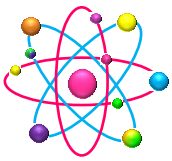
3°

Natural Sciences



Content

Know the contents

The Gimnasio Virtual San Francisco Javier, presented through textbooks for primary education program and sequence of science content, enriched with several videos and additional topics.

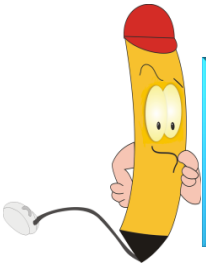
With this text handling you acquire attitudes, skills, abilities and ideas that allow you to expand your worldview.

Your content are grouped into four sessions containing topics and subtopics of several pages. Each topic begins with a title, a series of questions, whose purpose is to arouse your interest in the contents, you can use the questions at the end of a topic to find your learning.

Find images related to the concepts and themes, videos, diagrams, concept maps with didactic sense.

The virtualitos will help you travel through this adventure of knowledge.

Let us search...

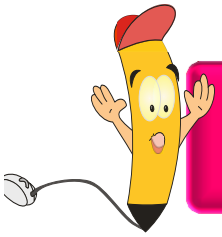


When you find this you will know that there are many unanswered questions, which you can use at the end of a topic to find what you have learned.

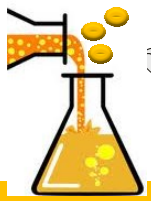
When you find this you will have to perform the activities for each topic or subtopic.

Art is part of your activities, giving a personal touch when you go to color.
Now you are the artist!

Virtualito invites you to learn more about the topic, research new things. It is interesting to know!



You know?
Find fun facts that invite you to learn about other related topics.



Circulatory System

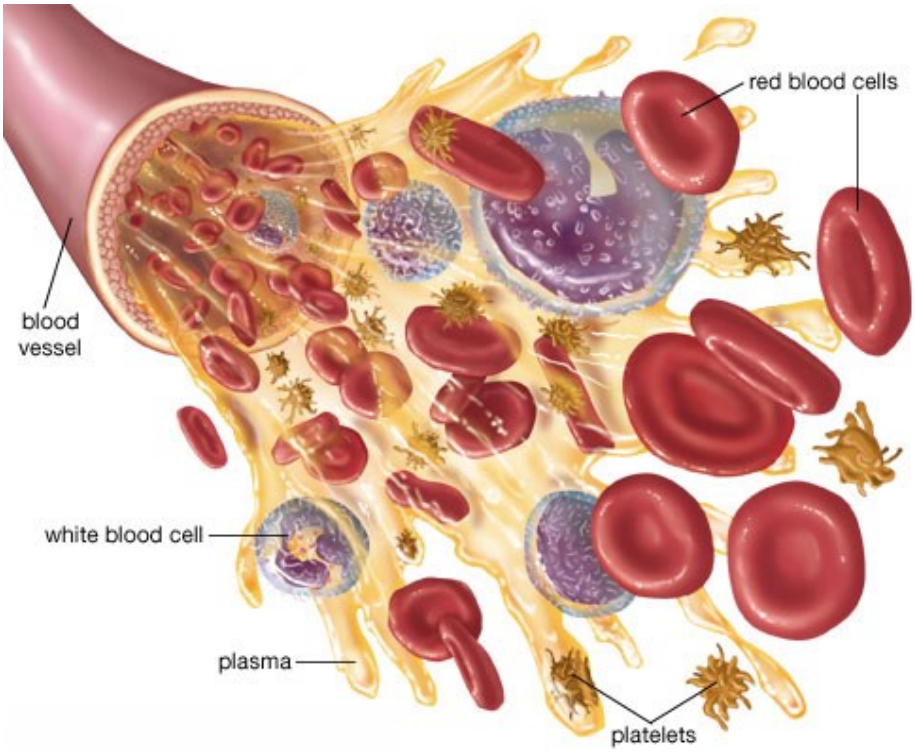
The circulatory system is responsible to distribute oxygen and nutrients throughout the body, and collecting the carbon dioxide and excretion products from the cells.

Is formed by:

A fluid called blood pump that pushes the blood is called heart and tubes called blood vessels (arteries, veins and capillaries) and lymph vessels.

Blood. Liquid consists called blood plasma and several types of cellular components: red blood cells, white blood cells and platelets.

Plasma. The plasma consists mainly of water and dissolved substances (mineral salts, glucose, lipids and proteins). Plasma without serum proteins called.

