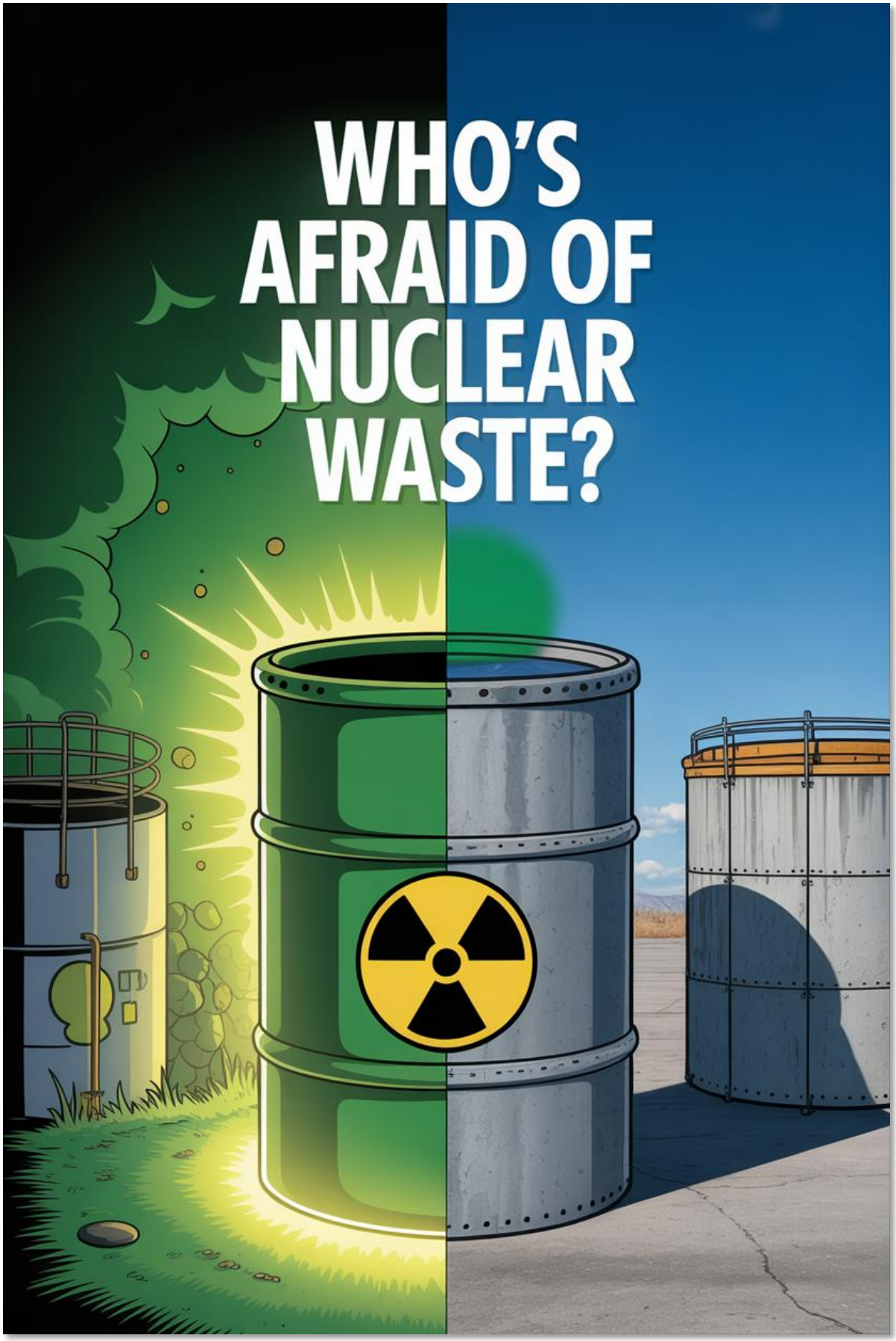
WHO'S
AFRAID OF
NUCLEAR
WASTE?

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Who's Afraid of Nuclear Waste?

Video Length: 6:42

To find more resources for this video, visit https://www.kiteandkeymedia.com/videos/is-nuclear-energy-and-waste-safe-or-dangerous-and-how-to-manage-storage-disposal-radiation/.

