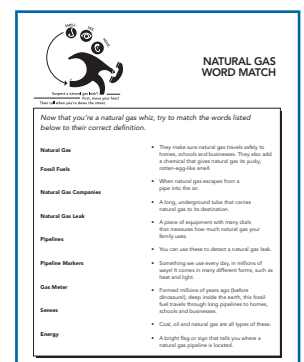
The following activities will help you teach your students about natural gas, including how to detect and respond to a natural gas leak. All materials can be downloaded from www.safegasohio.org. The materials are listed in order, starting with an overview of natural gas history and a list of key terms and concluding with a certificate of completion and classroom poster. While we encourage you to introduce the activities in this manner, you may certainly alter the order to fit the unique requirements of your classroom.

KNOW YOUR NATURAL GAS LINGO & WORD MATCH

This activity features definitions of nine key natural gas terms, followed by a word match that your students can use to test their knowledge. Since this activity serves as an introduction to natural gas and its proper use, we suggest you present it to your students early on in your lesson plan.

To use this word match in your classroom:

1. Download the definitions and word match (available in black and white, as an Adobe® PDF file) from www.safegasohio.org. See page six of this guide for activity answer key. Note: This activity consists of TWO pages.
2. Review the definitions page ("Know Your Natural Gas Lingo") with your students.
3. Ask them to complete the word match (page two), either in class or at home.



File name: Lingo&wordmatch.pdf

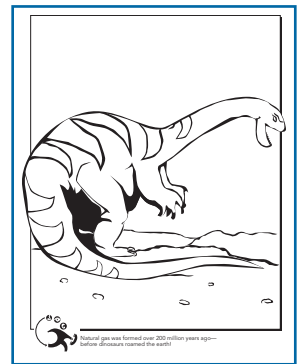


COLORING PAGES

These five sequential coloring pages provide a basic summary of the history of natural gas.

To use these coloring pages in your classroom:

1. Download the coloring pages (available in black and white, as an Adobe® PDF file) from www.safegasohio.org.
2. Briefly explain the history of natural gas to your students. Use the statements at the bottom of each coloring page as a guide.
3. Ask your students to color each page. (This can also serve as a homework assignment.)



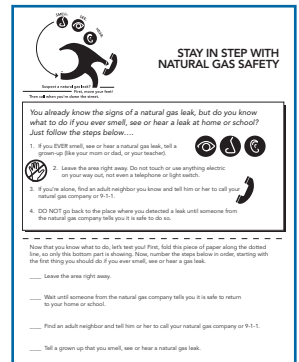
File name: Coloringpgs.pdf

STAY IN STEP WITH NATURAL GAS SAFETY

Now that your students have learned about natural gas history and the role this key energy source plays in our lives, you can introduce the topic of natural gas safety. Before presenting these safety steps, make sure your students understand the three main signs of a natural gas leak.

To use this safety steps activity in your classroom:

1. Download the natural gas safety steps (available in black and white, as an Adobe® PDF file) from www.safegasohio.org. See page seven of this guide for activity answer key.
2. Review the steps with your students. Emphasize the importance of telling an adult if they ever suspect a gas leak and not touching or using anything electric (not even a light switch or telephone) when leaving the area.
3. Tell them to fold the paper on the dotted line, so only the bottom part of the page is showing, and number the safety steps in order, starting with the first action they should take if they detect a natural gas leak. (This activity can also serve as a homework assignment.)



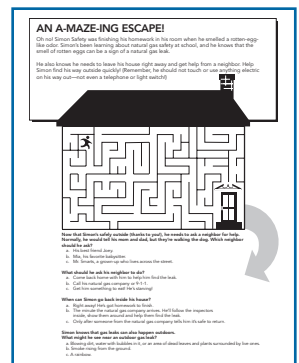
File name: StayinStep.pdf

AN A-MAZE-ING ESCAPE

This maze activity shows students what to do if they ever detect a natural gas leak at home.

To use this maze activity in your classroom:

1. Download the maze activity (available in black and white, as an Adobe® PDF file) from www.safegasohio.org. See page eight of this guide for activity answer key.
2. Instruct your students to help Simon Safety find his way outside (remind them that he can't touch anything electric on his way out!). Then, have them answer the multiple choice questions at the bottom of the page.



