

Miss MOLECULE & friends (episode 2) / METHANE



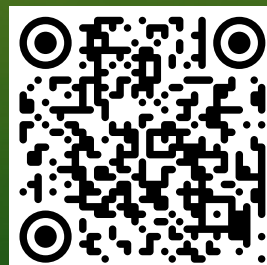
Key Stage 2 & 3 workbook

Methane is a potent greenhouse gas that traps heat in our atmosphere. Due to human activities like farming and industry, its levels are currently at a record high. Fortunately, solutions are emerging, such as converting cow manure into clean energy and using satellites to detect methane leaks worldwide.

Episode 2 link: www.missmolecule.co.uk/episode2



Scan or click the QR code to watch the episode:



Miss
MOLECULE
& friends

A Studio Wallop production

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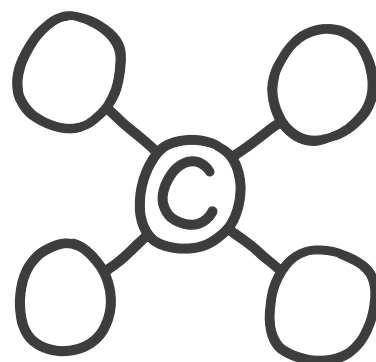
This Miss Molecule & Friends episode is all about the gas Methane. After watching the animation, can you remember some facts about this gas and why scientists are working to reduce its amount in our atmosphere?

What is true or false about methane?

	True	False
Odourless (doesn't smell)	<input type="checkbox"/>	<input type="checkbox"/>
It's solid	<input type="checkbox"/>	<input type="checkbox"/>
Flammable (easy to catch on fire)	<input type="checkbox"/>	<input type="checkbox"/>
Very smelly	<input type="checkbox"/>	<input type="checkbox"/>
It is always being made	<input type="checkbox"/>	<input type="checkbox"/>
Lighter than air	<input type="checkbox"/>	<input type="checkbox"/>
Heavy	<input type="checkbox"/>	<input type="checkbox"/>

Methane is made up of 1 carbon atom and 4 _____ atoms.

Draw them into the image below.



Can you match the types of methane emissions to their sources?



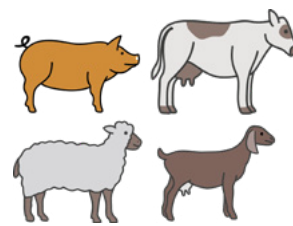
Landfills



Termites



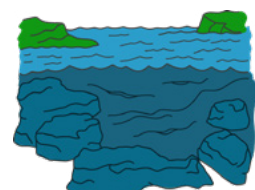
Fossil fuels (oil & coal)



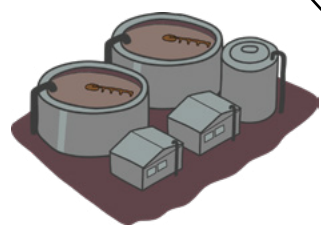
Farm animals

Naturally made methane (BOG)

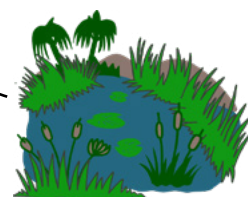
Human caused methane (SYNTH)



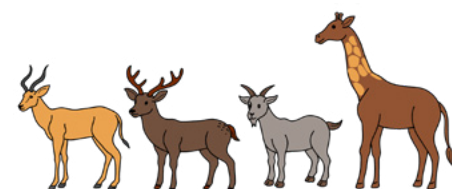
Ocean floor



Sewage treatment plants



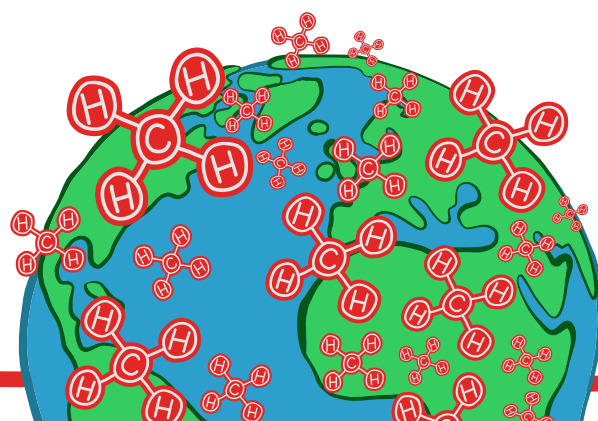
Swamps & bogs



Antelopes, deer, goats & giraffes (wild animals)

