



HELP YOUR SCHOOL
WIN UP TO \$10,000
IN GRANT FUNDING!



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HERE'S EVERYTHING YOU NEED TO KNOW TO ENTER THE 2019 CHALLENGE.



THE THEME

Each year, *The Adventures of Captain Mercaptan*®, BGE's Natural Gas Safety Hero Challenge asks elementary school-aged children to complete an activity demonstrating mastery of natural gas safety. This year, students are tasked with completing *The Adventures of Captain Mercaptan: Volume 2* (found on page 3). Your final entry should include a safety message that completes the story and an accompanying three-panel comic strip, which must include at least one member of the Captain Mercaptan safety squad (Captain Mercaptan, Piper or Sunny).

HERE'S HOW IT WORKS:

1. Discuss natural gas safety

- ★ Read *The Adventures of Captain Mercaptan: Volume 2* (found on page 3) with your class.
- ★ Review the gas safety information on page 11 to ensure your students have complete knowledge of natural gas safety. Consider teaching the lesson plans found on pages 12-27 which align with Maryland State STEM Standards of Practice and are specialized for each grade level.
- ★ You can complement your natural gas safety lesson plan with free curriculum-based games, teacher guides and activities that support STEM learning, available at **BGE-Education.com**.

2. Work with your class on a safety message and comic strip

- ★ Encourage your students to think of their own natural gas safety message to complete *The Adventures of Captain Mercaptan: Volume 2* (found on page 3).
- ★ Ask them to incorporate that message into a three panel comic strip using the Captain Mercaptan superhero theme.

- ★ Ask them to choose one or more of the supplied superhero images from pages 9 and 10 as the focal point of the comic strip. Re-size the digital files included in the downloadable entry kit as-needed.
- ★ Artwork should NOT include images of any Marvel® characters found in the Marvel/Captain Mercaptan comic book, including IRON MAN™, Pepper Potts and Killjoy. A complete checklist for eligible entries is on page 4.
- ★ Have your class select their favorite student's comic strip to submit for entry.
- ★ Have fun! Encourage creativity!

3. Prepare your entry

- ★ Scan the safety comic strip your class selects to upload.
- ★ Use the online entry form at **BGEGasHero.com**.
- ★ Entry should include the chosen safety message, safety comic strip, description of your school enrichment project and a W-9 for your school.
- ★ Illustration file types accepted: jpg and png.
- ★ Upload your signed waiver form signed by the parent/guardian of the student who drew your comic strip along with your entry to **BGEGasHero.com** by 11:59 pm on November 10, 2019.

**ENTRIES ACCEPTED UNTIL
NOVEMBER 10, 2019**



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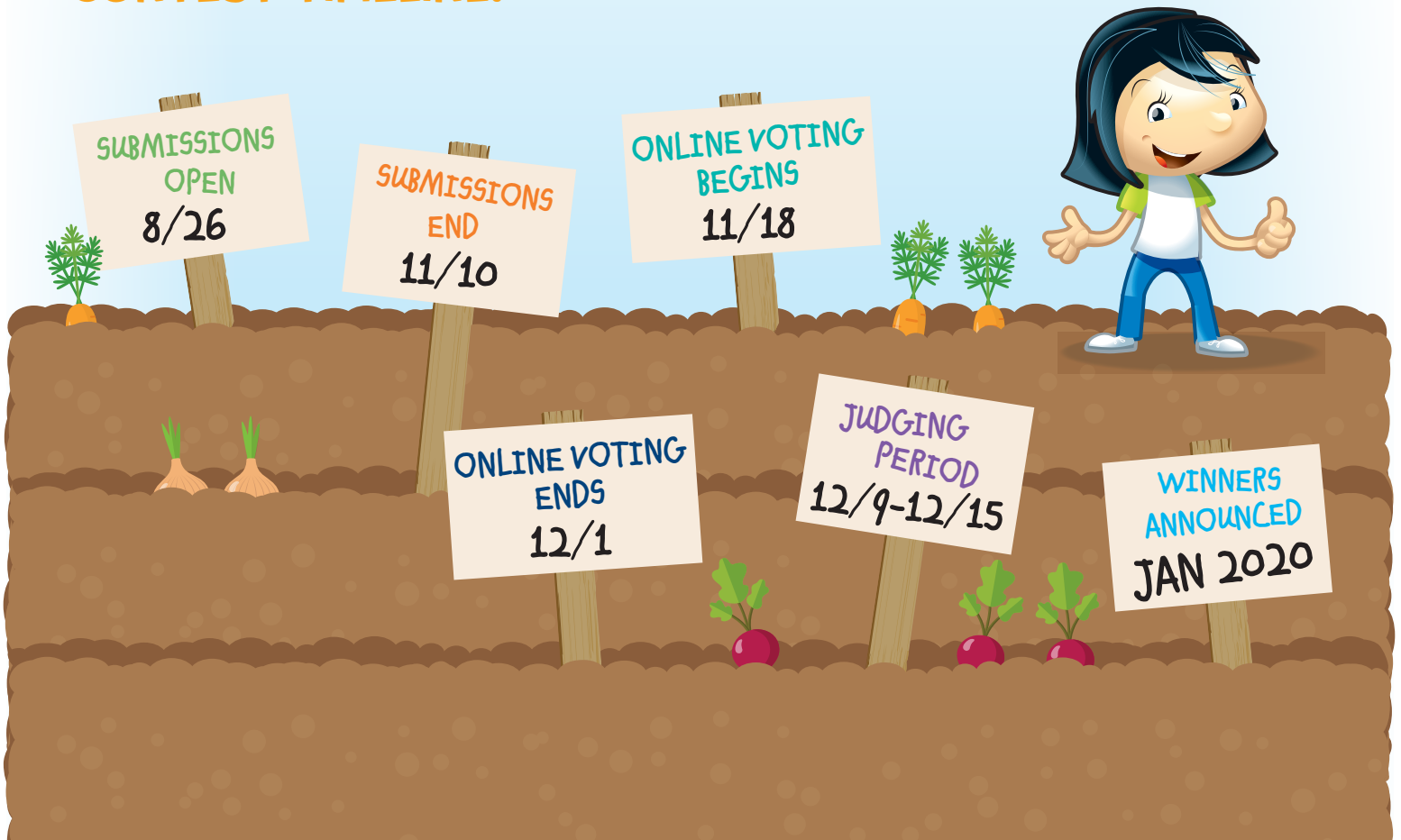
USE BGE'S FREE CLASSROOM RESOURCES TO TEACH NATURAL GAS SAFETY.



