

EmPOWERed Kids™

Teacher Guide

(CARBON MONOXIDE PRESENTATION)



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(CARBON MONOXIDE 3-6)



Dear Educator,

Carbon Monoxide is an odorless, colorless and tasteless gas that can come from certain appliances, home generators and even car exhaust. Consumers Energy wants to equip students with carbon monoxide knowledge and educate them on the dangers associated with it.

EmPOWERed Kids is a fun, interactive educational app that teaches children in the communities we serve about electricity and natural gas. This year, we added a carbon monoxide safety program to educate students about this hazard. By going through the carbon monoxide portion of this app, kids will learn about the dangers of this invisible gas and learn to identify what types of things in a house could potentially emit it.

We believe having a Consumers Energy presenter visit your classroom to engage with students is the most effective way to educate students on electric, natural gas and carbon monoxide safety, and we will continue to offer our free in-class presentations on these topics. We also know that due to scheduling, location and popularity, a live presentation is not always possible. This teacher's guide will give you the information you need to successfully navigate the material with students using the EmPOWERed Kids app, available through the Google Play or Apple App stores.

We appreciate your interest in our EmPOWERed Kids app and programs and hope you will find this new safety information useful and effective for your students. If you have any questions about the new material or the app, please contact us at education@cmsenergy.com

Thank you.

Sincerely,

A handwritten signature in black ink that reads 'AKK'.

Aaron Kantor

Director of Emergency Management and Public Safety

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EmPOWERed Kids

Teacher Guide

(CARBON MONOXIDE SAFETY)

ANTICIPATORY SET

The EmPOWERed Kids app presents high-interest content that encourages users to raise questions and become familiar with current resources used for energy. The use of this guide with our app is meant to supplement your curriculum and not to replace it. Begin the lesson by reviewing classroom procedures involving the use of technology in the classroom as well as energy vocabulary appropriate to class content. (See vocabulary list at the end of the Teacher's Guide. **All words included in the vocabulary list are underlined the first time they are encountered in this presentation.)

NOTE: For more information about Consumers Energy:

- Visit – ConsumersEnergy.com
- Safety - ConsumersEnergy.com/safety
- Join us on Facebook – facebook.com/ConsumersEnergyMichigan
- Follow us on Twitter – twitter.com/ConsumersEnergy

PROCEDURES

PRESENTATION

Students gain knowledge most effectively by exploring and doing. When teaching the content found in our app, we suggest alternating between a presenter or teacher-led discussion, and breakout sessions for exploration among smaller groups of students. Suggestions for group configurations can be found on the next page. When it is necessary to teach new terms, give definitions and use them in a sentence. Also, use the following tips:

1. Keep it short and sweet – avoid rambling and overly detailed explanations
2. Plan ahead – set clear goals for what you want the students to know
3. Use diagrams, pictures and other visual aids when available for students to better understand information
4. Check for understanding by asking questions during and after the presentation
5. Write key words on the board
6. Break up the presentation with time for discussion with a desk mate, small groups or as a whole class

GROUP CONFIGURATIONS

While going through the app, there are several different presentation options. How you decide to present will depend on the characteristics of your group and the availability of the technology in your classroom.

1. Teacher presents the app overhead while class watches:
 - a. This is the best option for younger students and classrooms with limited technology. Students are still able to receive the information, but are limited in their ability to explore and interact.
2. Individual with his/her own tablet:
 - a. If your classroom is equipped with individual technology, this arrangement allows for the greatest amount of personal exploration and interactivity, but students may lose out on having a robust scientific discussion.
3. Two students paired together sharing a tablet:
 - a. This arrangement allows students to work and explore collaboratively.