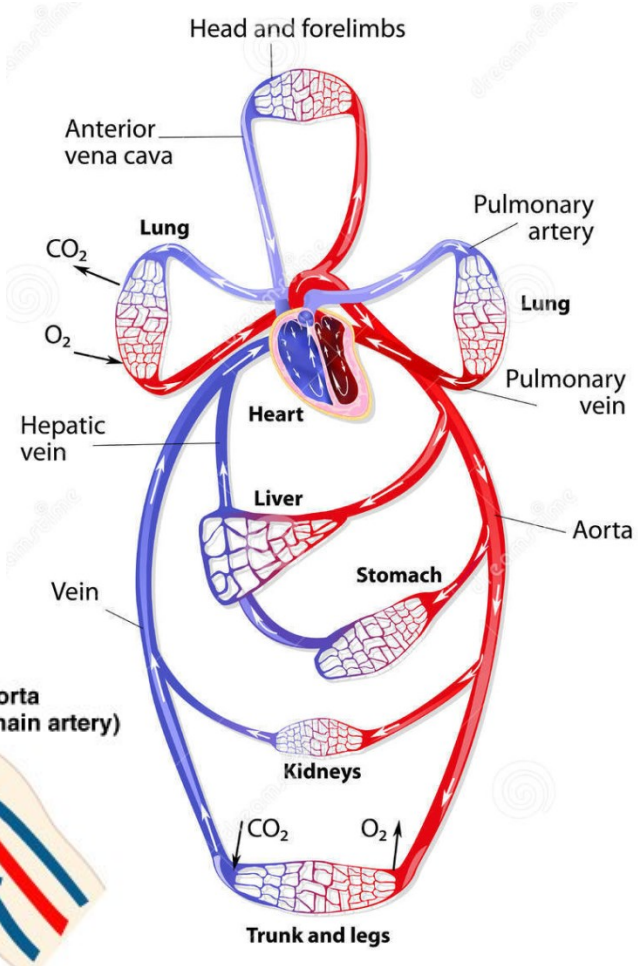


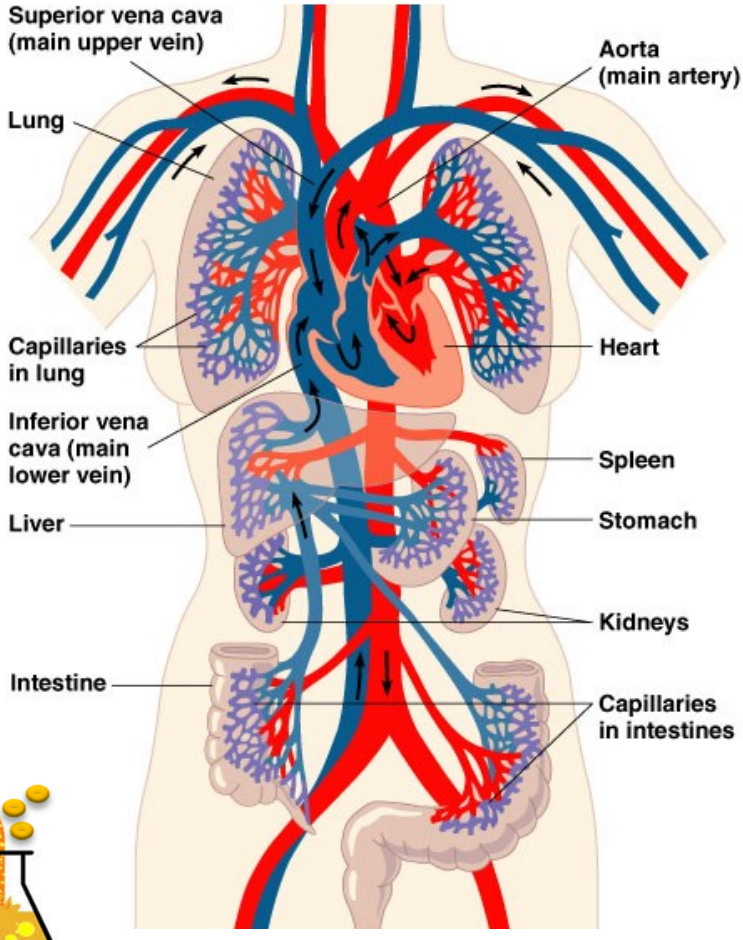
Red blood cells. RBCs or erythrocytes without a nucleus are filled and hemoglobin, which is a protein capable of capturing and releasing oxygen.

White blood cells. The white blood cells may have phagocytic function (as the types neutrophils, eosinophils and monocytes), function to produce antibodies (lymphocytes do) or producing vasodilators (basophils do).

Platelets. Platelets are fragments of cytoplasm containing a substance that initiates blood clotting.

http://www.youtube.com/watch?v=9_q6o_7CT_U





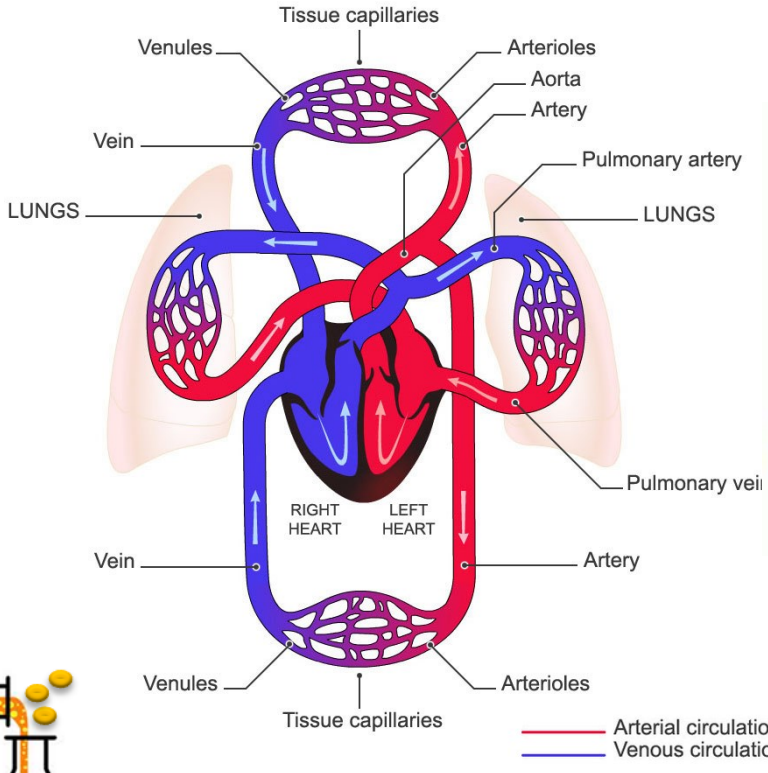
Blood vessels. There are three different types called arteries, veins and capillaries.

