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Level 6

Scientists turn CO2 emissions into stone

12th June, 2016

<http://www.breakingnewsenglish.com/1606/160612-co2-emissions.html>

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Please try Levels 0, 1 and 2 (they are easier).

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THE ARTICLE

From <http://www.BreakingNewsEnglish.com/1606/160612-co2-emissions.html>

Scientists have come up with a smart but simple way to deal with carbon dioxide emissions, by turning them back into stone. Researchers in Iceland pumped 220 tons of CO₂ deep underground into volcanic rock. It reacted with minerals in the rock and over a relatively short space of time, transformed into a chalk-like solid substance similar to limestone. The team expressed their surprise at both the success and the speed of the CO₂ conversion. Lead scientist Juerg Matter said: "Of our 220 tons of injected CO₂, 95 per cent was converted to limestone in less than two years." He added: "It was a huge surprise to all the scientists involved in the project, and we thought, 'Wow! This is really fast'."

The scientists hope their experiment will be adapted on a larger, more industrial scale. It could help to alleviate the problem of growing CO₂ emissions entering the atmosphere and warming the planet. It could also become a key technique in carbon capture and storage (CCS) solutions. Many other CCS techniques have involved injecting and trapping CO₂ underground. However, there was always the problem of the emissions leaking their way back above ground and into the atmosphere. Dr Matter was enthusiastic about his team's experiments. He said: "We need to deal with rising carbon emissions and this is the ultimate permanent storage – turn them back to stone."

Sources: <http://www.bbc.com/news/science-environment-36494501>
<http://www.theguardian.com/environment/2016/jun/09/co2-turned-into-stone-in-iceland-in-climate-change-breakthrough>
<http://www.sciencealert.com/scientists-have-figured-out-how-to-turn-co2-into-solid-rock-within-months>

WARM-UPS

1. CO2: Students walk around the class and talk to other students about CO2. Change partners often and share your findings.

2. CHAT: In pairs / groups, talk about these topics or words from the article. What will the article say about them? What can you say about these words and your life?

scientists / simple / emissions / underground / volcanic / success / surprise / project / experiment / industrial / atmosphere / planet / carbon / storage / enthusiastic

Have a chat about the topics you liked. Change topics and partners frequently.

3. EMISSIONS: Students A **strongly** believe countries that do not stick to strict emissions limits should be heavily punished; Students B **strongly** believe otherwise. Change partners again and talk about your conversations.

4. CARBON FOOTPRINT: How can we offset our carbon footprint? Complete this table with your partner(s). Change partners often and share what you wrote.

	Possibilities	Do you do this/these?
Driving		
Home energy		
Food		
Water		
Air travel		
Recycling		

5. CARBON: Spend one minute writing down all of the different words you associate with the word "carbon". Share your words with your partner(s) and talk about them. Together, put the words into different categories.

6. CLEAN ENERGY: Rank these with your partner. Put the best clean energy at the top. Change partners often and share your rankings.

- solar power
- wind power
- wave power
- hydropower
- geothermal energy
- bio energy
- human power
- heat pump

BEFORE READING / LISTENING

From <http://www.BreakingNewsEnglish.com/1606/160612-co2-emissions.html>

1. TRUE / FALSE: Read the headline. Guess if a-h below are true (T) or false (F).

- a. The method to turn CO₂ into stone is very complex and difficult. **T / F**
- b. Researchers in Iceland pumped 220kg of CO₂ deep underground. **T / F**
- c. The substance the CO₂ changes into is similar to coal. **T / F**
- d. Scientists were surprised at how fast the CO₂ changed to stone. **T / F**
- e. Scientists hope people will now follow up their work on a larger scale. **T / F**
- f. Turning carbon into stone could be a new method of carbon storage. **T / F**
- g. This is the first technique to pump CO₂ underground. **T / F**
- h. A scientist said this method was the ultimate in permanent storage. **T / F**

2. SYNONYM MATCH: Match the following synonyms from the article.

- | | |
|-----------------|------------------|
| 1. come up with | a. enormous |
| 2. deal with | b. comparatively |
| 3. relatively | c. greatest |
| 4. conversion | d. reduce |
| 5. huge | e. passionate |
| 6. alleviate | f. handle |
| 7. key | g. seeping (out) |
| 8. leaking | h. created |
| 9. enthusiastic | i. crucial |
| 10. ultimate | j. change |

