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To: IELTS Prep Group
Subj: IELTS Reading lesson 1-11-2017

Lesson Objective

The student shall be able to use “power words” as part of their oral vocabulary, read and comprehend both social and business language and demonstrate effective oral communication skills

Section One

Vocabulary

Evaluation Criteria

- Ability to understand definitions of English vocabulary

MATCH THE WORD WITH THE CORRECT DEFINITION

VOCABULARY	DEFINITIONS
1. Demise (Noun)	A. The composite or generally prevailing weather conditions of a region, as temperature, air pressure, humidity, precipitation, sunshine, cloudiness, and winds, throughout the year, averaged over a series of years.
2. Feasible (Adjective)	B. An unpleasantly difficult, perplexing, or dangerous situation.
3. Helium (Noun)	C. To release the air or gas from (something inflated, as a balloon).
4. Deflated (Verb)	D. Termination of existence or operation.
5. Predicament (Noun)	E. Capable of being done, effected, or accomplished.
6. Climate (Noun)	F. An inert, gaseous element present in the sun's atmosphere and in natural gas, and also occurring as a radioactive decomposition product, used as a substitute for flammable gases in dirigible balloons. Symbol: <i>He</i> ; atomic weight: 4.0026; atomic number: 2; density: 0.1785 g/l at 0°C and 760 mm pressure.
7. Catastrophic (Adjective)	G. Causing or involving great fear or suffering; dreadful; terrible.
8. Dire (Adjective)	H. Of the nature of a catastrophe, or disastrous event; calamitous.

Section Two

Reading Comprehension and Pronunciation skills.

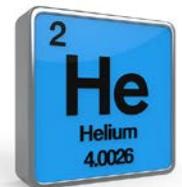
Evaluation Criteria

- Ability to effectively read and comprehend written English in a social or business environment.

ARTICLE 1 (A)

Helium's future up in the air

- A) In recent years, we have all been exposed to dire media reports concerning the impending demise of global coal and oil reserves, but the depletion of another key non-renewable resource continues without receiving much press at all. Helium – an inert, odorless, monatomic element known to lay people as the substance that makes balloons float and voices squeak when inhaled – could be gone from this planet within a generation.
- B) Helium itself is not rare; there is actually a plentiful supply of it in the cosmos. In fact, 24 per cent of our galaxy's elemental mass consists of helium, which makes it the second most abundant element in our universe. Because of its lightness, however, most helium vanished from our own planet many years ago. Consequently, only a miniscule proportion – 0.00052%, to be exact – remains in earth's atmosphere. Helium is the by-product of millennia of radioactive decay from





the elements thorium and uranium. The helium is mostly trapped in subterranean natural gas bunkers and commercially extracted through a method known as fractional distillation.

3. C) The loss of helium on Earth would affect society greatly. Defying the perception of it as a novelty substance for parties and gimmicks, the element actually has many vital applications in society. Probably the most well-known commercial usage is in airships and blimps (non-flammable helium replaced hydrogen as the lifting gas du jour after the Hindenburg catastrophe in 1932, during which an airship burst into flames and crashed to the ground killing some passengers and crew). But helium is also instrumental in deep-sea diving, where it is blended with nitrogen to mitigate the dangers of inhaling ordinary air under high pressure; as a cleaning agent for rocket engines; and, in its most prevalent use, as a coolant for superconducting magnets in hospital MRI (magnetic resonance imaging) scanners.
4. D) The possibility of losing helium forever poses the threat of a real crisis because its unique qualities are extraordinarily difficult, if not impossible to duplicate (certainly, no biosynthetic ersatz product is close to approaching the point of feasibility for helium, even as similar developments continue apace for oil and coal). Helium is even cheerfully derided as a "loner" element since it does not adhere to other molecules like its cousin, hydrogen. According to Dr. Lee Sobotka, helium is the "most noble of gases, meaning it's very stable and non-reactive for the most part ... it has a closed electronic configuration, a very tightly bound atom. It is this coveting of its own electrons that prevents combination with other elements'. Another important attribute is helium's unique boiling point, which is lower than that for any other element. The worsening global shortage could render millions of dollars of high-value, life-saving equipment totally useless. The dwindling supplies have already resulted in the postponement of research and development projects in physics laboratories and manufacturing plants around the world. There is an enormous supply and demand imbalance partly brought about by the expansion of high-tech manufacturing in Asia.
5. E) The source of the problem is the Helium Privatization Act (HPA), an American law passed in 1996 that requires the U.S. National Helium Reserve to liquidate its helium assets by 2015 regardless of the market price. Although intended to settle the original cost of the reserve by a U.S. Congress ignorant of its ramifications, the result of this fire sale is that global helium prices are so artificially deflated that few can be bothered recycling the substance or using it judiciously. Deflated values also mean that natural gas extractors see no reason to capture helium. Much is lost in the process of extraction. As Sobotka notes: "[t]he government had the good vision to store helium, and the question now is: Will the corporations have the vision to capture it when extracting natural gas, and consumers the wisdom to recycle? This takes long-term vision because present market forces are not sufficient to compel prudent practice". For Nobel-prize laureate Robert Richardson, the U.S. government must be prevailed upon to repeal its privatization policy as the country supplies over 80 per cent of global helium, mostly from the National Helium Reserve. For Richardson, a twenty- to fifty-fold increase in prices would provide incentives to recycle.
6. F) A number of steps need to be taken in order to avert a costly predicament in the coming decades. Firstly, all existing supplies of helium ought to be conserved and released only by permit, with medical uses receiving precedence over other commercial or recreational demands. Secondly, conservation should be obligatory and enforced by a regulatory agency. At the moment, some users, such as hospitals, tend to recycle diligently while others, such as NASA, squander massive amounts of helium. Lastly, research into alternatives to helium must begin in earnest.