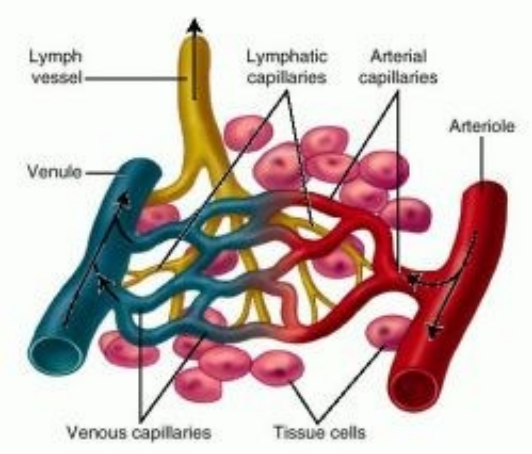
Arteries. They are the vessels that carry blood from the heart to other parts of the body. They are elastic thanks to having a thick middle muscular layer. All of them, except the pulmonary artery carry blood rich in oxygen.

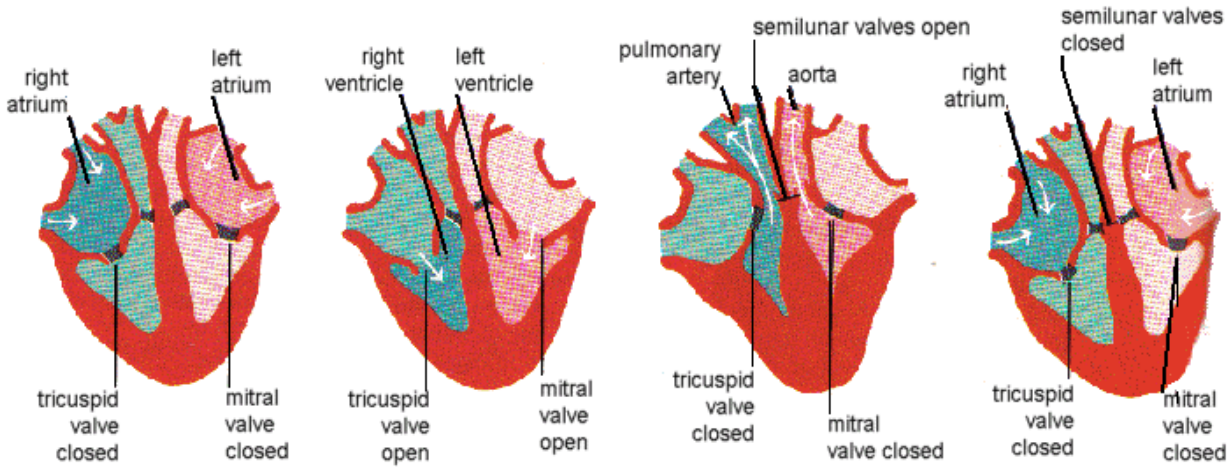
Veins. They are the vessels that carry blood to the heart. They are very elastic. For this they need to have internal valves to prevent backflow of blood. All of them, except the pulmonary vein carry blood low in oxygen.

Capillaries. They are extremely thin vessels, caused by successive branching arteries and veins connecting the end of the arteries with the principle of the veins. The walls are so thin that allow the exchange of gases in the lungs, the input of nutrients in the intestine and out of the products of excretion in the kidneys.

The circulatory system. The set of all blood vessels are a double circulatory system and complete. It is called double because they buy two circuits, which are the pulmonary and general. Full name is in the heart why there is no mixing of oxygenated and deoxygenated blood, namely oxygenated blood passes through the left side of the heart and passes Unoxygenated the right.