Public and private elementary schools in the BGE service area are also welcome to schedule free, in-person safety presentations from BGE safety experts. To schedule a presentation, please email our community affairs team at BGEEducationalOutreach@BGE.COM.

The Captain Mercaptan website, BGEGasHero.com, includes a link to free educational materials on natural gas safety available at BGE-Education.com. Use these free resources and information provided in this entry kit to develop classroom lessons, teacher guides, experiments, games and worksheets.

CONTEST TIMELINE:



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THE ADVENTURES OF CAPTAIN MERCAPTAN: VOLUME 2



This year, *The Adventures of Captain Mercaptan*, BGE's Natural Gas Safety Hero Challenge, asks schools to create an illustrated three-panel comic strip that finishes the story below. Entries must include both a safety message and at least one member of the Captain Mercaptan safety squad in the comic strip. Have fun and be creative!

Alex, Nicole, Maddie, and Blanca set off for their class's community service project. The weather was warm in their Baltimore neighborhood community garden that day, but they were excited to work hard.

"Working at the community garden is one of my favorite volunteer projects!" Alex exclaimed.

"Me too," agreed Nicole. *"And look! There are honeybees pollinating the plants!"*

"Those bees sure are hard at work," said Blanca.

"And we probably should be too," added Maddie. *"Just look at how overgrown everything is."*

The group started grabbing everything they needed out of the garden shed — gloves, rakes, and compost bags for the weeds. There was a lot to be done, but with everyone's help, it would take no time at all.

"I just love all of the great smells from all of the flowers, fruits, and vegetables that are growing," said Alex as he pulled another handful of weeds.

"I agree," added Maddie. *"I wonder if there are any plants that are ready to be picked."*

The group began looking for the plants that were ripe and ready to be harvested. That's when they noticed a dusty patch of ground and dying plants that stood out from the rest of the healthy, green garden.

"I wonder what is wrong with these plants?" Blanca questioned. *"The rest of the garden is thriving!"*

That's when the group also noticed the disgusting stench of rotten eggs.

"Ewww what is that smell? Does anyone else smell rotten eggs?," asked Alex.

"I thought you loved the smell of the garden?," joked Nicole.

Just then, three figures appeared up in the sky. Captain Mercaptan, with his helpers, Sunny and Piper, had arrived at the scene. The captain's hair was gold in color instead of blue which meant he detected natural gas nearby!

NOW DRAW WHAT HAPPENS NEXT!



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RULES AT A GLANCE

Does your entry align with the rules?

Run through this quick checklist to make sure.

Your entry SHOULD:

- ☐ Only be submitted if your school is located within BGE's service area.
- ☐ Be completed by only those students in your classroom (grades K–5), with no outside help.
- ☐ Include a contact for your entry, who can be a teacher or administrator from the school.
- ☐ Include a brief description of how prize money would be used to enrich the school (see contest rules for more details).
- ☐ Include illustrations that can be completed in any hand-drawn medium, but please consider that entered illustrations must be scanned and uploaded to the website for voting.
- ☐ Include illustrations that are bold and will scan clearly.
- ☐ File types accepted: jpg and png.
- ☐ Include a signed waiver (from parents/guardians) for the student whose comic strip you submit with your entry. Waiver forms are included in this entry kit.
- ☐ Be uploaded to the **BGEGasHero.com** website by 11:59 p.m. on November 10, 2019.
- ☐ Include one or more of the supplied images of Captain Mercaptan, Sunny and/or Piper.
- ☐ Complete The Adventures of Captain Mercaptan: Volume 2 story (found on page 3).

Your entry SHOULD NOT:

- ✗ Depict unsafe natural gas practices, including but not limited to lighting matches, illustrating an explosion or showing someone passing out when natural gas is present.
- ✗ Include Marvel® characters from the Marvel/Captain Mercaptan comic book, including IRON MAN™, Pepper Potts and Killjoy.
- ✗ Include illustrations that are created in whole or part using computer or other electronic means.
- ✗ Contain any personal identification, such as personal names, email addresses or street addresses.
- ✗ Contain copyrighted material owned by others (including logos, words, and art, etc.)
- ✗ Include illustrations from any children or employees of BGE or Weber Shandwick and their respective parents, subsidiaries, retailers, affiliates, promotion and advertising agencies (collectively, the "Contest Entities") and members of their immediate families (spouse, mother, father, sister, brother, ward, daughter or son and their respective spouses, regardless of where they reside) and persons living in the same household of such employees, whether or not related.



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PROMPTS

Tips for creating your comic strip:



Surround your safety heroes with adventure!

Once you and your class are finished learning and talking about natural gas safety, it's time to get to work on your safety message and three panel comic strip. We've supplied artwork of all three superheroes—Captain Mercaptan, Piper and Sunny—in various positions for your students to use as they focus on their artwork. They should use what they've learned about natural gas safety and put their imaginations to work to create their comic strips. Here are some things to consider:

READ The Adventures of Captain Mercaptan: Volume 2 (on page 3), then guide students through a reading comprehension and writing exercise that encourages them to use creative thinking to continue Captain Mercaptan's adventure story.

