Titan Learning Center
Science Act Prep
Week 6

This section of the Science ACT is called conflicting viewpoints. In this section you are given short statements that represent the ideas of 2 different scientists that disagree with each other. Your job is to analyze the arguments and information. You will be asked to identify the nature of the disagreement and the different evidences each scientist proposes.

It may help you analyze this section by asking yourself the following questions during and after you read the passages:
- What is the basic question/issue?
- What is the position of each of the scientists on the question/issue?
- What evidence(s) do each Scientist bring to support his/her position?
- What flaws do each scientist find in the *other* scientist's argument?

*Scientist A*

Many car companies are considering using hydrogen as an automotive fuel. While it only has a range of approximately 200 miles, the research and development that is being done is very positive. Hydrogen engines work differently than standard gas-powered engines and do not produce carbon monoxide, like gasoline-powered cars. When hydrogen is burned, it turns into water and is released harmlessly into the air. The source of power is significantly cleaner than the combustion that occurs in gasoline powered engines today. 90 percent of all carbon monoxide pollutants come from automobiles. This carbon monoxide is the major greenhouse gas that is causing the purported global warming. A hydrogen-burning car, on the other hand, only produces water as its by-product. In addition, the demand for oil is increasing exponentially causing major spikes in prices. A major source of hydrogen is actually from coal, another fossil fuel. When coal is burned to make electricity, it produces hydrogen as a by-product. Right now, this is being released into the air. Since it is already being produced, it would only have to be harvested and stored before it could be used. Hydrogen can be stored in various ways, even though it will take much more hydrogen to fuel cars than it does gasoline. Hydrogen can be stored in its room temperature gaseous form or in a smaller, liquid form, though much colder. This cold, liquid hydrogen can then be pumped into cars and used. Filling stations are being set up all across the country in order to respond to the growing demand for alternative energy cars.

*Scientist B*

Scientists, though encouraged by the possible reduction in carbon monoxide emissions, are fearful of other emissions from hydrogen-powered cars. Studies are showing that the leaked hydrogen could increase the concentration of greenhouse gases in the atmosphere. The problem is destruction of OH radicals, but this time in the troposphere. OH is an environmental scrubber, reacting with and removing all manner of pollutants, including the potent greenhouse gas methane. Lower levels of OH would allow methane to stick around in the atmosphere longer, allowing the greenhouse influence to rise. No one is really sure just how much hydrogen will escape into the atmosphere, but since it needs to be stored under temperatures much cooler than average room temperature, the chances are high that at least some will. However, any increase in hydrogen, under the current research, has the potential to increase rates of methane and the average global temperature. While creating the hydrogen from the coal will create more carbon monoxide as the coal is being gasified, it will allow the carbon monoxide to be created in one location, with the possibility of collecting and recycling instead of millions of cars spewing it into the atmosphere. Another possible problem is the excess hydrogen in the atmosphere. Right now, microbes in the soil utilize hydrogen, taking it from the atmosphere. If there is an increase in atmospheric hydrogen, there are no models for the amount of hydrogen these microbes will absorb. Are we just trading one set of problems for another? Before we commit large amounts of resources, scientists should be sure all of there variables are controlled.

20. An extension of Scientist B's argument is
F. Research should determine how much hydrogen would leak before hydrogen powered cars are put into production.
G. Using hydrogen as fuel for cars is not going to help the problems of global warming.
H. The amount of oil being used for gasoline will increase in the future.
J. The amount of carbon monoxide created will pollute the atmosphere as much as the exhaust from cars.

21. One thing Scientist A and B will agree on is
A. The need for new technology isn't that pressing.
B. Hydrogen-fueled cars will help decrease our use of oil.
C. Hydrogen-fueled cars will solve all our energy problems.
D. New forms of fuel will create more problems than they solve.

22. Scientist A would agree
F. Hydrogen-fueled cars will also increase global warming, albeit not as quickly.
G. Though there are some design flaws that still need to be addressed, hydrogen-fueled cars are not going to decrease the amount of global warming.
H. With the increase in demand of oil, making hydrogen cars will not alleviate the cost of new technology.
J. Though the range for hydrogen-fueled cars is somewhat limited today, their ability to move vehicles cheaply and cleanly is something to be admired.

23. A weakness of Scientist B's argument is
A. Using hydrogen as fuel may decrease the amount of methane in the air, increasing the risk of global warming.
B. Using hydrogen as fuel may increase the amount of carbon monoxide in the air, increasing the risk of global warming.
C. Using hydrogen as fuel may increase the amount of hydrogen in the air, with unknown results.
D. Using hydrogen as fuel may increase the amount of OH in the air, helping reduce the amount of methane.

24. A strength of Scientist A's argument is
F. Hydrogen will only emit water.
G. Gasoline is easier to store.
H. Gas powered cars have further range.
J. Hydrogen production will keep all carbon monoxide out of the air

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