3. PHRASE MATCH: (Sometimes more than one choice is possible.)

- | | |
|---|----------------------------|
| 1. Scientists have come up with a smart | a. rock |
| 2. carbon dioxide | b. back above ground |
| 3. volcanic | c. involved in the project |
| 4. over a relatively short | d. industrial scale |
| 5. all the scientists | e. emissions |
| 6. larger, more | f. capture and storage |
| 7. warming | g. but simple way |
| 8. a key technique in carbon | h. the planet |
| 9. emissions leaking their way | i. storage |
| 10. the ultimate permanent | j. space of time |

GAP FILL

From <http://www.BreakingNewsEnglish.com/1606/160612-co2-emissions.html>

Scientists have come up with a (1) _____ but simple way to deal with carbon dioxide emissions, by turning them back into stone. Researchers in Iceland (2) _____ 220 tons of CO2 deep underground into volcanic rock. It reacted with minerals in the rock and over a (3) _____ short space of time, transformed into a chalk-like solid (4) _____ similar to limestone. The team (5) _____ their surprise at both the success and the speed of the CO2 conversion. Lead scientist Juerg Matter said: "Of our 220 tons of injected CO2, 95 per cent was (6) _____ to limestone in less than two years." He added: "It was a (7) _____ surprise to all the scientists (8) _____ in the project, and we thought, 'Wow! This is really fast'."

pumped
converted
smart
huge
substance
involved
relatively
expressed

The scientists hope their experiment will be (9) _____ on a larger, more industrial scale. It could help to (10) _____ the problem of growing CO2 emissions entering the (11) _____ and warming the planet. It could also become a key (12) _____ in carbon capture and storage (CCS) (13) _____. Many other CCS techniques have involved injecting and trapping CO2 underground. However, there was always the problem of the emissions (14) _____ their way back above ground and into the atmosphere. Dr Matter was (15) _____ about his team's experiments. He said: "We need to deal with rising carbon emissions and this is the ultimate (16) _____ storage – turn them back to stone."

solutions
atmosphere
adapted
enthusiastic
technique
permanent
alleviate
leaking

LISTENING – Guess the answers. Listen to check.

From <http://www.BreakingNewsEnglish.com/1606/160612-co2-emissions.html>

- 1) Scientists have come up with a smart but simple way _____ carbon dioxide
 - a. to deal within
 - b. to deal without
 - c. to deal wither
 - d. to deal with
- 2) Researchers in Iceland pumped 220 tons of CO2 deep underground _____ rock
 - a. into volcano
 - b. into Vulcan
 - c. into volcanic
 - d. into volcanically
- 3) It reacted with minerals in the rock and over a relatively short _____
 - a. space for time
 - b. space of time
 - c. space of times
 - d. spaces of time
- 4) expressed their surprise at both the success and the speed of _____
 - a. the CO2 conversions
 - b. a CO2 conversion
 - c. the CO2 conversion
 - d. a CO2 converted
- 5) He added: "It was a huge surprise to all the _____"
 - a. scientists involved
 - b. scientists involves
 - c. scientists revolved
 - d. scientists revolves
- 6) their experiment will be adapted on a larger, more _____
 - a. industrial scale
 - b. industrial shale
 - c. industrial skill
 - d. industrial school
- 7) the problem of growing CO2 emissions entering the atmosphere and _____
 - a. warming the planets
 - b. warming the plant
 - c. warming the plants
 - d. warming the planet
- 8) It could also become a key technique in carbon capture and _____
 - a. storage (CCS) solution
 - b. storage (CSC) solutions
 - c. store age (CCS) solutions
 - d. storage (CCS) solutions
- 9) However, there was always the problem of the _____
 - a. emission leaking
 - b. emissions leaking
 - c. emissions leak in
 - d. emissions leaking in
- 10) We need to deal with rising carbon emissions and this is the ultimate _____
 - a. permanence storage
 - b. permanently storage
 - c. permanent storage
 - d. permanents storage

LISTENING – Listen and fill in the gaps

From <http://www.BreakingNewsEnglish.com/1606/160612-co2-emissions.html>

Scientists have come up with a (1) _____ way to deal with carbon dioxide emissions, by turning them back into stone. Researchers in Iceland pumped 220 tons of CO2 deep underground (2) _____. It reacted with minerals in the rock and over a relatively short space of time, (3) _____ chalk-like solid substance similar to limestone. The team expressed their (4) _____ success and the speed of the CO2 conversion. Lead scientist Juerg Matter said: "Of our 220 (5) _____ CO2, 95 per cent was converted to limestone in less than two years." He added: "It was a huge surprise to all the scientists (6) _____, and we thought, 'Wow! This is really fast'."