Is methane stronger or weaker than carbon dioxide when heating up the planet?

☐ Stronger ☐ Weaker



Methane is produced in two ways: from natural sources and human activity. Which character represents which source? Can you remember some of the things about them?



Name: _____

What source of methane am I?

What makes me?

Methane is the main ingredient in natural gas used in homes, but what do we use gas for?

Methane is an odourless gas, which means it has no natural smell. So why do we add a stink to it?

What happens to our atmosphere if too much methane is in the air?

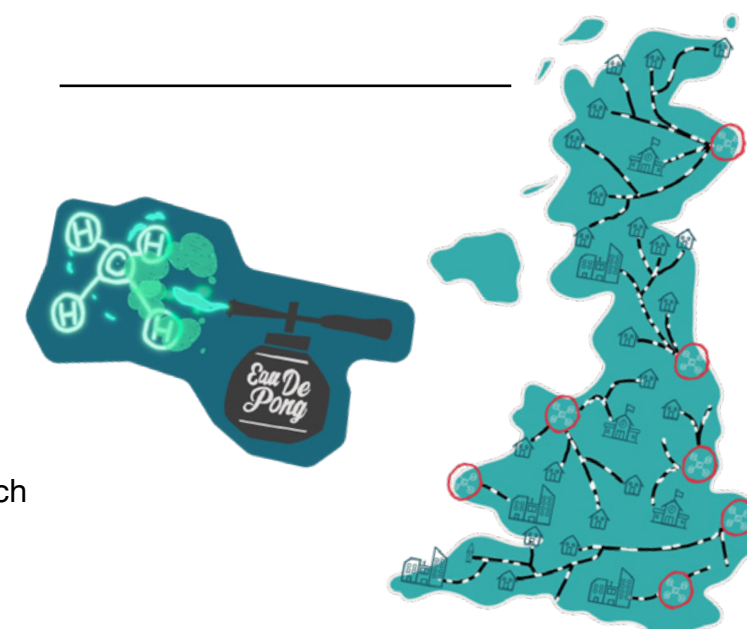


Name: _____

What source of methane am I?

What makes me?

What's the secret underground system that delivers energy to our homes through pipelines?



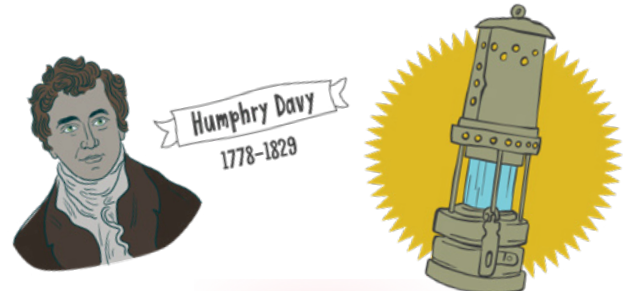
Why is too much human-caused methane in our atmosphere bad for the environment?

How can scientists tell how old or new methane is?

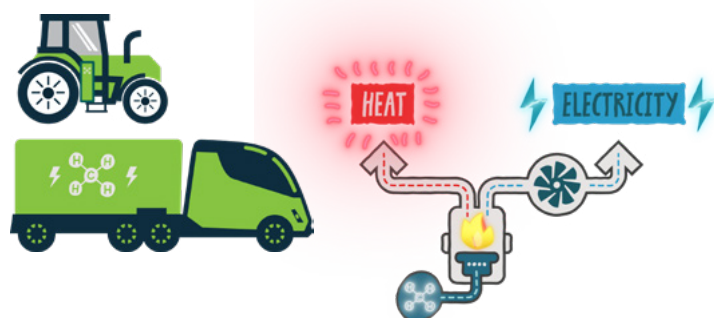
When was methane first discovered?