How you break up groups for discussion will likely depend on how you decided to configure your students for the presentation and your personal preference for group work. Some arrangements you might find helpful are:

- a. Elbow partner – discuss with the person that sits closest to you
- b. Small groups – discuss with a few others that sit at your table/group of desks
- c. Whole class – discuss as a class with the teacher

Regardless of the configuration you decide, each of the breakout sessions offers your students the opportunity to have a scientific discussion. These discussions are a key component in helping your students think more scientifically. Throughout the presentation, ask and answer scientific questions with your students by making observations, using open ended questions and making predictions. For each breakout session, ask students to point out observations, explain why they think it happened, if there are other possibilities and what additional questions they might still have. Here are some additional tips:

1. You will be investigating new topics with your students, so remember that to help them acquire the new knowledge, repetition is key. This can be accomplished by having students repeat after you or have students summarize the observations of other classmates into their own words.
2. Whenever possible, encourage open ended questions and answers, as opposed to close ended questions. Ex. Closed = Can you smell CO? Answers: No. Open = What are the symptoms of CO poisoning? Answers: Dizziness, nausea, shortness of breath, headache, fatigue, etc.
3. Allow students time to predict what may happen next and then discuss with one other person next to them before discussing aloud as a class to arrive at the final answer. Explain that scientists don't just try to find an answer that fits; they look for evidence to support their answer. What evidence do the students see to support their predictions?
4. Throughout the presentation and breakout sessions, have students:
 - a. Write questions that occur to them while they are exploring and go back to find the answers
 - b. Make a list of questions to ask others that they can't find the answer for in the materials provided
 - c. At the end of each section have students list:
 - i. What is one new thing I learned?
 - ii. What is one question I still have?

HOME VERSUS SCHOOL MODE

The EmPOWERed Kids app has been designed for K-6th grade. The app is split into two grade bands, K-2nd grade and 3rd-6th grade. The carbon monoxide presentation is the same for all grades. After you select a grade level, you will be prompted to select “School Presentation Mode” or “Home Activity Center.”

Selecting the “School Presentation Mode” will allow you to learn about electricity or natural gas lessons or carbon monoxide safety. The Electricity Safety Presentation covers vital information about electric generation, distribution and safety (downed power lines, outlet safety, etc.). The Natural Gas Safety Presentation teaches important messages about underground utility safety, calling 8-1-1 to have a locator mark your yard with flags and how to properly respond to a natural gas leak. The carbon monoxide safety presentation teaches the dangers about the poisonous gas, the symptoms of carbon monoxide poisoning, and how to stay safe.

Selecting the “Home Activity Center” allows you to explore a dozen games! There are six games related to electricity and six for natural gas. The games vary slightly depending on the grade level category you selected at the beginning. The “Home Activity Center” is designed for students to play after being taught the safety lessons to help reinforce key safety messages. It is also a great way for students to bring the safety messages home to play with their families.

TECHNOLOGY BUTTONS

At the bottom of the screen, you will notice some technology buttons. They can be used to enhance your presentation experience.



The first icon looks like a bulleted list. This button will bring you to the table of contents page or ‘slide menu.’ You can choose a slide from this page and it will automatically take you there.



The second icon looks like a home. Using this button will bring you back to the slide where you choose either Electric Safety Presentation, Natural Gas Safety Presentation, or the Carbon Monoxide Presentation. If a student mistakenly clicks this button, you can re-enter the safety presentation and use the “bulleted list” button to quickly advance them to the proper page he/she needs to be on. When in the “Home Activity Center” you can use the home button to pause or exit the game you are playing.



The third icon looks like a speaker with music notes. This button will only turn off the background music of the app. The slides themselves have sound that can be turned off with the volume buttons on the physical device (tablet, phone, iPad, etc.) the app is being viewed on.



The other buttons you will see are “Back” and “Next.” These buttons do exactly what they say. “Back” will take you to the previous slide. “Next” will advance you to the following slide. If you have not completed the activities on the slide, you may see a “Skip” button instead of “Next.” You can either complete the activities on the page to garner a “Next” button, or you can click “Skip” and a box will prompt you to confirm if you indeed want to skip or if you would like to remain on the page.

ANTICIPATION GUIDE

Before we go through the EmPOWERed Kids app from Consumers Energy, respond to the following questions under “Before.” If you agree with the statement, check yes. If you do not agree with the statement, check no. After completing the activities in the EmPOWERed Kids app, we will come back to this guide and compare our thinking.

Before		... completing the EmPOWERed Kids app ...	After	
Yes	No		Yes	No
		1. Carbon monoxide is a poisonous gas.		
		2. You can smell carbon monoxide.		
		3. The symptoms of carbon monoxide poisoning are just like the flu.		
		4. Carbon monoxide alarms should be placed on every level of your home.		
		5. Call 911 if your carbon monoxide alarm goes off.		