The scientists hope their experiment will (7) _____ larger, more industrial scale. It could help (8) _____ problem of growing CO2 emissions entering the atmosphere and warming the planet. It could also become a key technique (9) _____ and storage (CCS) solutions. Many other CCS techniques have involved injecting and trapping CO2 underground. However, there was always the problem of the emissions leaking their (10) _____ ground and into the atmosphere. Dr Matter was (11) _____ his team's experiments. He said: "We need to deal with rising carbon emissions and this is (12) _____ storage – turn them back to stone."

COMPREHENSION QUESTIONS

From <http://www.BreakingNewsEnglish.com/1606/160612-co2-emissions.html>

1. How much carbon dioxide did scientists pump into the ground?
2. What is the stone that the CO₂ changed into similar to?
3. What surprised the team about the conversion of CO₂ to stone?
4. How long did it take 95% of the CO₂ to turn to stone?
5. What word did the lead scientist use to express his surprise?
6. What kind of scale do the scientists hope the experiment will go to?
7. What does the abbreviation CCS mean?
8. What happened to CO₂ in previous attempts at pump it underground?
9. How did Dr Matter feel about his team's experiments?
10. What kind of storage did Dr Matter call his procedure?

MULTIPLE CHOICE - QUIZ

From <http://www.BreakingNewsEnglish.com/1606/160612-co2-emissions.html>

- 1) How much carbon dioxide did scientists pump into the ground?
 - a) 2,000 tons
 - b) 220 tons
 - c) 200 tons
 - d) 212 tons
- 2) What is the stone that the CO2 changed into similar to?
 - a) coal
 - b) quartz
 - c) diamond
 - d) limestone
- 3) What surprised the team about the conversion of CO2 to stone?
 - a) the speed
 - b) the smell
 - c) the cost
 - d) the birds
- 4) How long did it take 95% of the CO2 to turn to stone?
 - a) over two years
 - b) around two years
 - c) less than two years
 - d) two years and a day
- 5) What word did the lead scientist use to express his surprise?
 - a) yes
 - b) wow
 - c) gosh
 - d) awesome
- 6) What kind of scale do the scientists hope the experiment will go to?
 - a) a larger, industrial scale
 - b) lime scale
 - c) a digital scale
 - d) a volcanic scale
- 7) What does the abbreviation CCS mean?
 - a) captive carbon steam
 - b) CO2 carbon site
 - c) carbon capture storage
 - d) coal-carbon system
- 8) What happened to CO2 in previous attempts at pump it underground?
 - a) it leaked
 - b) it exploded
 - c) it became toxic
 - d) nothing
- 9) How did Dr Matter feel about his team's experiments?
 - a) enthusiastic
 - b) disappointed
 - c) hopeful
 - d) positive
- 10) What kind of storage did Dr Matter call his procedure?
 - a) ulterior preeminent storage
 - b) timely pre-emptive storage
 - c) ultra-prominent storage
 - d) ultimate permanent storage

ROLE PLAY

From <http://www.BreakingNewsEnglish.com/1606/160612-co2-emissions.html>

Role A – Solar power

You think solar power is the greatest form of clean energy. Tell the others three reasons why. Tell them things that aren't as good with their power. Also, tell the others which is the least effective of these (and why): wind power, wave power or geothermal power.

Role B – Wind power

You think wind power is the greatest form of clean energy. Tell the others three reasons why. Tell them things that aren't as good with their power. Also, tell the others which is the least effective of these (and why): solar power, wave power or geothermal power.

Role C – Wave power

You think wave power is the greatest form of clean energy. Tell the others three reasons why. Tell them things that aren't as good with their power. Also, tell the others which is the least effective of these (and why): wind power, solar power or geothermal power.

Role D – Geothermal power

You think geothermal power is the greatest form of clean energy. Tell the others three reasons why. Tell them things that aren't as good with their power. Also, tell the others which is the least effective of these (and why): wind power, wave power or solar power.