In 1792, what did William Murdock do with Methane?

What did Humphry Davy invent to ensure the miners could see underground without the risk of methane explosions?



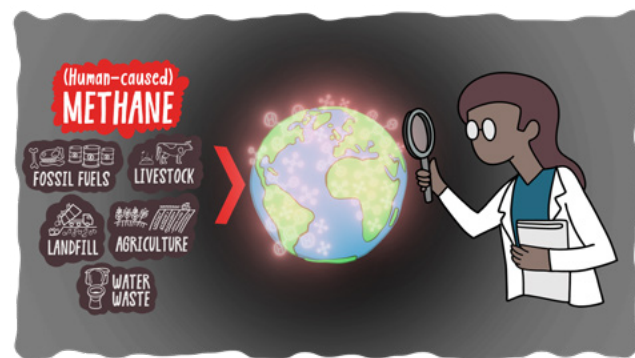
Methane is a cleaner fuel than coal or oil. What types of vehicles and machines can run on methane, and what else can it be used for?



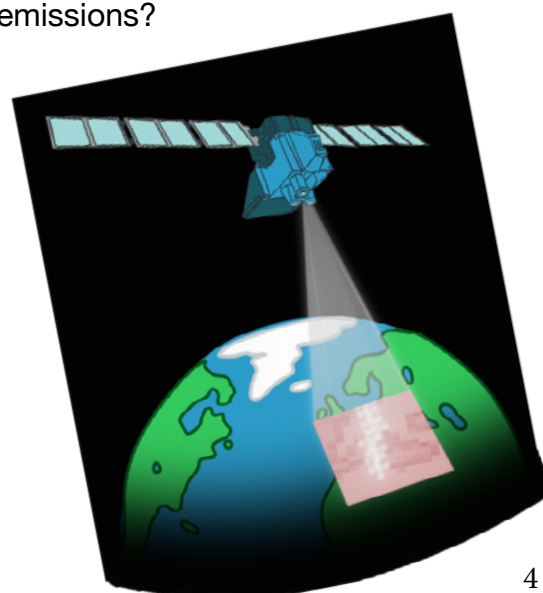
What are some of the ways scientists can monitor methane emissions?

How many satellites do GHGSat have orbiting the Earth?

What does Dan use as an example to show how much methane has stopped being released? Can you remember how many of them?



How many years ago was 1792?



How many stomach compartments do grazing animals have?

Name each compartment of the cow's stomach.

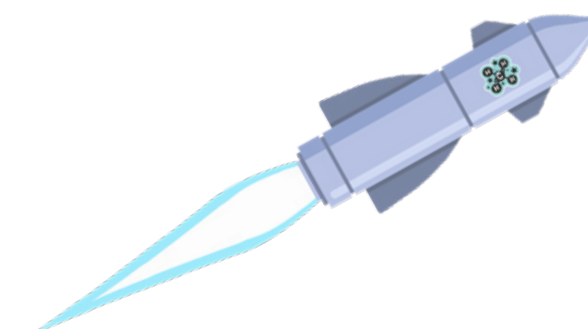
1. _____
2. _____
3. _____
4. _____

What is the process called when organic waste breaks down without oxygen to create biogas?

