

ENERGY CARD:

Helium-3

Helium-3 (He3) is a gas that has potential to be used to produce energy here on earth. However, there is very little Helium-3 on Earth. Helium-3 is produced by the sun and carried by solar winds. Our atmosphere prevents Helium-3 from reaching earth, but since the moon has no atmosphere, there is nothing to stop Helium-3 from reaching the surface of the moon and being absorbed by the moon's soil. Scientists estimate that the Moon has over one million tons of Helium-3 which was transported by solar winds and is a renewable resource. Scientists estimate that 25 tons of Helium-3 could power the United States for an entire year. This much Helium-3 could be transported from the Moon to the Earth in a ship the size of the recently retired space shuttle. If the United States were able to mine the Helium-3 on the Moon, it might solve our energy problems.

Not many people have ever heard of Helium-3 and even fewer understand how it could be used. Currently, many countries on Earth use nuclear power plants to produce heat, which turns water into steam to generate electricity. These nuclear power plants use a process called nuclear fission, which creates radioactive waste that is dangerous and expensive to store safely. On the other hand, Helium-3 is used in a process called nuclear fusion that combines the Helium with a substance called Deuterium. When the two are combined, energy is produced, but no harmful waste is created.

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There are issues with using Helium-3 to create an energy source. First, no one has ever used this process to create a large amount of energy. There simply is not enough Helium-3 here on earth to be used in a nuclear power plant. Second, scientists estimate one million tons of moon soil would be needed to produce seventy tons of Helium-3. This is too much moon soil to transport to Earth. Third, extracting Helium-3 from the Moon's soil will require superheating rocks on the surface of the moon. A process for doing this in space would need to be developed. Finally, a spacecraft with the ability to transport the Helium-3 to Earth would need to be built. There is a lot to learn about using Helium-3 as a source of energy, but it could solve the Earth's energy needs.

For more information:

- <http://science.howstuffworks.com/environmental/green-science/energy-from-space.htm>
- <http://www.explainingthefuture.com/helium3.html>
- Isotope = form of element with same atomic number