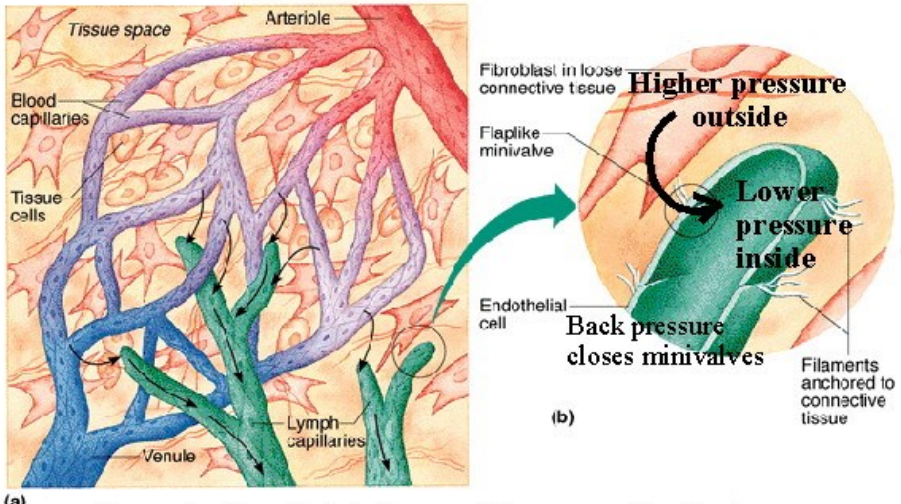




The lymphatic system. Is constituted by the lymphatics and lymph nodes. The liquid called lymph. The lymphatics are blind, ie no outlet. On its walls absorb some of the interstitial fluid and lead to blood vessels.

The lymphatic system has three functions:

Blood returning a large portion of the plasma due to the pressure is out of blood capillaries.
Transport fats absorbed in the intestine preventing blood does not come with too much fat to heart.
Antibodies. Lymph node cells are generated which produce antibodies. The main lymph nodes in the neck, armpits and in English. The inflammation is a symptom of getting an infection.



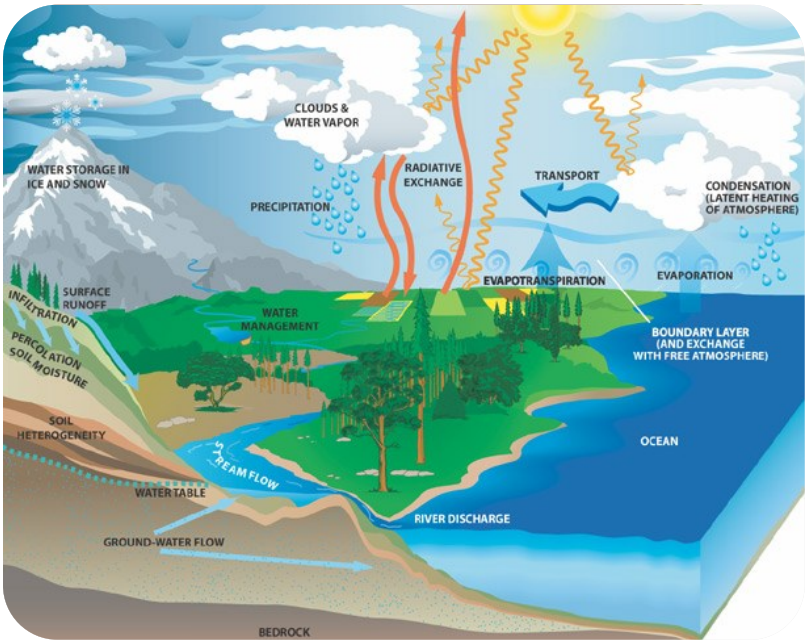
Water

Water is the primary and essential component of the human body. Human beings can not be without drinking more than five or six days without endangering his life. The human body has 75% water at birth and about 60% in adulthood. Approximately 60% of this water is in the interior of the cells. The rest is the blood flowing in and bathes the tissues.

For energy in combustion reactions of nutrients takes place inside the cells will produce small quantities of water.
The water produced in cellular respiration is called metabolic water, and is essential for animals adapted to desert conditions. If camels can withstand months without drinking is because they use the water produced by burning the accumulated fat in their humps. In humans, metabolic water production on a normal diet is as little as 0.3 liters per day.

As shown in the following figure, the body loses water through different pathways. This water must be recovered by offsetting losses with intake and thus preventing dehydration.

The Water Cycle



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As shown in the following figure, the body loses water in various ways. This water has to be retrieved offsetting losses to the intake, thereby avoiding dehydration. http://www.youtube.com/watch?v=0VuabmeLa4I

Properties of water

Solvent action

It is called the universal solvent as the liquid dissolves more substances. This property, perhaps the most important for life, is due to its ability to form hydrogen bonds.

The solvent capacity is responsible for that is the medium where metabolic reactions occur. http://www.youtube.com/watch?v=rvld4fkePiE

High cohesive strength

Hydrogen bonding of water molecules held tightly together, forming a compact structure makes it almost incompressible fluid. Unable to compress may work in some animals as a hydrostatic skeleton.

Large specific heat.

This property is related to the hydrogen bonds formed between the water molecules. The water may absorb large amounts of "heat" used to break the hydrogen bonds so that the temperature rises slowly. This allows the aqueous cytoplasm serve as protection against temperature changes. This keeps the temperature constant.

High heat of vaporization.

