

THE EYES OF NYE: NUCLEAR ENERGY

VIDEO WORKSHEET <https://tinyurl.com/ojln6cs>

This video provides students lots of information about the production of nuclear energy at power plants, the politics surrounding that, and pros and cons related to nuclear power. I suggest showing this video towards the end of your nuclear chemistry unit. It is a Bill Nye production, but it is geared towards high school students!

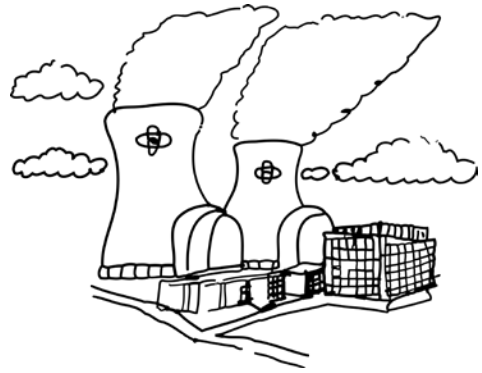
You can find the video for free on YouTube at the link above!

Name _____ Class _____ Date _____

THE EYES OF NYE: NUCLEAR ENERGY

VIDEO WORKSHEET

<https://tinyurl.com/qjln6cs>



1. What are the three main sections of a nuclear power plant?
2. What starts the nuclear chain reaction?
3. What does fission mean?
4. What two products are formed from the fission of uranium?
5. How much nuclear waste is produced in 60 years of a power plant operating?
6. How much would a coal plant produce?
7. Where are most of the nuclear waste and spent fuel rods currently?
8. What is the estimate for how long it takes nuclear waste to completely decay?
9. What materials are used to shield or block nuclear radiation?

10. Why is Yucca Mountain such an attractive location for nuclear waste storage?

a.

b.

c.

11. What is the half-life of Plutonium, part of nuclear waste?

12. Why was the 10,000 year standard ruled invalid?

13. Give two positive and negative arguments involving the usage of nuclear energy.

14. How much total nuclear waste exists worldwide?

15. What are two other ideas for dealing with nuclear waste?

16. Why can't the nuclear waste be shot into space?

17. Describe transmutation.

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ANSWERS

1. What are the three main sections of a nuclear power plant?

Reactor, Generator, Cooling Towers

2. What starts the nuclear chain reaction?

Uranium is bombarded by neutrons

3. What does fission mean?

To split apart an atom

4. What two products are formed from the fission of uranium?

*Energy as Heat
Shoots out another neutron*

5. How much nuclear waste is produced in 60 years of a power plant operating?

Enough waste to fit into a convenience store

6. How much waste would a coal plant produce?

Ten million times more waste

7. Where are most of the nuclear waste and spent fuel rods currently?

In reactor pools at the nuclear plant

8. What is the estimate for how long it takes nuclear waste to completely decay?

10 000 years

9. What materials are used to shield or block nuclear radiation?

Stainless steel, concrete

10. Why is Yucca Mountain such an attractive location for nuclear waste storage?

- a. *Dry site*
- b. *Remote*
- c. *Stable rock formation*

11. What is the half-life of Plutonium, part of nuclear waste?

24 000 years

12. Why was the 10,000 year standard ruled invalid?

Plutonium would still be very dangerous at 10 000 years.

13. Give two positive and negative arguments involving the usage of nuclear energy.

No deaths in accidents in 50 years

20% of US energy production

Can be used by terrorists

Disposal is expensive

14. How much total nuclear waste exists worldwide?

300 000 tons

15. What are two other ideas for dealing with nuclear waste?

Burying under oceans or under remote islands,

drop into Earth's crust, bury in polar ice caps

16. Why can't the nuclear waste be shot into space?

An accident would cause a nuclear disaster

17. Describe transmutation.

A method of changing a dangerous radioactive substance into a less dangerous one that will decay in a few hundred years.