We appreciate Kite & Key Media allowing us to share this video with you!

Lesson Description

What if everything you think you know about nuclear waste is wrong? Is it really the glowing green goo we see in movies—or something far less scary? This video challenges the myths surrounding nuclear power and reveals surprising facts about how nuclear waste is stored, how much of it actually exists, and how it compares to other energy sources. Students will discover how fear, media portrayals, and misinformation can shape public opinion, and they'll be encouraged to think critically about how science, safety, and perception often collide.

Objectives

Students will be able to:

- identify common misconceptions about nuclear waste and its appearance in media and popular culture.
- explain how nuclear waste is stored and compare its risks to those of other energy sources.
- analyze how fear and misinformation influence public attitudes toward nuclear energy.
- evaluate whether policies that limit nuclear energy are based on evidence or emotion.

Concepts & Key Terms

Containment: the process of safely storing or enclosing radioactive materials to prevent them from escaping into the environment

Emissions: substances, such as gases or particles, released into the air from energy production or other activities

Radiation: energy that travels in waves or particles, which can be harmful in large amounts but is safely controlled in nuclear power systems

Renewable Energy: energy from sources that naturally replenish, such as wind, solar, or water power

Waste Disposal: the safe management, storage, or removal of materials that are no longer useful, including hazardous or radioactive substances

Preview Activity

Use Think, Pair, Share to have students answer and discuss these preview questions: What comes to mind when you hear the words "nuclear waste?" Where

do you think nuclear waste comes from, and what do you think happens to it? Why do you think people are often afraid of nuclear power or the word "radiation?"

OR

Distribute copies of the K-W-L worksheet to the class. Have students fill in the K and W sections. After showing the video, have students complete the L section and answer the questions at the bottom of the worksheet.

Viewing Guide Instructions

We recommend that teachers show the video twice: first to allow students to view the video and focus on the issues presented, and second to allow them time to complete the viewing guide. After they complete the viewing guide, allow students a few minutes to work in pairs to share and verify answers.

Answers to Viewing Guide

1. solid
2. brick
3. 720,000
4. nothing's
5. balance

Who's Afraid of Nuclear Waste?

Viewing Guide

Name _____ Date _____

Class _____Period _____ Teacher _____

Directions: As you watch the video, fill in the blanks with the correct words.

1. It's a _____ and it's put in steel and concrete canisters that are designed to survive earthquakes, tornadoes, floods…
2. The amount of power an average person uses in a year would generate nuclear waste about the size of a _____.
3. For wind power, _____ tons of blade material that has to be disposed of over the next 20 years.
4. And have you ever noticed that nuclear waste has been around for a long time and _____ happened?
5. So we have to _____ those risks against the rewards of cleaner, reliable energy.

Take a few moments to reflect on the video and answer these questions.

Why might people trust images or stories about danger more than scientific data?

_____

_____

_____

How does this video show the difference between emotional reactions and evidence-based reasoning? _____

_____

_____

_____

_____

Discussion & Analysis

1. What does nuclear waste actually look like?
2. How is nuclear waste stored and kept safe?
3. Why do many people believe nuclear waste is dangerous?
4. How has television and pop culture shaped people's views of nuclear energy?
5. What makes nuclear energy different from coal, wind, or solar power?
6. How much waste does nuclear power really create compared to other energy sources?
7. Why might people trust images or stories about danger more than scientific data?
8. How does fear affect the public debate about nuclear power?
9. What evidence does the video give to show that nuclear waste is managed safely?
10. How could misinformation about nuclear waste harm progress toward cleaner energy?
11. What role do activists and public protests play in shaping nuclear energy policy?
12. How do emotions and facts sometimes clash when people talk about energy choices?
13. What might change if more people understood how small and secure nuclear waste actually is?
14. Do you think nuclear energy should play a larger role in the future? Explain your reasoning.
15. How might government rules or public pressure slow down the use of nuclear energy, even if the science shows it is safe?
16. What incentives or fears might drive media outlets or activists to exaggerate nuclear risks?
17. If people reject nuclear power because of fear, what trade-offs might that create for the environment and the economy?
18. What does this topic teach us about the importance of questioning experts, media messages, and political claims before forming opinions?