BRAINSTORM safety messages. It could come from the Marvel/Captain Mercaptan comic book found at **BGEGasHero.com** or other safety lessons you discuss in class.

CONSIDER what kind of story would best illustrate your class' chosen message and matches this year's adventure story. Quick sketches could serve as layouts before your students begin their final versions.

CHOOSE safety superheroes from the images provided. Are they posing as a group? Are they in action? Are they hiding in a corner?

THINK about using other hand-drawn characters and scenery in the comic strip.



ALSO REMEMBER:

- ★ Your students can use any hand-drawn medium they wish for their sketches, but make sure it can be scanned for submission.
- ★ Don't have your students overcrowd the panels. The bigger and bolder the elements, the better they will be seen and understood.
- ★ Use the handy Rules at a Glance sheet (on page 4) to make sure the entry has the best chance of winning.
- ★ Select one or more of the superhero images (included with this entry kit and available in the downloadable version) as the focal point of your entry. Resize as necessary to fit your needs.
- ★ Do not cut and paste any images except for the supplied superhero images.
- ★ Do not use any logos or brands, or use computer software in any aspect of your entry.
- ★ Make selecting your class' entry fun! Here are some fun ways to decide which entry gets uploaded:
 - Hold a class poll
 - Ask parents via your school newsletter
 - Utilize your school's morning announcements
 - Conduct a poll during school breakfast or lunch service
- ★ After selecting your class winning comic strip, upload your entry to **BGEGasHero.com** by 11:59pm on November 10.

GOOD LUCK!



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FAQS

We've drawn up some frequently asked questions... and the answers, of course!

Q: HOW DO I KNOW IF MY SCHOOL IS ELIGIBLE?

A: *The Adventures of Captain Mercaptan, BGE's Natural Gas Safety Hero Challenge* is open to all public and private schools designated as a 501(c)3, grades K-5, that receive service from BGE, regardless of your gas or electricity supplier.

Q: CAN MORE THAN ONE CLASSROOM FROM A SCHOOL PARTICIPATE?

A: Yes. There is no limit to the number of classes from a single school that may participate in the contest, as long as each class has a different point of contact who is either a teacher or administrator from that school. Multiple entries from the same school will be identified by the student's first name and grade level.

Q: CAN WE USE COMPUTERS TO DRAW OUR SAFETY SKETCHES?

A: No computer generated or aided illustrations will be accepted. Use only hand-drawn art medium such as crayons, pencils, watercolor, etc., but please keep in mind that you'll be scanning your comic strip for submission, so give your students the best opportunity to produce a clear, colorful entry!

Q: WHAT IF OUR CONTEST ENTRY IS DEEMED INELIGIBLE?

A: If you upload your entry and it does not meet eligibility requirements (see Rules at a Glance page in this entry kit), your class contact will be notified by email with the specific reasons the entry did not meet eligibility. You may then make the necessary revisions and resubmit, as long as you can meet the submission deadline.

Q: WHO CAN VOTE FOR OUR ENTRY ONLINE?

A: During the voting period from November 18 to December 1, 2019, all valid entries will be posted on the contest website and anyone over 13 years old can vote up to three times per day. The 10 entries from each grade with the most votes from our public voting phase will advance to the final judging phase.

Q: HOW IMPORTANT IS ONLINE PUBLIC VOTING?

A: Online public voting is used to determine which entries will advance to the official judging period. It is important to note: winners are decided based on the scores they receive during the official judging period, not based on popularity.

Q: HOW WILL THE FINALISTS BE JUDGED?

A: A panel of judges will score the finalists based on the following criteria: overall creativity (45%); demonstrated understanding of natural gas safety (10%); and illustration artistry (45%).

Q: WHERE CAN OUR CLASS LEARN MORE ABOUT NATURAL GAS SAFETY?

A: BGE strongly encourages educators to take advantage of a wealth of free information available on the e-Smart Kids website (**BGE-Education.com**). BGE values safety. Our goal with this contest is to encourage natural gas safety for people of all ages and teach children to be aware of potential hazards surrounding natural gas. You'll find a direct link to classroom learning materials on the contest website.

Q: WHAT IF I HAVE QUESTIONS ABOUT THE RULES AND REGULATIONS?

A: First, carefully review the contest description, Rules at a Glance, FAQs and the official contest rules included with the downloadable entry kit. If you still have questions, email us at **GasHero@BGE.COM**. We will be happy to answer any questions.

Q: DOES BGE OFFER FREE IN-SCHOOL SAFETY PRESENTATIONS?

A: Yes. Public and private elementary schools in the BGE service area can schedule free in-school safety presentations. To schedule a presentation, please email our external affairs team at **BGEEducationalOutreach@BGE.COM**.



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WINNERS ANNOUNCED IN JANUARY

Find out in January 2020 which entries won the following awards:

\$10,000 BGE CAPTAIN'S CHOICE AWARD

Overall winner will receive \$10,000 in grant funding for their school

\$5,000 BGE HERO AWARD

Awarded to one winning school from each grade (K-5)

BGE ROCK THE VOTE AWARD

We'll give backpacks and safety gear to the class who submitted the entry with the most online public votes

\$500 BGE TEACHER AWARD

Awarded to the teacher of the BGE Captain's Choice award winner to purchase classroom supplies

\$100 BGE TEACHER AWARDS

Awarded to the teachers of the BGE Hero Award winning classes to purchase classroom supplies

If you have questions about *The Adventures of Captain Mercaptan*, BGE's Natural Gas Safety Hero Challenge, please review the official contest rules and FAQs. Additional questions may be emailed to GasHero@BGE.COM.



AVA MARIE JOINS CAPTAIN MERCAPTAN'S SAFETY CREW!