INTRODUCTION

Carbon Monoxide (CO) is known as the silent killer because it is invisible – odorless, colorless and tasteless. CO is a toxic gas produced by the incomplete burning of fuels including oil, propane, coal, wood, natural gas, gasoline, diesel fuel, charcoal and kerosene. Faulty or inadequately vented appliances that use these fuels – such as furnaces, fireplaces, wood stoves, charcoal grills, kerosene heaters as well as gasoline powered generators and vehicles – can produce deadly amounts of CO.

So, let's start learning more about Consumers Energy and Carbon Monoxide Safety!

First tap on your correct grade level, then choose school presentation mode, and then tap on the Carbon Monoxide Safety Presentation.

What is Carbon Monoxide?

Press (NEXT) to get started.

What do you think carbon monoxide is?

Answer: Carbon Monoxide (CO) is a deadly, colorless, odorless, tasteless and poisonous gas.

[Click icon]



Can you spot the 8 potential sources of CO?

(NEXT)

Clogged chimney - If it's not ventilated properly, it can produce Carbon Monoxide

(NEXT)

Space heater - If it's not ventilated properly, it can produce Carbon Monoxide

(NEXT)

Dryer - If it's not ventilated properly, it can produce Carbon Monoxide

(NEXT)

Fireplace - If it's not ventilated properly, it can produce Carbon Monoxide

(NEXT)

Stove and oven - If it's not ventilated properly, it can produce Carbon Monoxide

(NEXT)

Car exhaust - If it's not ventilated properly, it can produce Carbon Monoxide

Portable generator - If it's not ventilated properly, it can produce Carbon Monoxide

(NEXT)

Water heater - If it's not ventilated properly, it can produce Carbon Monoxide

Great job, we found all 8 potential sources!

(NEXT) (NEXT)

**Safety Tips:
Carbon Monoxide****SAFETY TIPS: CARBON MONOXIDE (Video)**

Note: This 2 minute and 20 second video will describe what Carbon Monoxide is, how it is created, what the symptoms of Carbon Monoxide poisoning are, what you should do to stay safe, and how to prevent Carbon Monoxide poisoning.



****Sound must be on for video****

(PRESS PLAY)

Ask students the following questions after video is done playing.

1. Why is Carbon Monoxide referred to as the silent killer?

Answer: It is hard to identify because you can't see it, smell it or taste it.

2. What are some appliances that can produce dangerous amounts of Carbon Monoxide?

Answer: Furnace, oven, grill and generator

3. What is the best way to prevent Carbon Monoxide poisoning?

Answer: By purchasing a Carbon Monoxide alarm

(NEXT)

**Carbon Monoxide
is Dangerous!****CARBON MONOXIDE IS DANGEROUS**

Did you know? 75% of homes have a potential source of Carbon Monoxide (CO)



[Click icon]

You can't touch it.

You can't taste it.

You can't see it.

You can't even smell it!

(NEXT) (NEXT)

**Symptoms of CO
poisoning****SYMPTOMS OF CO POISONING**

Did you know? 72,000 Carbon Monoxide poisoning incidents occur in the US each year!



[Click icon]

The symptoms feel just like the flu!

(NEXT)

It can cause dizziness.

(NEXT)

It can cause nausea.

(NEXT)

It can cause shortness of breath.

(NEXT)

It can cause a headache.

(NEXT)

It can cause fatigue, which means you may feel sleepy or tired.

(NEXT) (NEXT)

Staying Safe from CO

STAYING SAFE FROM CO



Every level of your house should have a Carbon Monoxide alarm, especially near the areas where people sleep!

[Click icon]

Can you place all 3 of these CO alarms? Where should we put our alarms? Remember we need to have 1 on each level.

Drag and drop the 3 alarms in rooms of the house (1 per level).

Always remember: never use a portable generator in the house or garage! Because those can produce Carbon Monoxide too.

(NEXT) (NEXT)

You Can Call for Help

IF CO ALARM EVER SOUNDS

You can call for help!

