**Chapter 17: Nonrenewable Energy**

**Section 1: Energy Resources and Fossil Fuels**

**Energy Resources and Fossil Fuels**

* A **fossil fuel** is a nonrenewable energy resource formed from the remains of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that lived long ago; examples include oil, coal, and natural gas.
* Most of the \_\_\_\_\_\_\_\_\_\_\_\_ we use comes from this group of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ called fossil fuels.
* We use fossil fuels to run cars, ships, planes, and factories and to produce \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Fossil fuels are central to life in modern societies, but there are two main problems with fossil fuels.
  + The supply of fossil fuels is \_\_\_\_\_\_\_\_\_\_\_\_\_\_.
  + Obtaining and using them has \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ consequences.
* In the 21st century, societies will continue to explore \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to fossil fuels but will also focus on developing more \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ways to use these fuels.

**Fuels for Different Uses**

* Fuel is used for four main purposes:
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to run machines and appliances
* Different fuels are used for different purposes.
* The suitability of a \_\_\_\_\_\_\_\_ for each application depends on the fuel’s energy content, cost, availability, safety, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Electricity-Power on Demand**

* Because electricity is more \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to use, the energy in fuel is often \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ before used.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can be transported quickly across great distances.
* This makes it a good \_\_\_\_\_\_\_\_\_\_\_\_ of \_\_\_\_\_\_\_\_\_\_ for computers, light switches, and more.
* Two disadvantages of electricity are that it is difficult to \_\_\_\_\_\_\_\_\_\_ and other energy sources have to be used to \_\_\_\_\_\_\_\_\_\_\_\_\_\_ it.

**How Is Electricity Generated?**

* An **electric generator** is a device that converts \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy.
* Generators produce electrical energy by moving an electrically \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ material within a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ field.
* Most commercial electric generators convert the movement of a \_\_\_\_\_\_\_\_\_\_\_\_\_\_ into electrical energy. A *\_\_\_\_\_\_\_\_\_\_\_\_\_\_* is a wheel that changes the force of a moving gas or a liquid into energy that can do work.
* The turbine spins a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to produce electricity.
* The turbine spins because of the steam released from \_\_\_\_\_\_\_\_\_\_\_\_\_\_ water.
* The water is heated using a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ plant, or is heated from the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ in nuclear plants.

**World Energy Use**

* Everything you do, from the food you eat to the clothes you wear \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy.
* There are dramatic differences in fuel use and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ throughout the world.
* People in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ societies use more energy than people in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ countries do.
* And within developed societies, there are differences in energy \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* The difference in energy use among developed countries depends on how energy is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and used in those countries.

**Energy Use in the United States**

* The United States uses more energy per person than any other country except \_\_\_\_\_\_\_\_\_\_\_\_ and the \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* The U.S. uses more than \_\_\_\_\_\_ of its energy to transport goods and people.
* Other countries, such as \_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, depend on extensive rail systems and are smaller, compact countries
* Residents of the United States and Canada enjoy some of the lowest \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ taxes in the world. There is little incentive to conserve gasoline when its cost is so low.
* Countries with \_\_\_\_\_\_\_\_\_\_\_\_\_\_ fossil-fuel resources supplement a greater percentage of their energy needs with other energy sources, such as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**How Fossil-Fuel Deposits Form**

* Fossil fuel deposits are not distributed \_\_\_\_\_\_\_\_\_\_\_\_.
* There is an abundance of oil in \_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_, but very little in \_\_\_\_\_\_\_\_\_\_.
* The \_\_\_\_\_\_\_\_\_\_\_\_\_\_ United States produces more coal than other areas.
* The reason for this difference lies in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ history of the areas.

**Coal Formation**

* Coal forms from the remains of \_\_\_\_\_\_\_\_\_\_\_\_ that lived in swamps \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of years ago.
* As ocean levels rose and fell, \_\_\_\_\_\_\_\_\_\_\_\_ were repeatedly covered with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Layers of sediment \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the plant remains, and heat and pressure within the Earth’s \_\_\_\_\_\_\_\_\_\_ caused \_\_\_\_\_\_\_\_ to form.
* Much of the coal in the United States formed about \_\_\_\_\_\_ to \_\_\_\_\_\_ million years ago. Deposits in western states, however, formed between \_\_\_\_\_\_ and \_\_\_\_\_\_ million years ago.

**Oil and Natural Gas Formation**

* Oil and natural gas result from the \_\_\_\_\_\_\_\_\_\_ of tiny marine \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that accumulated on the bottom of the ocean millions of years ago.
* These remains were buried by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and then \_\_\_\_\_\_\_\_\_\_\_\_ until they became complex energy-rich carbon molecules.
* These molecules, over time, migrated into the \_\_\_\_\_\_\_\_\_\_\_\_ rock formations that now contain them.

**Coal**

* Most of the world’s fossil-fuel \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are made up of coal.
* Coal is relatively \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and it needs little \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ after being mined.
* \_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ are particularly rich in coal deposits.
* Over \_\_\_\_\_\_\_\_ the electricity generated in the United States comes from \_\_\_\_\_\_\_\_-fired power plants.