This year, WBAL-TV's Meteorologist Ava Marie will serve as the celebrity judge for The Adventures of Captain Mercaptan, BGE's Natural Gas Safety Hero Challenge. BGE and WBAL-TV will be working together to spread the word about natural gas safety and the Captain Mercaptan contest online, on social media, at events and even on your TV. Follow @WBALTV11, @AvaWBAL and @myBGE on all social media platforms for the latest contest updates.



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DRAW YOUR COMIC STRIP HERE.

Student's first name: _____

School: _____ Grade: _____



Gas Safety Message to complete The Adventures of Captain Mercaptan: Volume 2:

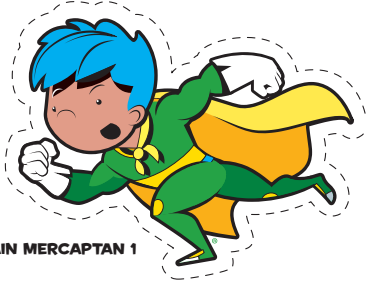
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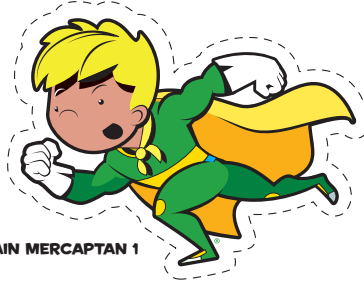
CHARACTER CUT-OUTS

Cut these out and use them on your comic strip!
Or download individual JPEG versions of these from
the online entry kit to resize yourself!

CAPTAIN MERCAPTAN



CAPTAIN MERCAPTAN 1



CAPTAIN MERCAPTAN 1



CAPTAIN
MERCAPTAN 2



CAPTAIN
MERCAPTAN 2



CAPTAIN
MERCAPTAN 3



CAPTAIN
MERCAPTAN 3



CAPTAIN
MERCAPTAN 4



CAPTAIN
MERCAPTAN 4

CHARACTER CUT-OUTS

Cut these out and use them on your comic strip!
Or download individual JPEG versions of these from
the online entry kit to resize yourself!



PIPER

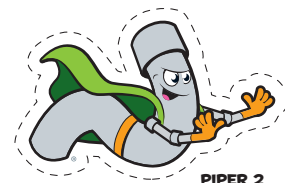


PIPER 1

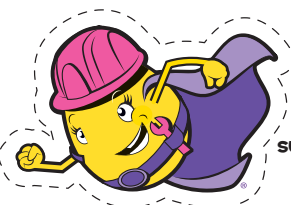
SUNNY



SUNNY 1



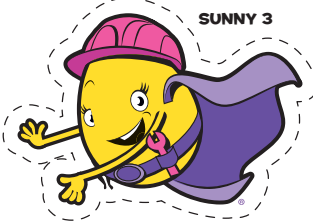
PIPER 2



SUNNY 2



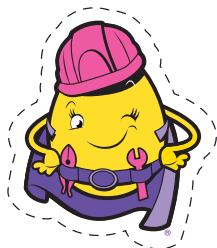
PIPER 3



SUNNY 3



PIPER 4



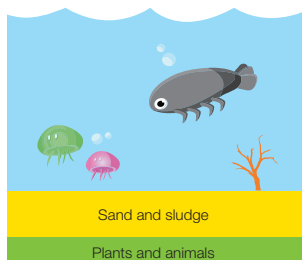
SUNNY 4

AN INTRODUCTION TO GAS SAFETY

Important information your students should know.



What is natural gas?



Natural gas is a fuel that's used to heat buildings, cook food, dry clothes, heat water and even help produce electricity. It's sometimes called "gas" for short, but don't confuse it with the gasoline that runs your parents' cars. Gasoline is a liquid, while natural gas is...you guessed it...a gas! In fact, natural gas is really a mixture of gases that formed

from the decayed remains of ancient plants and animals buried deep in the earth. The main ingredient in natural gas is methane. Methane is colorless, odorless and lighter than air. It gives off a lot of heat and light when it burns, but doesn't produce smoke. That makes natural gas a good fuel for use in the home. Today, more than half the homes in the U.S. are heated by natural gas.

Carbon monoxide safety

What is carbon monoxide?

Carbon monoxide is a poisonous gas that is produced from burning different types of fuel, including natural gas, propane, charcoal, coal, wood, oil and kerosene. It is also produced by products that have engines, such as cars, lawn mowers and generators (that use these fuels).

Why is it dangerous?

Carbon monoxide is dangerous for two important reasons:

- ★ Exposure to carbon monoxide gas can cause headaches, dizziness, weakness, nausea, vomiting, and loss of muscle control. Prolonged exposure leads to unconsciousness, brain damage, or even death.
- ★ Carbon monoxide is tasteless, odorless and colorless, making it virtually undetectable to you. As a result, you can be unaware of exposure to carbon monoxide until symptoms start to show.

To prevent accidental carbon monoxide poisoning, keep the following tips in mind:

- ★ Never stay in an enclosed area without fresh air where a carbon monoxide-producing engine is running. Examples include a vehicle running in a closed garage, a grill operating indoors, or an oven left on for warmth.
- ★ Remind your parents to install carbon monoxide detectors above your home's furnace and outside bedrooms.

What is mercaptan?

Natural gas is odorless, colorless and tasteless. To make it easier to detect, utilities like BGE add a harmless chemical, called mercaptan, to natural gas to make it smell. Many people describe the odor of mercaptan as similar to sulfur or rotten eggs.

Detecting natural gas

It's important that everyone be able to recognize natural gas and know what to do in case it ever gets outside pipes and appliances. Recognizing natural gas is easy:



USE YOUR NOSE

Mercaptan is an additive BGE puts in natural gas to give it a rotten egg smell.



USE YOUR EARS

Listen for hissing, blowing or roaring sounds of gas escaping.