AFTER READING / LISTENING

From <http://www.BreakingNewsEnglish.com/1606/160612-co2-emissions.html>

1. WORD SEARCH: Look in your dictionary / computer to find collocates, other meanings, information, synonyms ... for the words 'smart' and 'simple'.

smart	simple
--------------	---------------

- Share your findings with your partners.
- Make questions using the words you found.
- Ask your partner / group your questions.

2. ARTICLE QUESTIONS: Look back at the article and write down some questions you would like to ask the class about the text.

- Share your questions with other classmates / groups.
- Ask your partner / group your questions.

3. GAP FILL: In pairs / groups, compare your answers to this exercise. Check your answers. Talk about the words from the activity. Were they new, interesting, worth learning...?

4. VOCABULARY: Circle any words you do not understand. In groups, pool unknown words and use dictionaries to find their meanings.

5. TEST EACH OTHER: Look at the words below. With your partner, try to recall how they were used in the text:

<ul style="list-style-type: none">• come• deep• space• both• 95• huge	<ul style="list-style-type: none">• larger• growing• key• always• enthusiastic• ultimate
--	---

CO2 SURVEY

From <http://www.BreakingNewsEnglish.com/1606/160612-co2-emissions.html>

Write five GOOD questions about CO2 in the table. Do this in pairs. Each student must write the questions on his / her own paper.
When you have finished, interview other students. Write down their answers.

	STUDENT 1 _____	STUDENT 2 _____	STUDENT 3 _____
Q.1.			
Q.2.			
Q.3.			
Q.4.			
Q.5.			

- Now return to your original partner and share and talk about what you found out. Change partners often.
- Make mini-presentations to other groups on your findings.

CO2 DISCUSSION

STUDENT A's QUESTIONS (Do not show these to student B)

1. What did you think when you read the headline?
2. What springs to mind when you hear the word 'environment'?
3. What do you think about what you read?
4. How worried are you about CO2 emissions?
5. How good an idea is turning CO2 back into stone?
6. How harmful are carbon dioxide emissions?
7. What would it be like to work on this experiment?
8. What do you do to reduce carbon dioxide emissions?
9. Why didn't scientists think of this before?
10. When was the last time you thought, 'Wow!'?

Scientists turn CO2 emissions into stone – 12th June, 2016
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CO2 DISCUSSION

STUDENT B's QUESTIONS (Do not show these to student A)

11. Did you like reading this article? Why/not?
12. What will happen if scientists do not stop global warming?
13. Why do some politicians say global warming is not man made?
14. What other carbon storage solutions do you know of?
15. How good is your country at dealing with carbon emissions?
16. How would you deal with the problem of growing CO2 emissions?
17. Why do so many countries not stick to CO2 emissions limits?
18. Do the scientists deserve a Nobel Prize for this procedure?
19. Do you think this is the "ultimate permanent storage"?
20. What questions would you like to ask the researchers?

DISCUSSION (Write your own questions)

STUDENT A's QUESTIONS (Do not show these to student B)

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

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DISCUSSION (Write your own questions)

STUDENT B's QUESTIONS (Do not show these to student A)

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

LANGUAGE - CLOZE

From <http://www.BreakingNewsEnglish.com/1606/160612-co2-emissions.html>

Scientists have come (1) _____ with a smart but simple way to deal with carbon dioxide emissions, by turning them back into stone. Researchers in Iceland (2) _____ 220 tons of CO2 deep underground into volcanic rock. It reacted with minerals in the rock and over a (3) _____ short space of time, transformed into a chalk-like solid substance similar to limestone. The team expressed their surprise at (4) _____ the success and the speed of the CO2 conversion. Lead scientist Juerg Matter said: "Of our 220 tons of (5) _____ CO2, 95 per cent was converted to limestone in less than two years." He added: "It was a huge surprise to all the scientists (6) _____ in the project, and we thought, 'Wow! This is really fast'."

The scientists hope their experiment will be adapted on a larger, more (7) _____ scale. It could help to alleviate the problem of growing CO2 emissions entering the atmosphere and warming the planet. It could also become a (8) _____ technique in carbon (9) _____ and storage (CCS) solutions. Many other CCS techniques have involved injecting and trapping CO2 underground. However, there was always the problem of the emissions (10) _____ their way back above ground and into the atmosphere. Dr Matter was (11) _____ about his team's experiments. He said: "We need to deal with rising carbon emissions and this is the (12) _____ permanent storage – turn them back to stone."