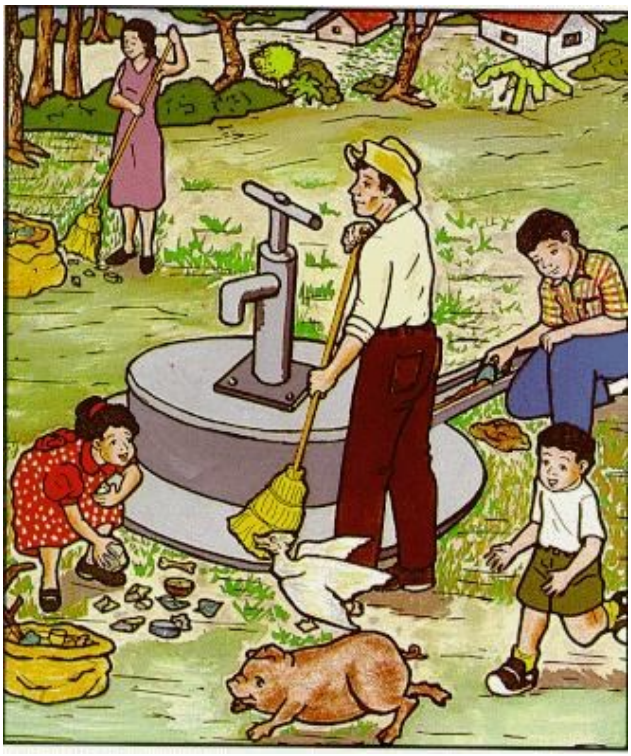
Hydrogen bonds are responsible to evaporate the water, you must first break the bridges and then give water molecules enough kinetic energy to pass from the liquid to the gaseous phase.
Gram to evaporate water 540 calories are required at a temperature of 20 ° C and 1 atmosphere pressure.

The importance of water

http://www.youtube.com/watch?v=l67HwLegDLE

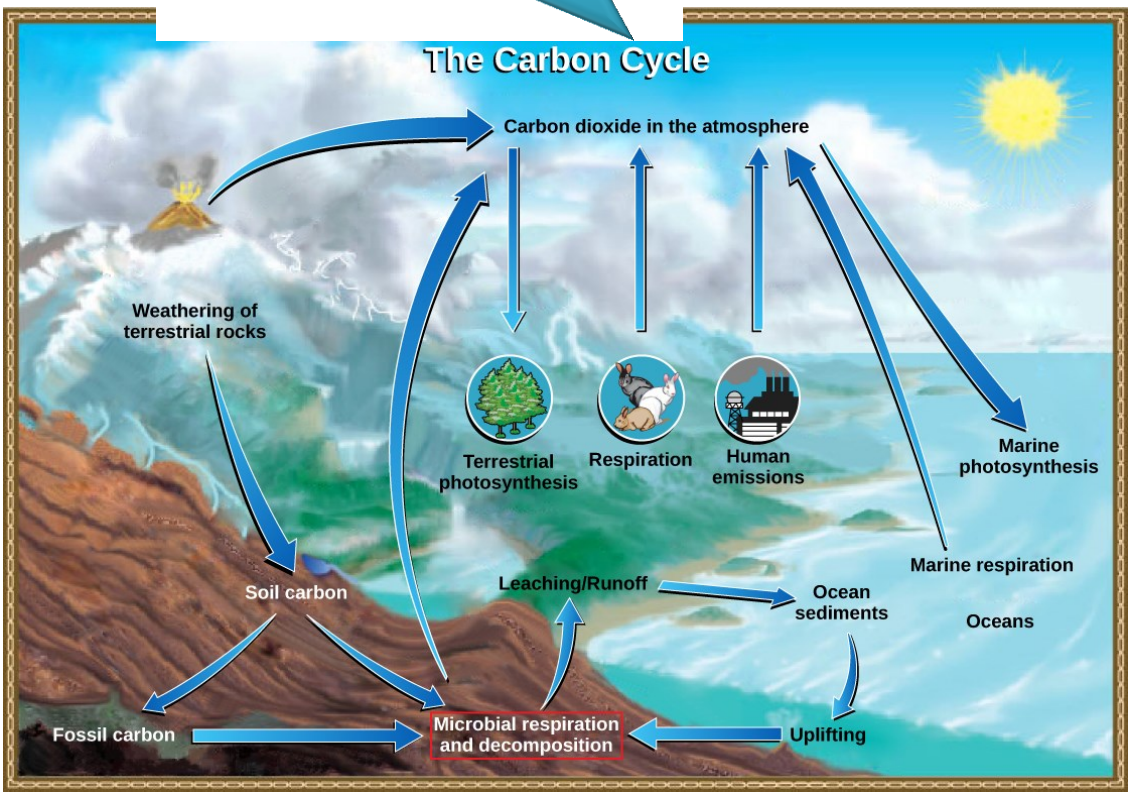
Water is necessary for the life of humans, animals and plants. An important part of the wealth of a country, so we must learn not to waste it.
We all know that water is essential to life and that if we fail to take die in a few days.

70% of our body is water, find water in the blood, saliva, inside of our cells, between each of our bodies, in our tissues and even bones.



Air

Is a mixture of gases constituting the atmosphere.



Physical and Chemical Properties of Air

Physical Properties

- Is lighter than water.
- It is less dense than water.
- Volume has undefined.
- Not exist in a vacuum.
- It is colorless, odorless and tasteless.