[Click icon]

(NEXT)



The first thing you should do is tell an adult!

(NEXT)

Leave the area and find some place safe!

(NEXT)

Better be safe than sorry. Immediately leave the house. And call 911.

(NEXT)(NEXT)

CLOSURE

CONGRATULATIONS! You are now safety heroes!



Let's review what we learned.

What is Carbon Monoxide?

Answer: Carbon Monoxide (CO) is a deadly, colorless, odorless, tasteless and poisonous gas.

What are some things that can create Carbon Monoxide?

Answer: Clogged chimney, space heater, dryer, fireplace, stove and oven, car exhaust, portable generator, water heater.

What are the symptoms of Carbon Monoxide poisoning?

Answer: Dizziness, nausea, shortness of breath, headache, fatigue.

How do you keep yourself safe?

Answer: Have a CO alarm on every level of your home.

What do you do if your CO alarm ever goes off?

Answer: Tell an adult, leave the area, and call 911.

Thank you for taking the time to complete the carbon monoxide safety presentation. You can either click (NEXT) to exit the presentation or you can have students click (PLAY GAMES) to play electricity and natural gas safety games.

CARBON MONOXIDE AWARENESS PROJECT

Sharing knowledge with others is a great way to help your school community. Now that you know more about how to be safe around carbon monoxide, you can share that information with others so they can be safe too. Your project is to create a poster that teaches others about carbon monoxide safety. The poster must contain a major safety message about carbon monoxide along with at least three facts that support the message. For example, you could say, “Carbon monoxide is dangerous” but now you will need to list three facts that explain why carbon monoxide is dangerous. Artwork must be appropriate and support the major safety message. Think about billboards or signs that you see around town. Too many words will make the message confusing, but too few words might not give enough information.

Project Requirements:

- 1) Create a poster with an important carbon monoxide safety message.
- 2) Include three supporting facts about your safety message.
- 3) Pictures and artwork should be appropriate and support the major safety message.
- 4) Present your poster to the class and explain your message and why it's important. (Rubric follows)

Presentation Rubric Safety Awareness Poster	Unsatisfactory 0-2	Poor 3	Good 4	Excellent 5	Total
Organization	Poster does not contain an important safety message or 3 supporting facts. Artwork is unrelated to the topic.	Poster contains a safety message and supporting facts, but the message is not clear or the facts don't support the message. Artwork is only slightly related to the topic.	Poster contains an important safety message and 3 supporting facts. Artwork is related to the safety message.	Poster contains an important safety message with 3 supporting facts. Artwork is related to the safety message. A good balance of words and visuals are represented.	
Subject Knowledge	Poster contains an incorrect or confusing safety message. No supporting facts are included.	Poster contains an incorrect or confusing safety message. Supporting facts don't support the safety message.	Poster contains an important safety message and 3 facts related to the safety message.	Poster contains an important safety message and 3 facts that clearly support the safety message.	
Speech	Student mumbles, incorrectly pronounces words, and speaks too quietly for students in the back of class to hear.	Student's voice is low. Student incorrectly pronounces words. Audience members have difficulty hearing presentation.	Student's voice is clear. Student pronounces most words correctly. Most audience members can hear presentation.	Student uses a clear voice and correct pronunciation of terms so that all audience members can hear presentation. Student is happy!	
Eye Contact	Student reads directly off the poster with no eye contact.	Student occasionally uses eye contact, but still reads mostly from the poster.	Student maintains eye contact most of the time but often returns to notes or maintains eye contact only with teacher.	Student maintains eye contact with entire audience, seldom returning to notes.	

VOCABULARY WORDS

EmPOWERed Kids! Carbon Monoxide 3-6

All of the definitions below were taken from www.merriam-webster.com/dictionary except for the ones with an asterisk (*) next to them. The (*) next to a vocabulary word indicates a definition provided by the Consumers Energy Education Team

Generator: A machine that produces electricity. Example- A generator is a machine that can produce electrical energy when the power is out in an area.

Nausea: Feeling of sickness with an inclination to vomit

Source: Anything (or a place) from which something comes or is obtained, origin

Ventilate: Cause air to enter and circulate freely in