File name: Maze.pdf

CLASSROOM SAFETY DRILL

If your school uses natural gas, you can conduct a natural gas safety drill. Here's how:

1. Tell your students that the entire class will participate in a natural gas safety drill. Before you begin, ask them to describe the signs of a natural gas leak. Also remind them to tell a teacher right way if they ever detect a leak in school.
2. Ask your students to line up by the doorway. Remind them not to touch or use anything electric on their way out—not even a light switch or computer.
3. Lead them outside, a safe distance away from the school.
4. Explain to your students that if this had been a real gas leak, you would now call the natural gas company or 9-1-1. No one would be able to return to the school until the natural gas company said it was safe to do so.

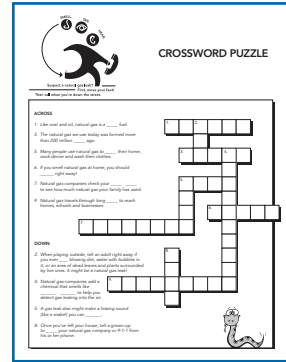


CROSSWORD PUZZLE & WORD FIND

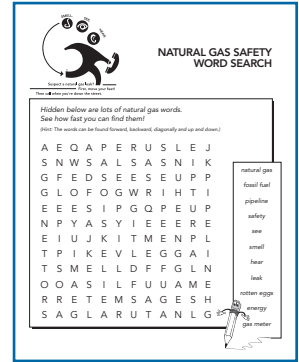
Both of these activities help reinforce key natural gas safety and awareness messages.

To use this crossword puzzle and word find in your classroom:

1. Download the crossword puzzle and word find (both available in black and white, as Adobe® PDF files) from www.safegasohio.org. See page nine of this guide for activity answer keys.
2. Distribute the crossword puzzle and word find to your students. For the word find, remind them that the words can be found forward, backward, diagonally, vertically and horizontally.
3. Students can complete these activities individually or in pairs.



File name: WordPuzzle.pdf



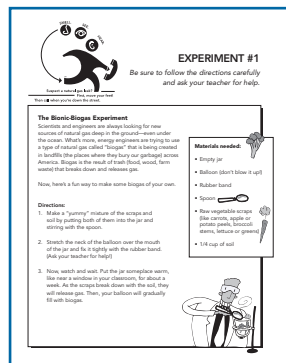
File name: WordFind.pdf

EXPERIMENTS

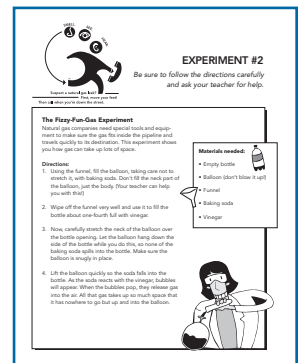
These two experiments help bring natural gas to life for students. The first experiment illustrates how, even if we cannot see a gaseous substance, it still exists and takes up space. The second experiment introduces an alternative form of natural gas, called biogas.

To perform these experiments in your classroom:

1. Download the experiment instructions (available in black and white, as an Adobe® PDF file) from www.safegasohio.org.
2. Gather the necessary materials and divide your students into groups to conduct the experiments. For the Bionic-Biogas Experiment, you will need to clear a space in your classroom (ideally a window ledge) where each group's covered jar can sit, undisturbed, for approximately one week.
3. Discuss each group's results as a class.



File name: BiogasExperiment.pdf



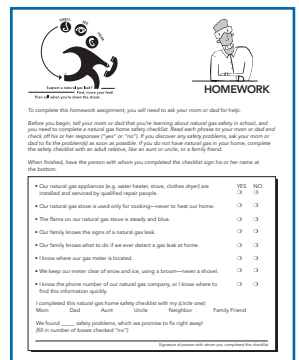
File name: FizzyGasExperiment.pdf

HOMEWORK ASSIGNMENTS

This homework assignment requires students to complete a natural gas safety home checklist, with the help of a parent, guardian, relative or family friend.