USE YOUR EYES

Look for dirt being blown into the air, dead plants or grass in an otherwise green area, fire coming from the ground or water bubbling or being blown into the air.

If you detect natural gas:

- ★ Leave the vicinity or building, go to a safe place and call BGE at **800.685.0123** or call 911.
- ★ Do not use anything that can cause a flame or spark, including phones, mobile phones, light switches, thermostats, matches or lighters because these can ignite natural gas.
- ★ Do not attempt to find or fix the source of the leak.

Winter safety for gas meters

If the gas meter is outside of your home, please tell your parents to keep ice and snow off of it. Make sure you or your parents don't melt ice or snow with a heat source like a hair dryer, chip the ice away or use a shovel to scrape it off. If the meter becomes encased in ice, please call BGE at **800.685.0123** and they can help.



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LESSON PLANS

We have included lesson plans that align with Maryland State STEM Standards of Practice. STEM education integrates the content and skills of science, technology, engineering and mathematics into the classroom. Through STEM education, students are challenged to answer complex questions, investigate global issues, solve real world problems and meet global challenges through hands-on, relevant, inquiry-based learning experiences.

The lesson plans included in this entry kit are designed to help teachers facilitate student engagement, incite questions and lead students through problem-solving related to natural gas topics. We hope to inspire the next generation of scientists, engineers and mathematicians.

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Answers to the Assessment Questions for Grades K-5:

1) b,c,d 2) b 3) b 4) c 5) d



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KINDERGARTEN LESSON PLAN:

Detecting Natural Gas

Learning Objectives:

- ★ Name the grade level appropriate concepts related to natural gas safety
- ★ Draw or write symbols learned from the natural gas safety lesson plan
- ★ Retell natural gas safety content to answer questions or solve problems
- ★ Participate in conversations with adults and peers about natural gas safety

ACTIVITY 1 : HOW WE USE NATURAL GAS

Materials needed

✓ Kindergarten Activity Sheet

✓ Captain Mercaptan Entry Kit

✓ Pencils, Markers or Crayons

✓ Additional websites and resources listed below

✓ American Gas Association Video*

Directions

- 1 Ask your students to think independently about all the appliances their families use at home. Have them turn to a partner to share all the appliances they use while at home.
- 2 Next, ask them if they know how the appliances they use at home are powered (gas vs. electric).
- 3 After taking a few responses from the class, play the American Gas Association *Kids and Natural Gas Safety* video*.
- 4 Following the video ask the students if they can list all the things natural gas could power in their homes.
- 5 Finally, using the activity sheet on page 15, have the students circle appliances that might use natural gas in their home.

* Available at BGEGasHero.com



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KINDERGARTEN LESSON PLAN:

Detecting Natural Gas

ACTIVITY 2 : HOW TO DETECT NATURAL GAS

Materials needed

✓ Kindergarten Activity Sheet

✓ Detect Natural Gas Card

✓ Captain Mercaptan Entry Kit

✓ Pencils, Markers or Crayons

Directions

- 1 Addressing the entire class, tell them they are going to learn how to use their senses to detect natural gas. Ask the class as a group if they can list their five senses.
- 2 Review the five senses and how they are used with your class.
- 3 Pass around the Detect Natural Gas Card (provided on page 28) to your class. Read the tips on the card aloud. As you read each tip, ask your students to point to their nose, ears and eyes.
- 4 To reinforce how the students can use their senses to detect natural gas use the Hear, See, Smell activity (page 15) to have the children trace the shape of the nose, eyes and ears.

ACTIVITY 3 : CREATE YOUR CAPTAIN MERCAPTAN ENTRY

Materials needed

✓ Marvel® A Natural Team Comic Book*

✓ Pencils, Markers or Crayons

✓ Captain Mercaptan Entry Kit

Directions

- 1 Read the Marvel® A Natural Team comic book to your class. If you have access to a digital projector, flip through the comic book on your screen.
- 2 After reading the Marvel® A Natural Team comic book and The Adventures of Captain Mercaptan: Volume 2, (included on page 3), work with the class to develop one safety message that all students can use as inspiration for their comic strips.
- 3 Have each student draw a three panel comic strip based on the safety message they developed to complete The Adventures of Captain Mercaptan story.
- 4 Once all students have had the chance to complete their comic strips, post all strips to your chalkboard or bulletin board and have the students vote for their favorite. Upload the class' favorite entry to the contest site – **BGEGasHero.com**.

KINDERGARTEN ACTIVITY:

Detecting Natural Gas



ACTIVITY 1: WHICH APPLIANCES USE GAS?

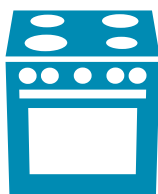
There are many things in your home that require natural gas to work. Circle the 3 items that require natural gas:



Hot water
heater



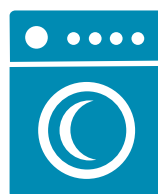
Refrigerator



Stove



Lamp



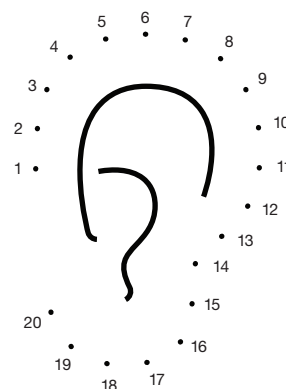
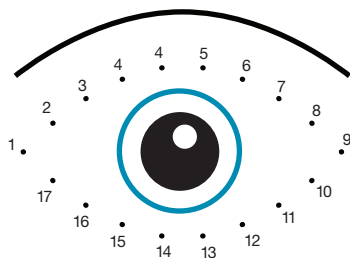
Dryer



TV

ACTIVITY 2: CONNECT THE DOTS

What senses do you use to detect a natural gas leak?