Put the correct words from the table below in the above article.

- | | | | | |
|-----|----------------|---------------|----------------|------------------|
| 1. | (a) up | (b) in | (c) over | (d) down |
| 2. | (a) primped | (b) plumped | (c) pumped | (d) primed |
| 3. | (a) relative | (b) relations | (c) relatively | (d) relatives |
| 4. | (a) between | (b) twice | (c) among | (d) both |
| 5. | (a) injected | (b) injecting | (c) injector | (d) injection |
| 6. | (a) convoluted | (b) involved | (c) revolved | (d) solved |
| 7. | (a) farcical | (b) remedial | (c) plural | (d) industrial |
| 8. | (a) quay | (b) key | (c) queue | (d) keyed |
| 9. | (a) captured | (b) captive | (c) capture | (d) captivity |
| 10. | (a) leading | (b) leaky | (c) reeking | (d) leaking |
| 11. | (a) enthuse | (b) enthuses | (c) enthusiasm | (d) enthusiastic |
| 12. | (a) intimate | (b) ultimate | (c) consummate | (d) primate |

SPELLING

From <http://www.BreakingNewsEnglish.com/1606/160612-co2-emissions.html>

Paragraph 1

1. deal with carbon iiodexd emissions
2. into valnoicc rock
3. It reacted with linrseam in the rock
4. a chalk-like solid scnutseab
5. the speed of the CO2 enovsorinc
6. all the scientists ionvvdel in the project

Paragraph 2

7. a larger, more lditnsairu scale
8. help to laavielet the problem
9. become a key eqhneictu
10. carbon ceuprat and storage (CCS) solutions
11. Dr Matter was unastethisic
12. the ettumlai permanent storage

PUT THE TEXT BACK TOGETHER

From <http://www.BreakingNewsEnglish.com/1606/160612-co2-emissions.html>

Number these lines in the correct order.

- () to alleviate the problem of growing CO2 emissions entering the atmosphere and warming the
- (**1**) Scientists have come up with a smart but simple way to deal with carbon dioxide emissions, by turning them back
- () the speed of the CO2 conversion. Lead scientist Juerg Matter said: "Of our 220 tons of injected CO2, 95
- () per cent was converted to limestone in less than two years." He added: "It was a huge
- () into stone. Researchers in Iceland pumped 220 tons of CO2 deep underground into volcanic rock. It reacted with
- () substance similar to limestone. The team expressed their surprise at both the success and
- () planet. It could also become a key technique in carbon capture and storage (CCS) solutions. Many other CCS
- () emissions and this is the ultimate permanent storage – turn them back to stone."
- () minerals in the rock and over a relatively short space of time, transformed into a chalk-like solid
- () enthusiastic about his team's experiments. He said: "We need to deal with rising carbon
- () of the emissions leaking their way back above ground and into the atmosphere. Dr Matter was
- () surprise to all the scientists involved in the project, and we thought, 'Wow! This is really fast!'"
- () The scientists hope their experiment will be adapted on a larger, more industrial scale. It could help
- () techniques have involved injecting and trapping CO2 underground. However, there was always the problem

PUT THE WORDS IN THE RIGHT ORDER

From <http://www.BreakingNewsEnglish.com/1606/160612-co2-emissions.html>

1. with way smart up carbon to but with dioxide deal simple a Come .
2. with in rock reacted minerals the It .
3. to limestone Transformed into a chalk- like solid substance similar .
4. in limestone to Converted years two than less .
5. surprise the It huge all involved a to scientists was .
6. hope scientists The adapted be will experiment their .
7. problem emissions of Alleviate growing the CO2 .
8. also could It capture carbon in technique key a become .
9. their above problem leaking back The emissions way ground of .
10. need to deal with rising carbon emissions We .

CIRCLE THE CORRECT WORD (20 PAIRS)

From <http://www.BreakingNewsEnglish.com/1606/160612-co2-emissions.html>

Scientists have come *down / up* with a smart but simple way to deal *of / with* carbon dioxide emissions, by turning them back into stone. Researchers in Iceland *pumped / plumped* 220 tons of CO2 deep underground into volcanic rock. It *reacted / reaction* with minerals in the rock and over a relatively short *spatial / space* of time, transformed into a chalk-like solid substance similar to limestone. The team expressed their *surprising / surprise* at both the success and the speed of the CO2 *conversion / convert*. Lead scientist Juerg Matter said: "Of our 220 tons of *injection / injected* CO2, 95 per cent was converted to limestone in less than two years." He added: "It was a *huge / enormous* surprise to all the scientists *involving / involved* in the project, and we thought, 'Wow! This is really fast'."