Chemical Properties

- Reacts with the condensing temperature on ice at low temperatures and produce air currents.
- This consists of various elements including oxygen (O2) and carbon dioxide basics for life.

The atmosphere

The atmosphere is a mixture of nitrogen (78%), oxygen (21%), and other gases (1%) surrounding the Earth. High above the planet, the atmosphere becomes more thin until it gradually reaches space. It is divided into five layers.
http://www.youtube.com/watch?v=L2hHqETPD1Y

The Troposphere

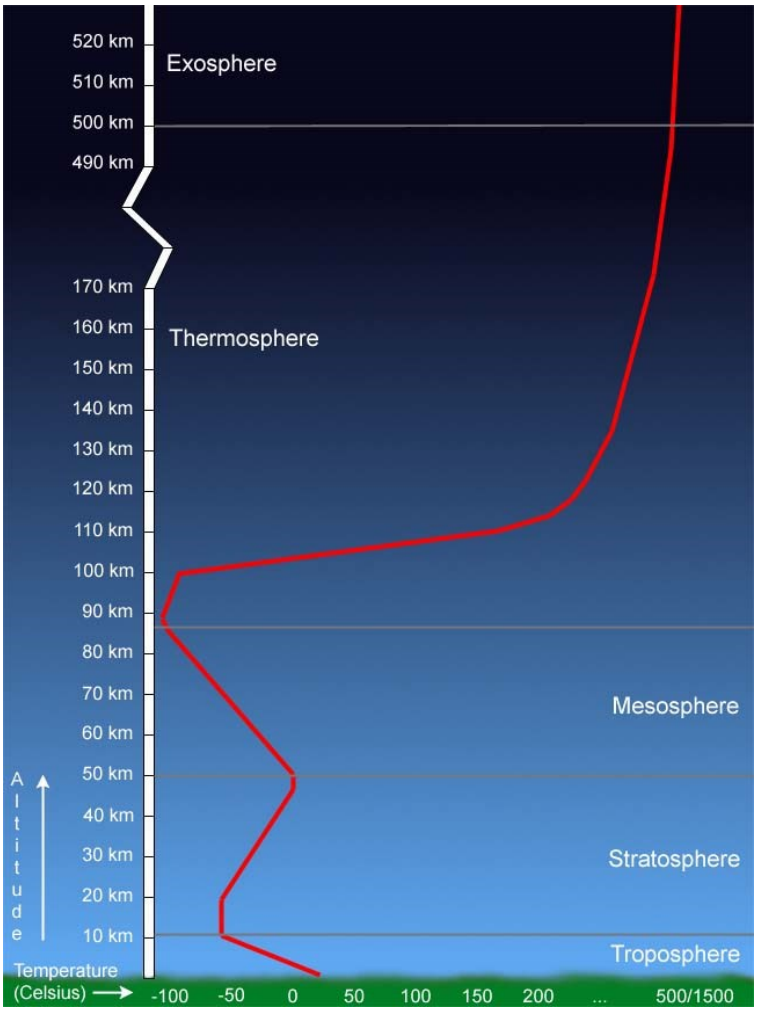
Is the bottom layer (closest to the surface) of the Earth's atmosphere. As it rises, the temperature decreases in the troposphere.

In the troposphere occurring phenomena that make up what we call time.

The Stratosphere

Is the second layer which forms the atmosphere of the Earth. With increasing temperature, ozone causes the temperature to rise as it absorbs the sun's harmful light and converts it into heat. An interesting feature of this layer is the disappearance of upwelling and the decreased concentration of water vapor.

The stratosphere is above the troposphere.



The Mesosphere

The third layer is there the temperature decreases as it rises, as in the troposphere. It can be up to -90 °C. It is the coldest area of the atmosphere!

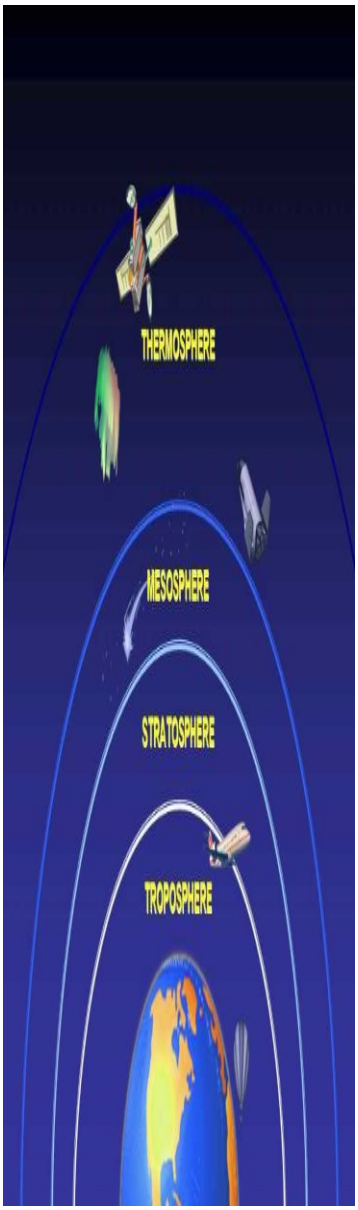
The Thermosphere

Is the bottom layer (closest to the surface) of the Earth's atmosphere. As it rises, the temperature decreases in the troposphere.