Questions 27–31

Which paragraph contains the following information?

Questions

- 27) A use for helium which makes an activity safer
- 28) The possibility of creating an alternative to helium
- 29) A term which describes the process of how helium is taken out of the ground
- 30) A reason why users of helium do not make efforts to conserve it
- 31) A contrast between helium's chemical properties and how non-scientists think about it.

Questions 32–35

Do the following statements agree with the claims of the writer in Reading passage 3?

Answer Yes, No or Not given to questions 32-35.

Yes	if the statement agrees with the claims of the writer
No	if the statement contradicts the claims of the writer
Not given	if it is impossible to say what the writer thinks about this

Questions

32) Helium chooses to be on its own.

33) Helium is a very cold substance.

34) High-tech industries in Asia use more helium than laboratories and manufacturers in other parts of the world.

35) The US Congress understood the possible consequences of the HPA.

Questions 36–40

Complete the summary below.

Choose no more than two words from the passage for each answer.

Questions

Sobotka argues that big business and users of helium need to help look after helium stocks because (36) will not be encouraged through buying and selling alone. Richardson believes that the (37) needs to be withdrawn, as the U.S. provides most of the world's helium. He argues that higher costs would mean people have (38) to use the resource many times over.

People should need a (39) to access helium that we still have. Furthermore, a (40) should ensure that helium is used carefully.

ARTICLE 2 (B)

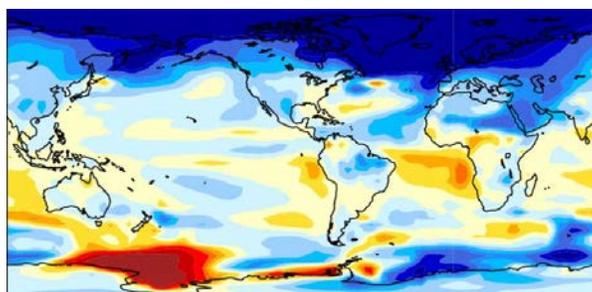
Climate Change Could Trigger Collapse of Major Ocean Current

1. In the 2004 disaster film "The Day After Tomorrow," global warming leads to the failure of an enormous current in the Atlantic Ocean, triggering catastrophic natural disasters and establishing freezing conditions in North America and Europe over a matter of weeks.

That scenario might not be so far-fetched, researchers have found.

The Atlantic Meridional Overturning Circulation (AMOC), a deep-sea system that circulates warm water and helps to regulate Earth's climate, is far less stable than scientists once thought, according to a new study. Under climate-change pressures such as dramatic increases in atmospheric carbon dioxide (CO₂), the AMOC could even collapse entirely, resulting in a much colder Northern Hemisphere and a wetter tropical Atlantic region. [Doomsday: 9 Real Ways Earth Could End]

This particular scenario wouldn't happen for hundreds of years — if it happens at all, the study authors wrote. However, computer models used to predict Earth's climate future typically represent AMOC as relatively stable. An unstable AMOC, as described in the study, changes the equation and presents a future several centuries from now in which the current weakens and ultimately fails to recover from repeated disruption, with dire consequences for the global climate.





2. A climate conveyer belt

AMOC operates like a gigantic climate conveyer belt. In the depths of the Atlantic Ocean, cold, dense waters are carried southward, toward the equator. At the same time, closer to the surface, the current transports heat (in the form of warm, less dense water) from the tropics to the North, where it gets transferred into the atmosphere and warms the air. This heat exchange is what drives and maintains global climate patterns, according to the National Oceanic and Atmospheric Administration.

But if climate models exaggerate the current's stability over time, that can skew the prediction of future risk from climate change, study lead author Wei Liu, a postdoctoral associate in the Department of Geology and Geophysics at Yale University, told Live Science.

This long view of AMOC's stability has also been a long-term project for Liu, who first explored the topic at the University of Wisconsin-Madison as an undergraduate and later incorporated his research into his doctoral thesis while at Scripps Institution for Oceanography, before bringing the investigation to Yale.

3. Some of Wei's suspicions about the accuracy of the models stemmed from observing how difficult it was for them to replicate sudden shifts in climate in Earth's distant past that were linked to AMOC behavior.

"I found that it is hard for climate models to simulate abrupt AMOC change — collapse — and climate change in paleoclimate, indicating that the AMOC in climate models is over stabilized," Wei said.

Furthermore, observations and analysis of the current have also suggested that the level of stability used in the models is likely exaggerated, he added.

"The significance of our study is to point out a systematic bias in current climate models that hinders a correct climate projection," Wei said in a statement.

4. Correcting the bias

In the study, Liu and his colleagues corrected for the bias in climate models favoring a stable AMOC, to see the effects of an unstable current. Their simulations increased the amount of atmospheric CO₂, and after 200 years elapsed, CO₂ levels were double what they were in 1990. About 300 years after that benchmark was reached, the current collapsed.

Once AMOC failed in the simulation, surface temperatures in the North Atlantic Ocean dropped 4.3 degrees Fahrenheit (2.4 degrees Celsius). Northwest Europe cooled, with surface air temperatures dropping as much as 12.6 degrees F (7 degrees C). Meanwhile, the tropical rain belt, a near-continuous band of storms and showers that cycles around Earth close to the equator, moved farther to the south.

Though the study used only one computer model and one global warming scenario, its findings suggest that allowing for an unstable ocean current produces vastly different outcomes, presenting "enormous implications" for climate change on a regional and global level, Wei said.

The findings were published online Jan. 4 in the journal *Science Advances*.

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