**Coal Mining and the Environment**

* The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ effects of coal mining vary.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ mining may have minimal effect on the environment at the surface, but \_\_\_\_\_\_\_\_\_\_\_\_\_\_ coal-mining operations sometimes remove the top of an entire mountain to reach the coal deposit.
* A lot of research focuses on locating the most productive, \_\_\_\_\_\_\_\_\_\_-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ coal deposits and finding less damaging methods of mining coal.

**Air Pollution**

* The quality of coal varies. Higher-grade coals, such as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ coal, produce more heat and less pollution than lower-grade coal, such as \_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* \_\_\_\_\_\_\_\_\_\_\_\_, found in all grades of coal, can be a major source of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ when coal is burned.
* The air pollution and \_\_\_\_\_\_\_\_ precipitation that result from burning high-sulfur coal without adequate pollution controls are serious problems in countries such as \_\_\_\_\_\_\_\_\_\_.
* However, clean-burning coal technology has dramatically reduced air pollution in countries such as the \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_.

**Petroleum**

* **Petroleum** is a \_\_\_\_\_\_\_\_\_\_\_\_ mixture of complex \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ compounds that is used widely as a fuel source.
* Petroleum, also known as **crude oil**.
* Anything that is made from crude oil, such as fuels, chemicals, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, is called a petroleum product.
* Petroleum accounts for \_\_\_\_\_\_ of the world’s commercial energy use.

**Locating Oil Deposits**

* Oil is found in and around major \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ features, such as folds, faults, and \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_, that tend to trap oil as it moves in the Earth’s crust.
* Most of the world’s oil reserves are in the \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_. Large deposits also exist in the United States, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, the \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ use many different methods to locate the rock formations that could contain oil.
* When geologists have gathered all of the data that they can from the Earth’s surface, exploration wells are drilled to determine the \_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the oil deposit.
* If oil can be extracted at a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ rate, wells are drilled and oil is pumped or flows to the surface.
* After petroleum is removed from a well, it is transported to a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to be converted into fuels and other petroleum \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**The Environmental Effects of Using Oil**

* Petroleum fuel releases \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ when burned.
* These pollutants contribute to \_\_\_\_\_\_\_\_ and cause \_\_\_\_\_\_\_\_\_\_\_\_ problems.
* Many scientists think that the \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ released from burning petroleum fuels contributes to global warming.
* Oil spills from \_\_\_\_\_\_\_\_\_\_\_\_ ships are another potential environmental problem of oil use .
* While oil spills are dramatic, much more oil pollution comes from everyday sources, like leaking \_\_\_\_\_\_\_\_.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ regulations and technologies have helped reduce the air pollution in many areas.
* New measures have recently been taken to prevent oil spills from tankers.
* Unfortunately, measures to reduce everyday \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of our waterways from oil lag far behind the efforts to \_\_\_\_\_\_\_\_\_\_\_\_\_\_ large spills.

**Natural Gas**

* About \_\_\_\_\_\_ of the world’s nonrenewable energy comes from natural gas.
* Natural gas, or \_\_\_\_\_\_\_\_\_\_\_\_\_\_ (CH4), produces fewer pollutants than other fossil fuels when burned.
* Vehicles that run on natural gas require \_\_\_\_\_\_\_\_\_\_ pollution controls.
* Electric \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ can also use this clean-burning fuel.

**Fossil Fuels and the Future**

* Fossil fuels supply about \_\_\_\_\_\_ of the energy used in developed countries.
* As the demand for \_\_\_\_\_\_\_\_\_\_\_\_ resources increases, the cost of \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_ will likely increase.
* This will make other energy sources more attractive.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for the energy we will use in the \_\_\_\_\_\_\_\_\_\_\_\_ is important because it takes many years for a new source of energy to make a significant contribution to our energy supply.

**Predicting Oil Prediction**

* Oil production is still \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, but it is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ much more slowly than it has in the past.
* Many different factors must be considered when \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ oil production.
* **Oil reserves** are oil deposits that are discovered and are in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ production.
* Oil reserves can be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ profitably at current prices using current technologies.
* In contrast, some oil deposits are yet to be discovered or to become \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Prediction must also take into account the changes in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that will allow more oil to be extracted in the future.
* All predictions of future oil production are guided by an important principle: the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cost of obtaining fuels \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the amount of fossil fuels we extract from the Earth.
* As supplies \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, oil may be used more \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Also, we may begin to rely on other energy sources to power items like \_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_.

**Future Oil Reserves**

* \_\_\_\_ large oil reserves have been discovered in the past decade.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ predicted that oil production from fields accessible from land would peak in about 2010.
* Additional oil reserves exist under the \_\_\_\_\_\_\_\_\_\_, but it is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to drill for oil in the deep ocean.
* Currently, oil platforms can be built to drill for oil in the ocean, but much of the oil in the \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ is currently inaccessible.