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KINDERGARTEN LESSON PLAN:

Detecting Natural Gas

Assessment

After utilizing the plans included in this Kindergarten Lesson Plan packet, your class will have gained many takeaways about natural gas and natural gas safety. As a final activity, work with the class to answer the assessment questions included below.

1. What senses can you use to detect natural gas?
 - a. Taste
 - b. Smell
 - c. Sight
 - d. Hearing
2. What color does Captain Mercaptan's hair turn when there is a natural gas leak?
 - a. Red
 - b. Yellow
 - c. Orange
 - d. Green
3. Mercaptan is the chemical added to natural gas to make a leak detectable. What does mercaptan smell like?
 - a. Your little brother
 - b. Rotten eggs
 - c. Candy
 - d. Cheese
4. If you detect natural gas what should you do?
 - a. Try to find the source of the leak
 - b. Use matches or turn anything on, even a cell phone
 - c. Find a safe place outside and call BGE, or tell an adult to call, 800.685.0123
 - d. Ignore the smell, it's probably nothing
5. How might natural gas be used safely in your home?
 - a. Heating the water in your shower or bathtub
 - b. Heating your stove to help your parents cook
 - c. Heating your home in the winter
 - d. All of the above



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FIRST/SECOND GRADE LESSON PLAN:

Detecting Natural Gas

Learning Objectives:

- ★ Recall and apply concepts presented in grade level appropriate natural gas lesson plan
- ★ Make connections between natural gas safety content and real life
- ★ Determine how science, technology, engineering and math is used throughout the natural gas delivery process
- ★ Identify and apply science practices when answering and solving complex natural gas related questions
- ★ Demonstrate the ability to connect multiple types of content when answering natural gas safety related questions

ACTIVITY 1 : HOW WE USE NATURAL GAS

Materials needed

✓ First/Second Grade Activity Sheet

✓ Additional websites and resources listed below

✓ Captain Mercaptan Entry Kit

✓ American Gas Association Video*

✓ Pencils, Markers or Crayons

Directions

- 1 Let your class know they'll learn how natural gas safety is used in their home.
- 2 Next, ask the students what appliances use natural gas in their home.
- 3 After taking a few responses from the class, play the American Gas Association *Kids and Natural Gas Safety* video*.
- 4 Finally, have the students complete the maze included on the activity sheet (page 20).

* Available at BGEGasHero.com



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FIRST/SECOND GRADE LESSON PLAN:

Detecting Natural Gas

ACTIVITY 2 : HOW TO DETECT NATURAL GAS

Materials needed

✓ First/Second Grade Activity Sheet

✓ Pencils, Markers or Crayons

✓ Captain Mercaptan Entry Kit

✓ Detect Natural Gas Card

Directions

- 1 Addressing the entire class, tell them they are going to learn how to use their senses to detect natural gas. Ask the class as a group to list their five senses.
- 2 Pass around the Detect Natural Gas Card (provided on page 28) to your class. Ask the class for two volunteers to read. Have one student read the “Signs of Natural Gas” section and have one student read the “Detect Natural Gas” section.
- 3 To reinforce how the students can use their senses to detect natural gas, have the students complete the natural gas safety word scramble on the activity sheet (page 20).

Answers: 1) NATURAL GAS 2) ROTTEN EGGS 3) SAFETY 4) GET OUT
5) CALL BGE 6) STOVE 7) HOT WATER 8) BLUE FLAME



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FIRST/SECOND GRADE LESSON PLAN:

Detecting Natural Gas



ACTIVITY 3 : CREATE YOUR CAPTAIN MERCAPTAN ENTRY

Materials needed

✓ Marvel® A Natural Team Comic Book*

✓ Pencils, Markers or Crayons

✓ Captain Mercaptan Entry Kit

Directions

- 1 Have each student read the Marvel® A Natural Team comic book found online at **BGEGasHero.com**. If students don't have independent access to a tablet or computer, you can read the comic book as a group from a projector.
- 2 After reading the Marvel® A Natural Team comic book and The Adventures of Captain Mercaptan: Volume 2, (included on page 3), work with the class to develop one safety message that all students can use as inspiration for their comic strips.
- 3 Have each student draw a three panel comic strip inspired by the safety message they developed to complete The Adventures of Captain Mercaptan story.
- 4 Once all students have had the chance to complete their comic strips, have fun selecting which entry your class will choose to upload. For some tips on how to make the selection process fun, check out page 5.
- 5 Upload the class' favorite entry to the contest site – **BGEGasHero.com**

* Available at BGEGasHero.com



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Detecting Natural Gas

ACTIVITY 1: HELP CAPTAIN MERCAPTAN GET OUT OF THE HOUSE!

Use your ears, nose and eyes to help Captain Mercaptan get out of the house safely.

DON'T use matches, or turn anything on, not even a cell phone.



ACTIVITY 2: WORD SCRAMBLE

Key words to know about gas safety.

- ## 1. RUTALNA SAG

2. TENORT GESG

3. ATYSFE

4. EGT TOU

5. ALCL EBG

6. OSVET

7. OHT RAWTE

8. ELBU AMFLE



FIRST/SECOND GRADE LESSON PLAN:

Detecting Natural Gas

Assessment

After utilizing the plans included in this First and Second Grade Lesson Plan packet, your class will have gained many takeaways about natural gas and natural gas safety. As a final activity, work with the class to answer the assessment questions listed below.

