Green Hydrogen Worksheet High School Appropriate Answer Key PDF

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Part 1: Building a Foundation

What is the primary process used to produce green hydrogen?

undefined. A) CombustION

undefined. A) Electrolysis ✓

undefined. A) Fermentation

undefined. A) Distillation

The primary process used to produce green hydrogen is electrolysis.

Which of the following are renewable energy sources used in the production of green hydrogen?

undefined. A) Solar power ✓

undefined. A) Natural gas

undefined. A) Wind power ✓

undefined. A) Coal

Renewable energy sources for green hydrogen production include solar and wind power.

Explain why green hydrogen is considered environmentally friendly.

Green hydrogen is considered environmentally friendly because it is produced using renewable energy and does not emit greenhouse gases during its use.

List two benefits of using green hydrogen over traditional fossil fuels.

1. Benefit 1

Reduced greenhouse gas emissions.

2. Benefit 2

Sustainability and renewable energy source.

Benefits of using green hydrogen include reduced greenhouse gas emissions and sustainability.

Which gas is released as a byproduct during the electrolysis process of producing green hydrogen?

undefined. A) Methane

undefined. A) Oxygen ✓

undefined. A) Carbon Dioxide

undefined. A) Nitrogen

Oxygen is released as a byproduct during the electrolysis process.

Part 2: Understanding and Interpretation

What distinguishes green hydrogen from grey hydrogen?

undefined. A) Green hydrogen is cheaper to produce.

undefined. A) Green hydrogen uses renewable energy sources. ✓

undefined. A) Green hydrogen is produced from coal.

undefined. A) Green hydrogen emits more CO2.

Green hydrogen is distinguished from grey hydrogen by its use of renewable energy sources for production.

Which of the following statements about green hydrogen are true?

undefined. A) It can be used as a fuel for vehicles. ✓

undefined. A) It is always more efficient than fossil fuels.

undefined. A) It requires renewable energy for production. ✓

undefined. A) It contributes to reducing greenhouse gas emissions. ✓

True statements about green hydrogen include its use as a fuel for vehicles, its requirement for renewable energy, and its contribution to reducing greenhouse gas emissions.

Describe how green hydrogen can contribute to energy independence.

Green hydrogen can contribute to energy independence by enabling local production of energy from renewable sources, reducing reliance on imported fossil fuels.

Part 3: Application and Analysis

If a city wants to reduce its carbon footprint, which of the following actions involving green hydrogen would be most effective?

undefined. A) Building more coal power plants

undefined. A) Investing in hydrogen fuel cell vehicles ✓

undefined. A) Increasing natural gas imports

undefined. A) Expanding oil refineries

Investments in hydrogen fuel cell vehicles would be the most effective action for reducing carbon footprints.

How can industries integrate green hydrogen into their operations?

undefined. A) Use it as a raw material in chemical production. ✓

undefined. A) Replace natural gas with hydrogen in heating processes. ✓

undefined. A) Use it to power electric grids during peak demand. ✓

undefined. A) Continue using coal for energy.

Industries can integrate green hydrogen by using it as a raw material in chemical production, replacing natural gas in heating processes, and powering electric grids during peak demand.

Propose a strategy for a local government to promote the use of green hydrogen in public transportation.

A strategy could include implementing incentives for hydrogen fuel cell buses, investing in hydrogen refueling infrastructure, and launching public awareness campaigns.

Which factor is most likely to hinder the widespread adoption of green hydrogen?

undefined. A) Lack of public interest

undefined. A) High production costs ✓

undefined. A) Abundance of renewable energy

undefined. A) Government incentives

High production costs are the most likely factor to hinder the widespread adoption of green hydrogen.

Analyze the challenges of using green hydrogen in the energy sector. Which of the following are valid challenges?

undefined. A) High infrastructure costs ✓

undefined. A) Limited renewable energy sources

undefined. A) Low energy density compared to fossil fuels ✓

undefined. A) Lack of technological advancement ✓

Valid challenges include high infrastructure costs, low energy density compared to fossil fuels, and lack of technological advancement.

Examine the relationship between green hydrogen production and water resources. What are the potential impacts?

The production of green hydrogen requires significant water resources, which can impact local water availability and sustainability.

Part 4: Evaluation and Creation

Which policy would most effectively support the growth of the green hydrogen industry?

undefined. A) Subsidizing fossil fuel industries

undefined. A) ImplementING carbon taxes ✓

undefined. A) Reducing research funding for renewable energy

undefined. A) Eliminating tariffs on oil imports

ImplementING carbon taxes would most effectively support the growth of the green hydrogen industry.

Evaluate the potential benefits of a global shift to green hydrogen. Which of the following are likely outcomes?

undefined. A) Decreased global carbon emissions ✓

undefined. A) Increased reliance on fossil fuels

undefined. A) Enhanced global energy security ✓

undefined. A) Improved air quality ✓

Likely outcomes of a global shift to green hydrogen include decreased global carbon emissions, enhanced global energy security, and improved air quality.

Design a campaign to educate the public about the benefits of green hydrogen. What key messages and strategies would you include?

A campaign could focus on the environmental benefits, economic opportunities, and energy independence provided by green hydrogen, using social media and community events for outreach.