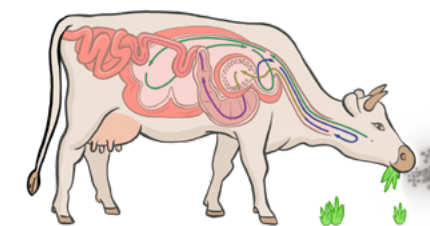
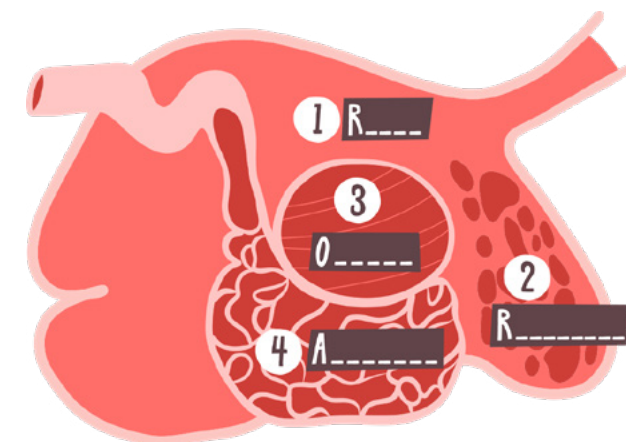
What are some scientists giving to cows to reduce the amount of methane they burp out?

What does Bennamann make with the methane they capture?

Bennamann helps farmers make energy from their cow poo, but what else can they do with it?



Which planet (other than Earth) can methane be made on?



What by-products are released by bacteria in the rumen?

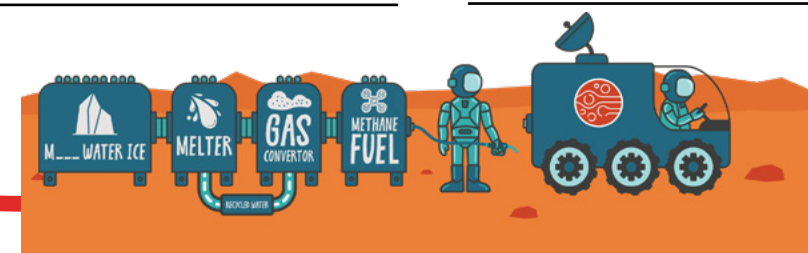


What other countries (apart from the UK) are making energy from cow poo?

Name three reasons why using methane to power rockets is much better than other fuels.

1. _____
2. _____
3. _____

Why is it important for rockets to be re-usable?



Over 100 countries have signed an agreement to cut methane emissions by 30% by 2030. Can you remember its name?

G_____ M_____ Pledge

Which of the methane twins should humans try to keep under control?

☐ Bog

☐ Synth

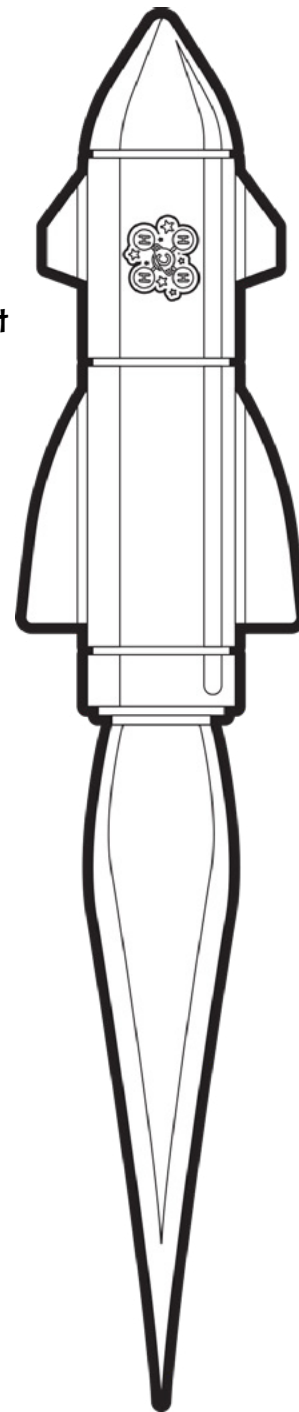
Keyword word search

Find some of the answers on the word search!

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



Design your own
methane-fuelled rocket
to go into space!



Davy lamp
Methane
Gas grid
Anaerobic
Atom
Emissions
Biofuel
Climate Change
Rumen
Hydrogen
Satellites
Omasum
Reticulum
Fertiliser
Coal Gas