To use this homework assignment in your classroom:

1. Download the homework assignment (available in black and white, as an Adobe® PDF file) from www.safegasohio.org.
2. Distribute the assignment to your students. Those who do not have natural gas in their home can complete the checklist with a relative or family friend. Remind them that the person with whom they complete the checklist must sign his or her name at the bottom.
3. Have your students share their experiences the next day in class.



File name: Homework.pdf



This homework assignment requires students to interview an adult who uses natural gas in his or her own home.

To use this homework assignment in your classroom:

1. Download the homework assignment (available in black and white, as an Adobe® PDF file) from www.safegasohio.org.
2. Distribute the assignment to your students. Remind them that the person they interview must be an adult.
3. Have the students share their experiences the next day in class.

NATURAL GAS WHIZ KID
HOMEWORK

For this homework assignment, you will interview an adult who uses natural gas in his or her home. This person could be your mom or dad, or an aunt, uncle, neighbor or family friend.

Before you begin, tell the person you want to interview that you're learning about natural gas safety in school, and you need to ask him or her a few questions. Remind the person to speak clearly so you can write down his or her answers.

Name of person being interviewed: _____

Age: _____

This person lives (circle one):
 Mom Dad Aunt Uncle Neighbor Family Friend

1. How long have you lived in your house? _____

2. Did you use natural gas in your previous home? _____

3. How many natural gas appliances do you have? Name each one: _____

4. Do you know what a natural gas leak smells like? _____

5. What should you do if you ever smell a gas leak at home? _____

6. What is the name of your natural gas company? _____

7. Where is your gas meter located? _____

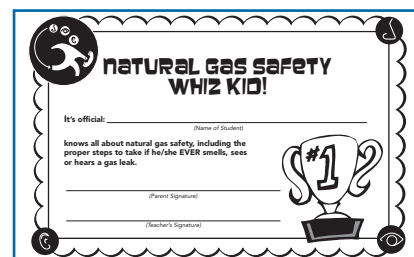
File name: Homework.pdf

NATURAL GAS WHIZ KID CERTIFICATE

Once your students have completed most or all of the lesson plan activities, you can present them with this certificate.

To use this certificate in your classroom:

1. Download the certificate (available in black and white, as an Adobe® PDF file) from www.safegasohio.org.
2. Sign each certificate.
3. Distribute the certificates to your students (you can conduct a small "graduation" ceremony if you wish) and instruct them to have a parent or guardian sign their certificate as well.
4. Hang the certificates around the classroom, or tell your students to display their certificate in a prominent spot at home, such as on their refrigerator.



File name: Certificate.pdf

POSTER

This poster reminds students of the three signs of a natural gas leak and the proper steps to take if a leak is ever detected.

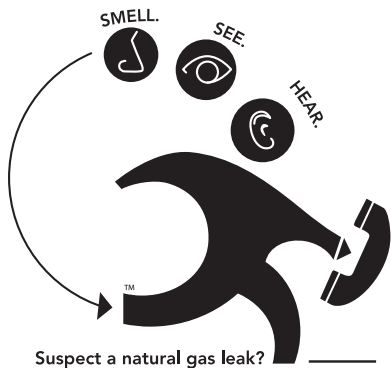
To use this poster in your classroom:

1. Download the poster (available in color, as an Adobe® PDF file) from www.safegasohio.org.
2. Hang the poster in a highly visible location in your classroom. If you have space, you may want to hang several copies of the poster throughout your school or classroom.



File name: Poster.pdf





Suspect a natural gas leak? _____

First, move your feet!

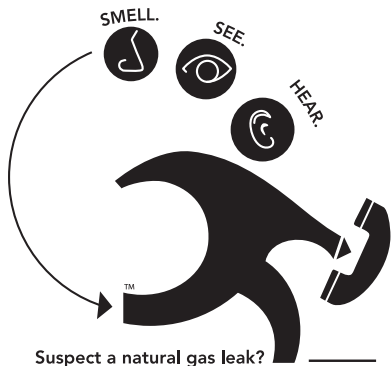
Then call when you're down the street.

NATURAL GAS WORD MATCH KEY

Now that you're a natural gas whiz, try to match the words listed below to their correct definition.