1. What senses can you use to detect natural gas?
 - a. Taste
 - b. Smell
 - c. Sight
 - d. Hearing
2. What color does Captain Mercaptan's hair turn when there is a natural gas leak?
 - a. Red
 - b. Yellow
 - c. Orange
 - d. Green
3. Mercaptan is the chemical added to natural gas to make a leak detectable. What does mercaptan smell like?
 - a. Your little brother
 - b. Rotten eggs
 - c. Candy
 - d. Cheese
4. If you detect natural gas what should you do?
 - a. Try to find the source of the leak
 - b. Use matches or turn anything on, even a cell phone
 - c. Find a safe place outside and call BGE, or tell an adult to call, 800.685.0123
 - d. Ignore the smell, it's probably nothing
5. How might natural gas be used safely in your home?
 - a. Heating the water in your shower or bathtub
 - b. Heating your stove to help your parents cook
 - c. Heating your home in the winter
 - d. All of the above



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THIRD/FOURTH/FIFTH GRADE LESSON PLAN:

Detecting Natural Gas



Learning Objectives:

- ★ Explain concepts presented in grade level appropriate natural gas safety lesson
- ★ Employ problem solving skills to natural gas safety content
- ★ Examine ways science, technology, engineering or mathematics content relates to natural gas safety
- ★ Summarize and apply science, technology, engineering and mathematics content when answering questions related to natural gas
- ★ Read, listen or view natural gas safety related content to answer complex questions and solve challenges related to natural gas
- ★ Apply appropriate academic and domain-specific vocabulary when responding orally or in writing

ACTIVITY 1 : HOW WE USE NATURAL GAS

Materials needed

✓ Grades 3-5 Activity Sheet

✓ Additional websites and resources listed below

✓ Captain Mercaptan Entry Kit

✓ American Gas Association Video*

✓ Pencils, Markers or Crayons

Directions

- 1 Let your class know they'll learn how natural gas safety is used in their home.
- 2 Next, ask the students what appliances in their home use natural gas.
- 3 After taking a few responses from the class, play the American Gas Association *Kids and Natural Gas Safety* video*.
- 4 Finally, have the students complete the word scramble included on the activity sheet (page 25).

ANSWERS: 1) NATURAL GAS 2) ROTTEN EGGS 3) GET OUT 4) CALL BGE
5) HEAT WATER 6) BLUE FLAME 7) MILLIONS

* Available at BGEGasHero.com



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THIRD/FOURTH/FIFTH GRADE LESSON PLAN:

Detecting Natural Gas



ACTIVITY 2 : HOW TO DETECT NATURAL GAS

Materials needed

✓ Grades 3-5 Activity Sheet

✓ Pencils, Markers or Crayons

✓ Captain Mercaptan Entry Kit

✓ Detect Natural Gas Card

Directions

- 1 Addressing the entire class, tell them they are going to learn how to use their senses to detect natural gas. Ask the class as a group to list their five senses.
- 2 Pass around the Detect Natural Gas Card (provided on page 28) to your class. Ask the class for two volunteers to read. Have one student read the “Signs of Natural Gas” section and have one student read the “Detect Natural Gas” section.
- 3 To reinforce how the students can use their senses to detect natural gas, have the students complete the natural gas safety crossword puzzle included in the activity sheet (page 26).

ANSWERS: **ACROSS** 1) Fossil 3) Years 5) Heat 6) Leave 7) Gas meter 9) Pipelines 12) Technology

DOWN 2) See 4) Rotten eggs 5) Hear 8) Call 10) Science 11) Math 13) Engineers



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THIRD/FOURTH/FIFTH GRADE LESSON PLAN:

Detecting Natural Gas



ACTIVITY 3 : CREATE YOUR CAPTAIN MERCAPTAN ENTRY

Materials needed

✓ Marvel® A Natural Team Comic Book*

✓ Pencils, Markers or Crayons

✓ Captain Mercaptan Entry Kit

Directions

- 1 Have each student read the Marvel® A Natural Team comic book found online at **BGEGasHero.com**. If students don't have independent access to a tablet or computer, you can read the comic book as a group from a projector.
- 2 After reading the Marvel® A Natural Team comic book and The Adventures of Captain Mercaptan: Volume 2, (included on page 3), work with the class to develop one safety message that all students can use as inspiration for their comic strips.
- 3 Have each student draw a three panel comic strip inspired by the safety message they developed to complete The Adventures of Captain Mercaptan story.
- 4 Once all students have had the chance to complete their comic strips, have fun selecting which entry your class will choose to upload. For some tips on how to make the selection process fun, check out page 5.
- 5 Upload the class' favorite entry to the contest site – **BGEGasHero.com**

* Available at BGEGasHero.com



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THIRD/FOURTH/FIFTH GRADE ACTIVITY:

Detecting Natural Gas



ACTIVITY 1: WORD SCRAMBLE

Unscramble the word(s) to complete the sentence.

- | | |
|-------------|---|
| RUTALNA SAG | 1. _____ is a fuel used to make electricity, warm homes and dry clothes. |
| TENORT GESG | 2. Mercaptan is added to natural gas to give it the _____ smell. |
| EGT TOU | 3. If you detect a natural gas leak you should immediately _____. |
| ALCL EBG | 4. After getting safely outside, you or a parent should _____ and report your leak. |
| TEHA RAWTE | 5. Natural gas is used in many homes to _____. |
| ELBU AMFLE | 6. If a gas stove is working correctly you will see a _____. |
| SOILNILM | 7. Natural gas was created _____ of years ago. |