19. How does this video show the difference between emotional reactions and evidence-based reasoning?

20. How could fear of nuclear waste limit human progress or reduce future prosperity?

21. What lessons from this video could apply to other issues where emotion or misinformation influences public opinion?

Discuss These Lines from the Video

Nuclear waste? Um, okay. This seems like a problem. Or at least it would seem like a problem if it wasn't total horse(bleep).

The Simpsons lied to you about nuclear waste.

Because nuclear power is so efficient, the amount of waste it generates compared to those other fuel sources is actually incredibly small.

For nuclear to generate enough power for one million people, it'd create three cubic meters of high-level waste per year. To get the same amount of power with coal, it'd generate about 300,000 tons of coal ash.

The most severe accident occurred in 1971… The result? Pretty much nothing.

Scientists determined that Yucca Mountain would be safe for one million years.

Does nuclear waste have the potential to be dangerous? Absolutely. Has it been in practice? Not at all.

So we have to balance those risks against the rewards of cleaner, reliable energy.

Quotes for Discussion

Media sensationalism amplifies public fears by focusing on rare but dramatic events, creating a distorted view of reality. – David L. Gardener

If it comes down to facts versus feelings, beware: feelings often win.
– Drew Westen

Nuclear is ideal for dealing with climate change, because it is the only carbon-free, scalable energy source that's available 24 hours a day.
– Bill Gates

Nuclear energy is not a silver bullet, but if we're going to get to net zero carbon emissions by 2050, it must be part of the mix. – Diana DeGette

When the government decides to favor a technology with subsidies, it's a good bet that subsidy 'winner' is a loser in the marketplace. – Nicolas Loris

There's no reason this issue should divide Congress. Nuclear energy delivers clean power, strengthens our grid, supports union labor, and revitalizes forgotten communities. That's a rare combination – one both parties should rally behind.
– Ruben Gallego

Activities

1. Have students complete the K-W-L chart in class or for homework. (Recall that the K and W sections are to be completed before watching the video and the L section after watching the video.)

2. Have students complete the political cartoon activity in class or for homework.

3. Have students complete the PMI chart in class or for homework.

4. Have students complete and submit the Exit Ticket as they leave class.

5. Myth vs. Reality Chart - Students list common beliefs about nuclear waste in one column and write what the video says in the other. They discuss which myths surprised them most and why those myths might have spread.

6. Visual Comparison - Working in pairs, students create a simple poster or slide comparing how much waste is created by nuclear, coal, and renewable energy sources. They present their visuals to the class to show which energy source produces the least waste.

7. Students analyze short clips, memes, or pop-culture images (like *The Simpsons*) that show nuclear waste. They discuss how humor or exaggeration shapes public opinion about science and safety.

8. In small groups, students review the video transcript to find three specific claims about nuclear waste safety. They look up credible sources to confirm or challenge those claims, then summarize their findings.

9. Students research what the video *doesn't* cover—like real nuclear accidents such as Fukushima or Chernobyl—and explain how those events differ from waste storage issues. They share a short paragraph on whether leaving that out was fair or misleading.

10. Individually, students write a short paragraph defending or opposing the use of nuclear power. They must use at least two facts from the video and one outside source to support their argument.

11. Divide the class into two teams—one arguing that fear of nuclear waste is justified, and one arguing it's exaggerated. After the debate, the class reflects on which arguments were based on emotion and which on evidence.

12. Students research the number of deaths or injuries connected to different energy sources and make a simple chart or graph. They discuss what the data suggest about real vs. perceived danger.

13. Groups imagine they are policymakers tasked with deciding whether to build a new nuclear plant. They must weigh risks, benefits, and public fears before presenting their decision and rationale.

14. Students find a recent article about nuclear energy or waste and summarize it in three sentences. As a class, they compare whether journalists focus more on fear, facts, or solutions.

15. Each student writes a brief letter to a local newspaper explaining why people should—or should not—rethink their views on nuclear waste. Encourage clear reasoning and respectful tone.