- | | |
|------------------------------|---|
| Natural Gas | • They make sure natural gas travels safely to homes, schools and businesses. They also add a chemical that gives natural gas its yucky, rotten-egg-like smell. |
| Fossil Fuels | • When natural gas escapes from a pipe into the air. |
| Natural Gas Companies | • A long, underground tube that carries natural gas to its destination. |
| Natural Gas Leak | • A piece of equipment with many dials that measures how much natural gas your family uses. |
| Pipelines | • You can use these to detect a natural gas leak. |
| Pipeline Markers | • Something we use every day, in millions of ways! It comes in many different forms, such as heat and light. |
| Gas Meter | • Formed millions of years ago (before dinosaurs!), deep inside the earth, this fossil fuel travels through long pipelines to homes, schools and businesses. |
| Senses | • Coal, oil and natural gas are all types of these. |
| Energy | • A bright flag or sign that tells you where a natural gas pipeline is located. |





Suspect a natural gas leak?

First, move your feet!

Then call when you're down the street.

STAY IN STEP WITH NATURAL GAS SAFETY KEY

You already know the signs of a natural gas leak, but do you know what to do if you ever see, smell or hear a leak at home or school? Just follow the steps below....

1. If you EVER see, smell or hear a natural gas leak, tell a grown-up (like your mom or dad, or your teacher).



2. Leave the area right away. Do not touch or use anything electric on your way out, not even a telephone or light switch.

3. If you're alone, find an adult neighbor you know and tell him or her to call your natural gas company or 9-1-1.



4. DO NOT go back to the place where you detected a leak until someone from the natural gas company tells you it is safe to do so.

Now that you know what to do, let's test you! First, fold this piece of paper along the dotted line, so only this bottom part is showing. Now, number the steps below in order, starting with the first thing you should do if you ever smell, see or hear a gas leak.

2

Leave the area right away.

4

Wait until someone from the natural gas company tells you it is safe to return to your home or school.

3

Find an adult neighbor and tell him or her to call your natural gas company or 9-1-1.

1

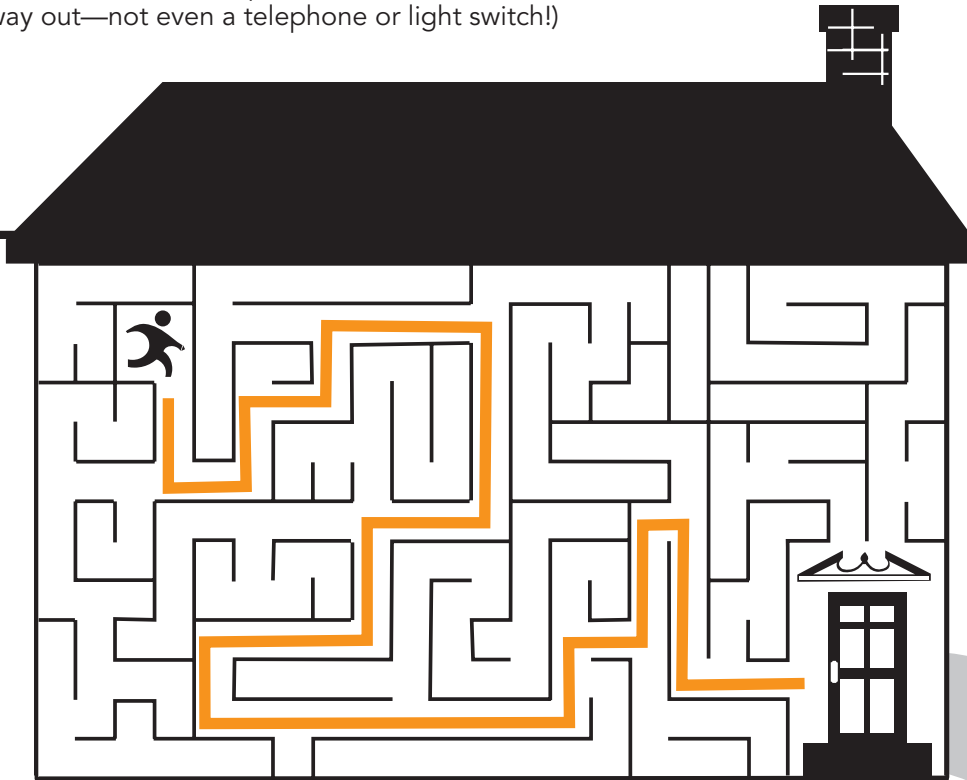
Tell a grown up that you smell, see or hear a natural gas leak.