In the troposphere occurring phenomena that make up what we call time.

The exosphere

It is the last layer of the atmosphere in this area is where the atoms escape into space.

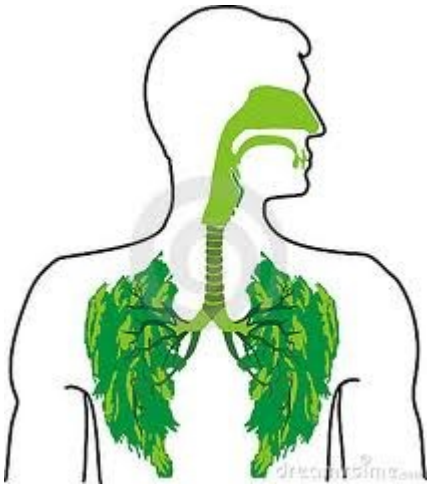


Ozone layer

Ozone is formed from molecular oxygen by absorbing ultraviolet light from the sun. This reaction is reversible, ie ozone returns to its natural state oxygen. This oxygen is converted back into ozone, resulting in a continuous process of formation and destruction of these compounds.

Ozone is a gas which forms a protective layer of the earth, capable of filtering out the ultraviolet rays from the sun.
Each time we use deodorants, insecticides, adhesives, etc.. In jars Spray, we are contributing to the destruction of the ozone layer. These products contain CFCs are substances that deplete the ozone layer. The destruction of this layer allows the passage of as many rays to the earth, and that can cause increased skin lesions, cataracts, premature aging, immune system damage and even cancer in humans. In plants, sunlight and, therefore, the development of the plant is affected. Families could be responsible for 50% of this problem by the daily consumption of products containing CFCs Spray.

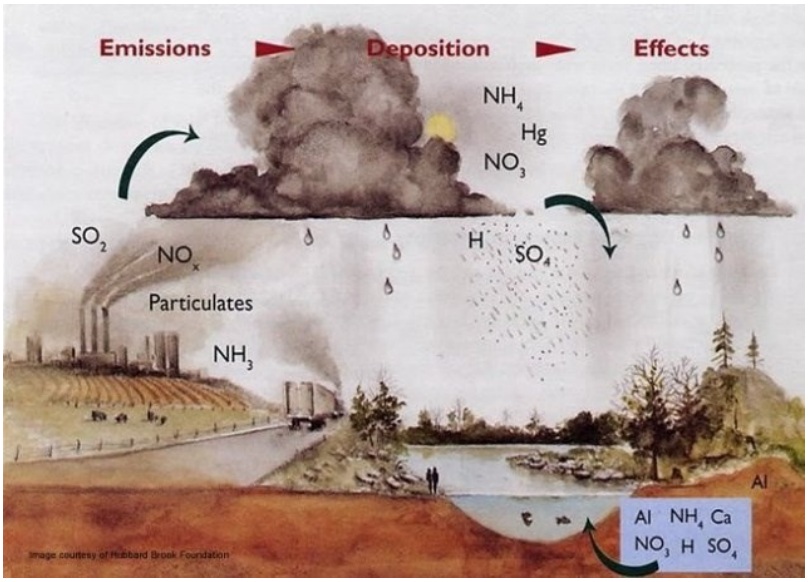
Clean air



Clean air and pure forms a layer about 500 000 million tons that surrounds the Earth.

Main effects of air pollution

- *Health: Irritation of the respiratory tract, its accumulation in the lungs causes diseases such as silicosis and asbestosis. Aggravate asthma and cardiovascular disease.*
- *Materials: Impairment of construction materials and other surfaces.*
- *Vegetation: Interfere in photosynthesis.*