16. Students investigate how nuclear power compares in cost to other energy sources. They write a short reflection on how economic incentives might influence policy and media coverage.

17. Students form small circles and take turns asking and answering open-ended questions from the discussion list. Each student must use evidence, not emotion, when responding.

Name _____ Date _____

Class _____Period _____ Teacher _____

Quiz: Who's Afraid of Nuclear Waste?

Directions: Select the answer that best completes the sentence.

1. According to the video, nuclear waste is _____.
   A. a glowing green liquid
   B. mostly invisible gas
   C. solid and safely sealed
   D. stored in open barrels

2. The video says nuclear power creates _____ waste compared to coal.
   A. far less
   B. slightly more
   C. about the same
   D. no measurable difference

3. One reason people still fear nuclear waste is _____.
   A. it has caused thousands of deaths
   B. pop culture made it seem deadly
   C. storage sites leak regularly
   D. scientists disagree about its safety

4. Yucca Mountain was rejected even though _____.
   A. no testing was ever done
   B. the public voted against it
   C. it failed to meet safety standards
   D. scientists said it was safe for one million years

5. The main idea of the video is that _____.
   A. nuclear waste remains too dangerous to use
   B. fear of nuclear waste comes mostly from emotion, not facts
   C. renewable energy creates less waste and no problems
   D. scientists still argue whether nuclear waste can ever be contained

Answer Key:

1. C
2. A
3. B
4. D
5. B

Name _____ Date _____

Class _____ Period _____ Teacher _____

Who's Afraid of Nuclear Waste?

Political Cartoon Activity

Directions: Use the political cartoon to answer the questions.

What irony is shown in the politician's statement, and how does it relate to the video's message about fear versus facts?_____

_____

_____

_____

_____

_____

How does this cartoon use exaggeration or satire to make its point, and why is that technique effective? _____

_____

_____

_____

Why might leaders or media outlets focus on fear even when evidence shows little or no danger? _____

_____

_____

_____

How do emotions influence public reactions to scientific issues like nuclear energy?

_____

_____

_____

_____

If people made decisions about energy based on evidence instead of fear, what might change about energy policy or public opinion? _____

_____

_____

_____

_____

Name _____ Date _____

Class _____ Period _____ Teacher _____

Who's Afraid of Nuclear Waste?

PMI Chart

P = Plus: What might be some positive effects of nuclear energy?
M = Minus: What might be some negative effects of nuclear energy?
I = Interesting: What is interesting or surprising about nuclear energy?

+ Plusses +	- Minuses -	I

If people reject nuclear power because of fear, what trade-offs might that create for the environment and the economy?

_____

_____

_____

How could misinformation about nuclear waste harm progress toward cleaner energy? _____

_____

_____

_____

Name _____ Date _____

Class _____ Period _____ Teacher _____

Who's Afraid of Nuclear Waste?

K-W-L Chart

Directions: Complete the **K** and **W** sections prior to watching the video. After you have seen the video, complete the **L** section and answer the questions below the K-W-L chart.

K	W	L
What I know about nuclear energy and waste…	What I want to know about nuclear energy and waste…	What I've learned about nuclear energy and waste…

What incentives or fears might drive media outlets or activists to exaggerate nuclear risks?

_____

_____

_____

What lessons from this video could apply to other issues where emotion or misinformation influences public opinion?

_____

_____

_____

Exit Ticket

Name

Admit One

If fear of nuclear waste is mostly based on emotion, how can facts and evidence help people make wiser energy choices?

Admit One

EXIT TICKET

Name

Admit One

If fear of nuclear waste is mostly based on emotion, how can facts and evidence help people make wiser energy choices?

Admit One

EXIT TICKET

Name

Admit One

If fear of nuclear waste is mostly based on emotion, how can facts and evidence help people make wiser energy choices?

Admit One

EXIT TICKET

Name _____ Date _____

Class _____ Period _____ Teacher _____

Who's Afraid of Nuclear Waste?

Claim Evidence Reasoning Activity

Claim: What is the claim from this video you are evaluating?

Evidence: What evidence is presented (or can you find) in support of the claim?

Reasoning: How does the evidence support (or dispute) the claim?

