

Science Time

Program Content for October 26, 2016

Read the article “New coolant has a little catch: It’s flammable” on page A4 of the Sunday, October 23, 2016 edition of The Seattle Times.

Objective

- I can detail the risks and benefits of the refrigerant HFO-1234yf

Next Generation Science Standards (NGSS) connection

- *Cross Cutting Concept:* New technologies can have deep impacts on society and the environment, including some that were not anticipated. Analysis of costs and benefits is a critical aspect of decisions about technology.

Pre-reading and Vocabulary: Define each term and then use it in a sentence to demonstrate your understanding.

1. vexing
2. degrade
3. regulatory
4. emission

Comprehension Questions

1. What was Rajiv Singh looking for 15 years ago?
2. What are refrigerants?
3. What is HFO-1234yf?
4. What are hydrofluorocarbons (HFCs)?
5. What happened in Kigali, Rwanda on October 15?
6. Why is HFO-1234yf controversial?
7. Where is HFO-1234yf already being used today?
8. What are the safety issues related to HFO-1234yf?
9. What dangerous chemical is released from 1234yf at high temperatures?
10. How does the global warming impact of HFCs compare to the impact of 1234yf?
11. How has the company Honeywell benefitted from the recent Kigali agreement?
12. What was the Montreal Protocol responsible for?

Prompts and Extensions

1. The new refrigerant, HFO-1234yf was developed as an agreement to the Montreal Protocol. Explore this [website](#) dedicated to the Ozone Hole that the Montreal Protocol helped repair starting in 1987 and learn more about this historic environmental achievement.
2. [Read and watch](#) on the Seattle Times the latest news about the landmark agreement from Kigali, Rwanda on October 15th to replace HFCs with new refrigerants like HFO-1234yf.
3. One of the major concerns of using HFO-1234yf in cars is that it is flammable. Based on your reading of the article do you share this same concern? Why or why not? Use evidence and quotes from the article to support your position.

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