AN A-MAZE-ING ESCAPE! **KEY**

Oh no! Simon Safety was finishing his homework in his room when he smelled a rotten-egg-like odor. Simon's been learning about natural gas safety at school, and he knows that the smell of rotten eggs can be a sign of a natural gas leak.

He also knows he needs to leave his house right away and get help from a neighbor. Help Simon find his way outside quickly! (Remember, he should not touch or use anything electric on his way out—not even a telephone or light switch!)



Now that Simon's safely outside (thanks to you!), he needs to ask a neighbor for help. Normally, he would tell his mom and dad, but they're walking the dog. Which neighbor should he ask?

- a. His best friend Joey.
- b. Mia, his favorite babysitter.
- c. Mr. Smarts, a grown-up who lives across the street.

What should he ask his neighbor to do?

- a. Come back home with him to help him find the leak.
- b. Call his natural gas company or 9-1-1.
- c. Get him something to eat! He's starving!

When can Simon go back inside his house?

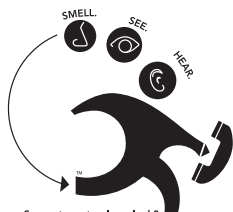
- a. Right away! He's got homework to finish.
- b. The minute the natural gas company arrives. He'll follow the inspectors inside, show them around and help them find the leak.
- c. Only after someone from the natural gas company tells him it's safe to return.

Simon knows that gas leaks can also happen outdoors.

What might he see near an outdoor gas leak?

- a. Blowing dirt, water with bubbles in it, or an area of dead leaves and plants surrounded by live ones.
- b. Smoke rising from the ground.
- c. A rainbow.



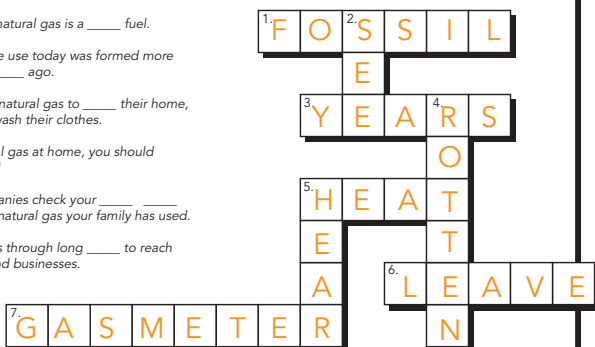


CROSSWORD PUZZLE KEY

Suspect a natural gas leak?
First, move your feet!
Then call when you're down the street.

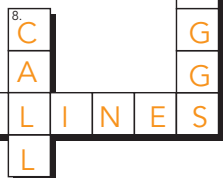
ACROSS

- Like coal and oil, natural gas is a _____ fuel.
- The natural gas we use today was formed more than 200 million _____ ago.
- Many people use natural gas to _____ their home, cook dinner and wash their clothes.
- If you smell natural gas at home, you should _____ right away!
- Natural gas companies check your _____ to see how much natural gas your family has used.
- Natural gas travels through long _____ to reach homes, schools and businesses.



DOWN

- When playing outside, tell an adult right away if you ever _____ blowing dirt, water with bubbles in it, or an area of dead leaves and plants surrounded by live ones. It might be a natural gas leak!
- Natural gas companies add a chemical that smells like _____ to help you detect gas leaking into the air.
- A gas leak also might make a hissing sound (like a snake!) you can _____.
- Once you've left your house, tell a grown-up to _____ your natural gas company or 9-1-1 from his or her phone.



NATURAL GAS SAFETY WORD SEARCH KEY

gas leak?
First, move your feet!
Then call when you're down the street.

Now are lots of natural gas words.
See how fast you can find them!
(Hint: The words can be found forward, backward, diagonally and up and down.)



natural gas
fossil fuel
pipeline
safety
see
smell
hear
leak
rotten eggs
energy
gas meter



 safegasohio.org