The scientists hope their experiment will be adapted *on / in* a larger, more industrial scale. It could help to *alleviate / elucidate* the problem of growing CO2 emissions entering *the / an* atmosphere and warming *the / a* planet. It could also become a *key / lock* technique in carbon capture and storage (CCS) solutions. Many other CCS techniques have *involving / involved* injecting and trapping CO2 underground. However, there was always the problem of the emissions *leaked / leaking* their way back *above / higher* ground and into the atmosphere. Dr Matter was *enthusiastic / enthusiasm* about his team's experiments. He said: "We need to deal with rising carbon emissions and this is the ultimate *permanently / permanent* storage – turn them back to stone."

Talk about the connection between each pair of words in italics, and why the correct word is correct.

INSERT THE VOWELS (a, e, i, o, u)

From <http://www.BreakingNewsEnglish.com/1606/160612-co2-emissions.html>

Sc__nt__sts h_v__c__m__p w_th__sm__rt b_t s__mpl__w__y
t__d__l w_th c__rb__n d__x__d__m__ss__ns, by t__rn__ng
th__m b__ck__nt__st__n__. R__s__rch__rs__n__c__l__nd p__mp__d
220 t__ns__f__C__2 d__p__nd__rgr__nd__nt__v__lc__n__c__r__ck.
__t__r__ct__d w_th m__n__r__ls__n__th__r__ck__nd__v__r__
r__l__t__v__ly sh__rt sp__c__f__t__m__, tr__nsf__rm__d__nt__
ch__lk__l__k__s__l__d s__bst__nc__s__m__l__r__t__l__m__st__n__. Th__
t__m__xpr__ss__d th__r__s__rpr__s__t__b__th th__s__cc__ss__nd
th__sp__d__f__th__C__2 c__nv__rs__n. L__d sc__nt__st J__rg
M__tt__r s__d: "f__r 220 t__ns__f__nj__ct__d C__2, 95 p__r
c__nt w__s c__nv__rt__d t__l__m__st__n__n__l__ss th__n tw__
y__rs." H__dd__d: "t__w__s__h__g__s__rpr__s__t__ll th__
sc__nt__sts__nv__lv__d__n__th__pr__j__ct, __nd w__th__ght,
'W__w! Th__s__s__r__lly f__st'."

Th__sc__nt__sts h__p__th__r__xp__r__m__nt w__ll b__d__pt__d
__n__l__rg__r, m__r__nd__str__l__sc__l__. __t__c__ld h__lp t__
__ll v__t__th__pr__bl__m__f__gr__w__ng C__2__m__ss__ns
__nt__r__ng th__tm__sph__r__nd w__rm__ng th__pl__n__t. __t__
c__ld__ls__b__c__m__k__y t__chn__q__n__c__rb__n c__pt__r__
__nd st__rg__ (CCS) s__l__t__ns. M__ny__th__r__CCS
t__chn__q__s h__v__nv__lv__d__nj__ct__ng__nd tr__pp__ng C__2
__nd rgr__nd. H__w__v__r, th__r__w__s__lw__ys th__pr__bl__m
__f__th__m__ss__ns l__k__ng th__r__w__y b__ck__b__v__
gr__nd__nd__nt__th__tm__sph__r__. Dr M__tt__r w__s
__nth__s__st__c__b__t h__s t__m's__xp__r__m__nts. H__s__d:
"W__n__d__t__d__l w__th r__s__ng c__rb__n__m__ss__ns__nd
th__s__s th__lt__m__t__p__rm__n__nt st__rg__ - t__rn th__m
b__ck t__st__n__."