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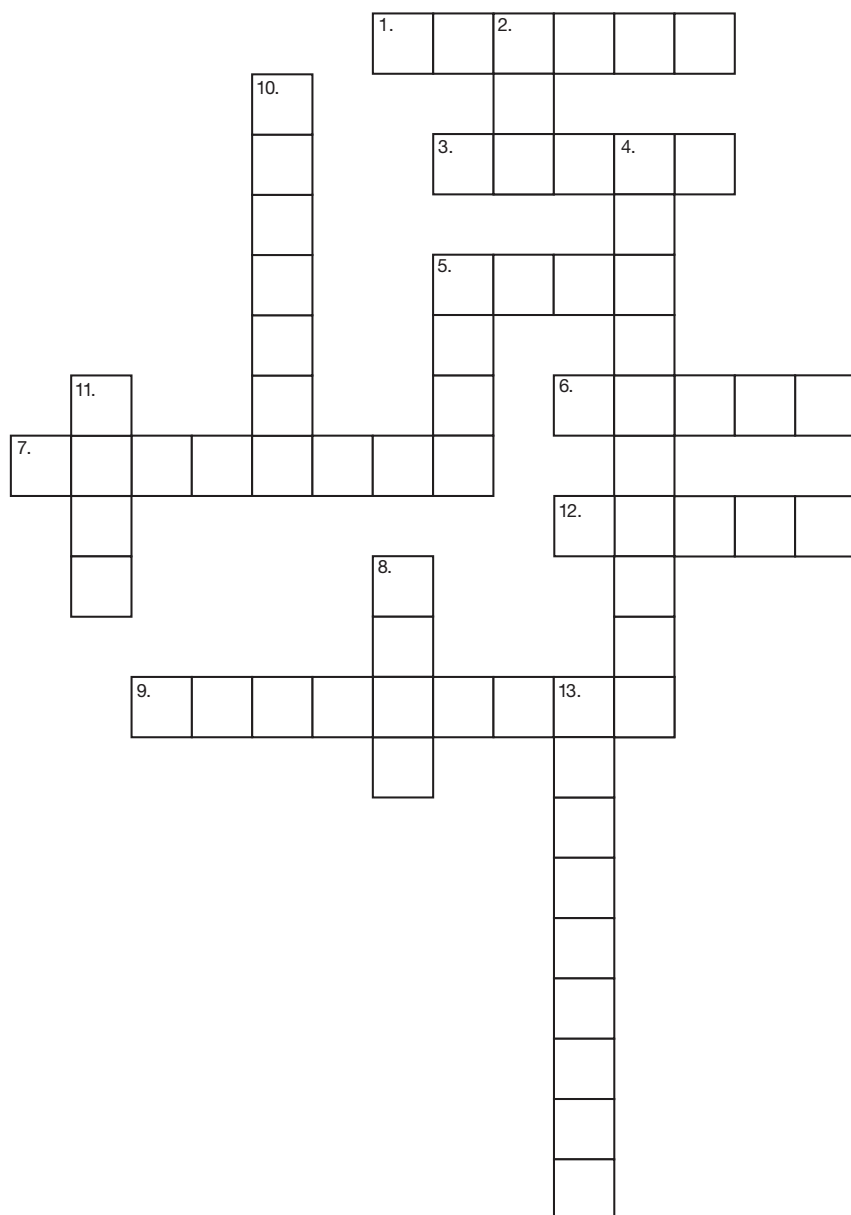


THIRD/FOURTH/FIFTH GRADE ACTIVITY:

Detecting Natural Gas

ACTIVITY 2: CROSSWORD

How to detect natural gas.



ACROSS

1. Like coal and oil, natural gas is a ____ fuel.
3. The natural gas we use today was formed more than 200 million ____ ago.
5. Many people use natural gas and propane to ____ their home, cook dinner, and wash their clothes.
6. If you smell gas at home, you should ____ right away!
7. Natural gas companies check your ____ ____ to see how much natural gas your family has used.
9. Natural gas travels through long ____ to reach homes, schools and businesses.
12. ____ is used to invent new devices or tools.

DOWN

2. 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 gas leak!
4. Gas companies add a chemical that smells like ____ to help you detect gas leaking into the air.
5. A gas leak also might make a hissing sound (like a snake!) you can ____.
8. Once you've left your house, tell a grown-up to ____ your gas company or 9-1-1 from his or her phone.
10. ____ is the understanding of the natural world.
11. ____ is a universal language used by scientists around the world.
13. BGE has many ____ that design and plan how energy reaches schools and homes.



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THIRD/FOURTH/FIFTH GRADE LESSON PLAN:

Detecting Natural Gas



Assessment

After utilizing the plans included in this Third, Fourth, and Fifth Grade Lesson Plan packet, your class will have gained many takeaways about natural gas and natural gas safety. As a final activity, work with the class to answer the assessment questions listed below.

1. What senses can you use to detect natural gas?
 - a. Taste
 - b. Smell
 - c. Sight
 - d. Hearing
2. What color does Captain Mercaptan's hair turn when there is a natural gas leak?
 - a. Red
 - b. Yellow
 - c. Orange
 - d. Green
3. Mercaptan is the chemical added to natural gas to make a leak detectable. What does mercaptan smell like?
 - a. Your little brother
 - b. Rotten eggs
 - c. Candy
 - d. Cheese
4. If you detect natural gas what should you do?
 - a. Try to find the source of the leak
 - b. Use matches or turn anything on, even a cell phone
 - c. Find a safe place outside and call BGE, or tell an adult to call, 800.685.0123
 - d. Ignore the smell, it's probably nothing
5. How might natural gas be used safely in your home?
 - a. Heating the water in your shower or bathtub
 - b. Heating your stove to help your parents cook
 - c. Heating your home in the winter
 - d. All of the above



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DETECT NATURAL GAS CARD

Use this card to complete the activities.



Here's how you can save the day if natural gas is leaking.



FOR SIGNS OF NATURAL GAS:



USE YOUR NOSE: Mercaptan is an additive BGE puts in natural gas to give it a rotten egg smell.

USE YOUR EARS: Listen for hissing, blowing or roaring sounds of gas escaping.



USE YOUR EYES: Look for dirt being blown into the air, dead plants or grass in an otherwise green area, fire coming from the ground or water bubbling or being blown into the air.



IF YOU DETECT NATURAL GAS, LEAVE IMMEDIATELY

- ✗ DON'T try to find the source of the leak.
- ✗ DON'T use matches, or turn anything on, even a cell phone.
- ✓ Find a safe place outside and call BGE, or tell an adult to call, **800.685.0123**.

BGE will respond quickly. There is no charge to investigate a gas leak.