**Section 2: Nuclear Energy**

**Nuclear Energy**

* In the \_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_, nuclear power plants were seen as the power source of the future because the fuel they use is \_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* In the \_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_, however, many planned nuclear power plants were \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and others under construction were \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Today, nuclear power accounts for \_\_\_\_\_\_ of the world’s electricity.

**Fission: Splitting Atoms**

* Nuclear power plants get their power from *nuclear energy*.
* **Nuclear energy** is the energy released by a \_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_ reaction. It represents the binding energy of the atomic nucleus.
* The \_\_\_\_\_\_\_\_\_\_\_\_ that hold together a \_\_\_\_\_\_\_\_\_\_\_\_\_\_ of an atom are more than \_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ stronger than the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ between atoms.
* In nuclear power plants, atoms of the element \_\_\_\_\_\_\_\_\_\_\_\_\_\_ are used as the fuel.
* The \_\_\_\_\_\_\_\_\_\_\_\_ of uranium atoms are bombarded with atomic particles called **neutrons**. These collisions cause the nuclei to split in a process called nuclear fission.
* **Nuclear fission** is the splitting of the nucleus of a large atom into \_\_\_\_\_\_ or \_\_\_\_\_\_\_\_ fragments.
* Nuclear fission releases a tremendous amount of \_\_\_\_\_\_\_\_\_\_\_\_ and more \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which in turn collide with more uranium \_\_\_\_\_\_\_\_\_\_\_\_.

**How Nuclear Energy Works**

* The \_\_\_\_\_\_\_\_ released during nuclear reactions is used to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the same way that power plants burn fossil fuels to generate electricity.
* The energy released from the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ reactions heats a closed loop of \_\_\_\_\_\_\_\_\_\_ that heats another body of water.
* As the water \_\_\_\_\_\_\_\_\_\_, it produces \_\_\_\_\_\_\_\_\_\_ that drives a \_\_\_\_\_\_\_\_\_\_\_\_\_\_, which is used to generate electricity.

**The Advantages of Nuclear Energy**

* Nuclear fuel is a very \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy source.
* Nuclear power plants \_\_\_\_ \_\_\_\_\_\_ produce air-polluting gases.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_ power plants release less radioactivity than \_\_\_\_\_\_\_\_-\_\_\_\_\_\_\_\_\_\_ power plants do, when operated properly.
* Countries with \_\_\_\_\_\_\_\_\_\_\_\_\_\_ fossil-fuel resources rely heavily on nuclear plants to supply electricity.

**Why Aren’t We Using More Nuclear Energy?**

* Building and maintaining a \_\_\_\_\_\_\_\_ reactor is very \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* This makes nuclear plants no longer \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ with other energy sources in many countries.
* The actual cost of new nuclear power plants is uncertain, so it is difficult to \_\_\_\_\_\_\_\_\_\_\_\_\_\_ whether investors will build new plants in the \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_.

**Storing Waste**

* The greatest \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of nuclear power is the difficulty in finding a safe place to store \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_.
* The fission products produced can remain dangerously \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of years.
* Storage sites for nuclear wastes must be located in areas that are geologically \_\_\_\_\_\_\_\_\_\_\_\_ for tens of thousands of years.
* Scientists are researching a process called *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_,* that would recycle the radioactive elements in nuclear fuel.

**Safety Concerns**

* In a poorly designed nuclear plant, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ process can potentially get out of control.
* The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ reactor was destroyed in \_\_\_\_\_\_\_\_ when an unauthorized test caused explosions and blasted radioactive materials into the air.
* Hundreds of people in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ died from radioactive exposure from this explosion.
* Even today, parts of northern Europe and the Ukraine remain \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from this disaster.
* The most serious nuclear accident in the United States occurred in \_\_\_\_\_\_\_\_ at the \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ nuclear power plant in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_, along with blocked valves and broken pumps, was responsible for this accident.
* Fortunately, only a small amount of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ gas escaped.
* Since that accident, the U.S. Nuclear Regulatory Commission has required more than \_\_\_\_\_\_ safety improvements to nuclear plants.

**The Future of Nuclear Power**

* One possible future energy source is *nuclear \_\_\_\_\_\_\_\_\_\_\_\_*.
* **Nuclear fusion** is the combination of the nuclei of small atoms to form a larger nucleus. Fusion releases tremendous amounts of energy.
* It is potentially a \_\_\_\_\_\_\_\_\_\_ energy source than nuclear fission is because it creates less dangerous radioactive \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Although the potential for nuclear fusion is great, so is the technical \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of achieving that potential.
* For fusion to occur, three things must occur simultaneously:
  + Atomic nuclei must be \_\_\_\_\_\_\_\_\_\_\_\_ to extremely high temperatures (about 100,000,000ºC or 180,000,000ºF).
  + The nuclei must be maintained at \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_ conditions.
  + The nuclei must be properly \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* The technical problems are so \_\_\_\_\_\_\_\_\_\_\_\_\_\_ that building a nuclear fusion plant may take decades or may \_\_\_\_\_\_\_\_\_\_ happen.