PUNCTUATE THE TEXT AND ADD CAPITALS

From <http://www.BreakingNewsEnglish.com/1606/160612-co2-emissions.html>

scientists have come up with a smart but simple way to deal with carbon dioxide emissions by turning them back into stone researchers in iceland pumped 220 tons of co2 deep underground into volcanic rock it reacted with minerals in the rock and over a relatively short space of time transformed into a chalk-like solid substance similar to limestone the team expressed their surprise at both the success and the speed of the co2 conversion lead scientist juerg matter said "of our 220 tons of injected co2 95 per cent was converted to limestone in less than two years" he added "it was a huge surprise to all the scientists involved in the project and we thought 'wow this is really fast'"

the scientists hope their experiment will be adapted on a larger more industrial scale it could help to alleviate the problem of growing co2 emissions entering the atmosphere and warming the planet it could also become a key technique in carbon capture and storage (ccs) solutions many other ccs techniques have involved injecting and trapping co2 underground however there was always the problem of the emissions leaking their way back above ground and into the atmosphere dr matter was enthusiastic about his team's experiments he said "we need to deal with rising carbon emissions and this is the ultimate permanent storage – turn them back to stone"

PUT A SLASH (/) WHERE THE SPACES ARE

From <http://www.BreakingNewsEnglish.com/1606/160612-co2-emissions.html>

Scientists have come up with a smart but simple way to deal with carbon dioxide emissions, by turning them back into stone. Researchers in Iceland pumped 220 tons of CO₂ deep underground into volcanic rock. It reacts with minerals in the rock and over a relatively short space of time, transformed into a chalk-like solid substance similar to limestone. The team expressed their surprise at both the success and the speed of the CO₂ conversion. Lead scientist Juerg Matter said: "Of our 220 tons of injected CO₂, 95 percent was converted to limestone in less than two years." He added: "It was a huge surprise to all the scientists involved in the project, and we thought, 'Wow! This is really fast'." The scientists hope their experiment will be adapted on a larger, more industrial scale. It could help to alleviate the problem of growing CO₂ emissions entering the atmosphere and warming the planet. It could also become a key technique in carbon capture and storage (CCS) solutions. Many other CCS techniques have involved injecting and trapping CO₂ underground. However, there was always the problem of the emissions leaking their way back above ground and into the atmosphere. Dr Matter was enthusiastic about his team's experiments. He said: "We need to deal with rising carbon emissions and this is the ultimate permanent storage – turn them back to stone."

HOMework

1. VOCABULARY EXTENSION: Choose several of the words from the text. Use a dictionary or Google's search field (or another search engine) to build up more associations / collocations of each word.

2. INTERNET: Search the Internet and find out more about CO₂. Share what you discover with your partner(s) in the next lesson.

3. GLOBAL WARMING: Make a poster about global warming and how we can reduce it. Show your work to your classmates in the next lesson. Did you all have similar things?

4. TURN TO STONE: Write a magazine article about turning CO₂ into stone. Include imaginary interviews with people who think this is the answer to global warming, and with people who think it isn't.

Read what you wrote to your classmates in the next lesson. Write down any new words and expressions you hear from your partner(s).

5. WHAT HAPPENED NEXT? Write a newspaper article about the next stage in this news story. Read what you wrote to your classmates in the next lesson. Give each other feedback on your articles.

6. LETTER: Write a letter to an expert on CO₂. Ask him/her three questions about CO₂. Give him/her three of your ideas on what we can do every day to reduce our carbon footprint. Read your letter to your partner(s) in your next lesson. Your partner(s) will answer your questions.

ANSWERS

TRUE / FALSE (p.4)

a F b F c F d T e T f T g F h T

SYNONYM MATCH (p.4)

- | | |
|-----------------|------------------|
| 1. come up with | a. created |
| 2. deal with | b. handle |
| 3. relatively | c. comparatively |
| 4. conversion | d. change |
| 5. huge | e. enormous |
| 6. alleviate | f. reduce |
| 7. key | g. crucial |
| 8. leaking | h. seeping (out) |
| 9. enthusiastic | i. passionate |
| 10. ultimate | j. greatest |

COMPREHENSION QUESTIONS (p.8)

1. 220 tons
2. Limestone
3. The speed
4. Less than two years
5. Wow
6. A larger, industrial scale
7. Carbon capture storage
8. Some of it leaked above ground
9. Enthusiastic
10. Ultimate permanent storage

MULTIPLE CHOICE - QUIZ (p.9)

1. b 2. d 3. a 4. c 5. b 6. a 7. c 8. a 9. a 10. d

ALL OTHER EXERCISES

Please check for yourself by looking at the Article on page 2.
(It's good for your English ;-)