Transcript

Speaker

Nuclear energy, power source of the future, right? A lot of people think so. Zero carbon emissions, check. Safety? It's generated fewer deaths than basically every other power source, so check. Nuclear waste? Um, okay. This seems like a problem. Or at least it would seem like a problem if it wasn't total horse(bleep).

We hate to be the ones to break this to you, but *The Simpsons* lied to you about nuclear waste. Well, to be fair, *The Simpsons* and pretty much all pop culture…ever.

Here's the thing, nuclear waste doesn't actually look like that. It looks like this. Not like that. Like this. Not like that. It's not a green goo stored in a drum that's one accident away from catastrophe. It's a solid, and it's put in steel and concrete canisters that are designed to survive earthquakes, tornadoes, floods, and even attacks with projectiles. It may even be Kraken-proof. Can't know until we try.

But nevertheless, people are still so scared of nuclear waste that it's often enough to stop conversations about nuclear power dead in their tracks. So here's the question, do the dangers of nuclear waste outweigh the potential benefits of nuclear power?

Let's start with the basics. Why would we even bother with an energy source that generates waste? Well, it's a pretty easy answer to that question. Because every energy source generates waste. The reason we're so much more aware of nuclear waste is that, well, we can see it right there in those concrete casks. It can be contained. All of our other fuel sources, by contrast, send their waste out into the environment. And here's the other thing. Because nuclear power is so efficient, the amount of waste it generates compared to those other fuel sources is actually incredibly small.

The amount of power an average person uses in a year would generate nuclear waste about the size of a brick. And the amount of it that would be high-level waste, the highly the radioactive material we're all afraid of, would weigh about as much as a sheet of paper.

Think about it this way. For nuclear to generate enough power for one million people, it’d create three cubic meters of high-level waste per year. To get the same

amount of power with coal, it’d generate about 300,000 tons of coal ash, which contains contaminants like mercury and arsenic.

And believe it or not, renewables have similar problems. One team of economists estimated that solar power could generate 300,000 metric tons of waste in the US by 2025. After all, all those used panels have to go somewhere. As for wind power, 720,000 tons of blade material that has to be disposed of over the next 20 years. Starts out green. Doesn't necessarily end up that way.

Now, one big difference, right? The waste from coal or wind isn't crawling with radiation. But even there, the danger is a lot smaller than you might assume. The small amount of high-level nuclear waste can, of course, be dangerous, but only if we're actually exposed to it.

And have you ever noticed that nuclear waste has been around for a long time and that nothing's happened? There's a reason for that. We're really, really good at keeping it safe. In In fact, the most severe accident occurred in 1971, when a driver transporting nuclear waste swerved off a Tennessee highway to avoid a crash, throwing a cask of spent nuclear fuel off of the vehicle. The result? Pretty much nothing. The casks stayed intact, and there was no radiation released. They're built that tough.

As a matter of fact, the US Department of Energy estimates that over 44,000 shipments of nuclear waste have taken place around the world since the early 1960s, and no one's ever died from, or even been injured by, radiation. In fact, the biggest safety problem has been activists blocking shipments to protest safety problems.

And that's not the only time that people with seemingly good intentions have made things worse. Activists also helped to block the use of Nevada's Yucca Mountain as a permanent storage site for America's nuclear waste, despite the fact that scientists from the government's Nuclear Regulatory Commission determined that the site would be safe for one million years.

That's had real consequences for nuclear power. Thirteen states have restrictions on the construction of nuclear car plants, about half of them because there's no central location to store waste, which is not, by the way, an especially radical idea. There's already an underground facility in New Mexico, where the government stores nuclear waste generated for military purposes. Finland is building its own

underground storage site. Hell, in Holland, they're so chill about it that they actually store their nuclear waste alongside valuable works of art. The Dutch, man.

Does nuclear waste have the potential to be dangerous? Absolutely. Has it been in practice? Not at all. Yes, there are risks involved, but that's true of all our energy sources. So we have to balance those risks against the rewards of cleaner, reliable energy. And so far, all the evidence points to us being able to handle nuclear waste responsibly and safely. Unless that Kraken brings friends. Then all bets are off.