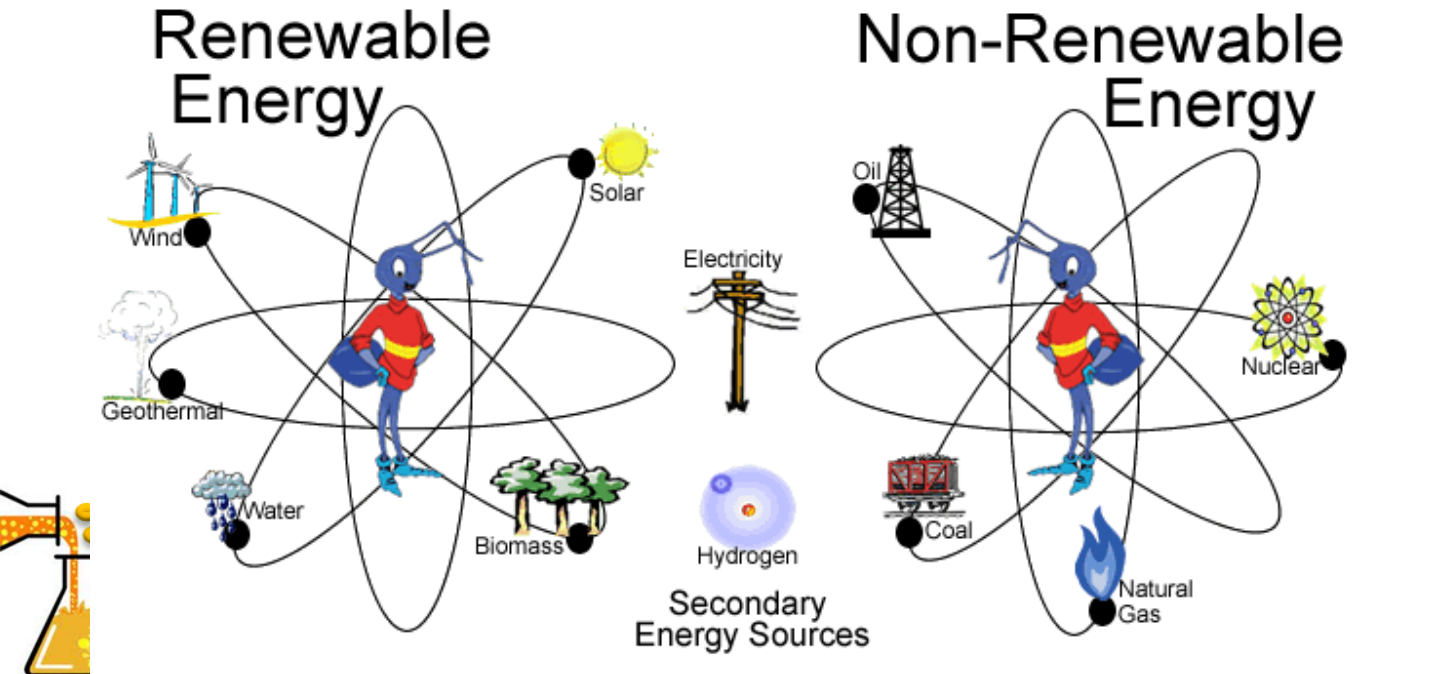


Natural resources

Living things can be organized or classified in many ways. The features that we consider to organize living things into different groups is called classification criteria. A classification criterion may be the size, another may be the environment they live and kingdom it belongs to.

http://www.youtube.com/watch?v=4wiKrZY5GVw

1) Perpetual resources: The resources which do not get exhausted are called perpetual natural resources. For example solar energy, water tides and wind.
2) Renewable natural resources: The resources which can be replenished and do not change the ecological balance are known as renewable natural resources. Fresh air, fresh water, fertile soil, plants and animals are its examples.
3) Non-renewable natural resources: Resources while once used up will be exhausted are non-renewable natural resources. Once they are used in ultimate way they can not be replaced. Minerals, fossil fuels, are its examples.

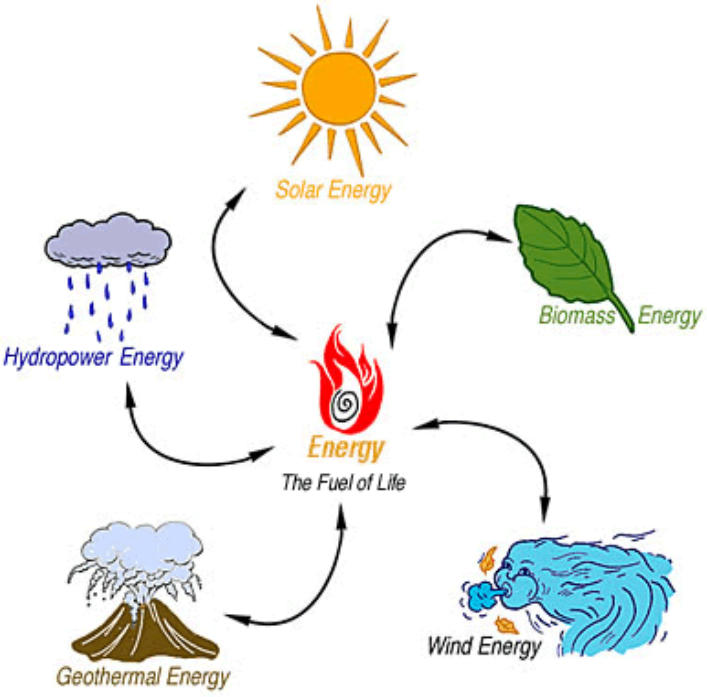


Renewable Resources

Renewable resources are those resources whose existence is not limited to use, because they return to their original or regenerated at a rate greater than the rate at which renewable resources are diminished by their use. This means that certain renewable resources may cease to be if your utilization rate is so high that prevents its renewal. Within this category we find the water resources and renewable biomass. Some renewable resources are classified as perpetual, because for more intense use it is not possible depletion. Within this category are renewable resources hydropower, solar radiation, wind and waves.

List of important renewable resources:

- Biomass: wood forests, agriculture products.
- Hydropower (can be hydro).
- Solar Radiation
- wind
- surf
- Geothermal Energy
- Fish



http://www.youtube.com/watch?v=ze8a6bbuDT4

Inexhaustible (perpetual) natural resources: correspond to those resources that are always present and are generated alone. For example: landforms like mountains and meadows, the sun, the air, water, etc..

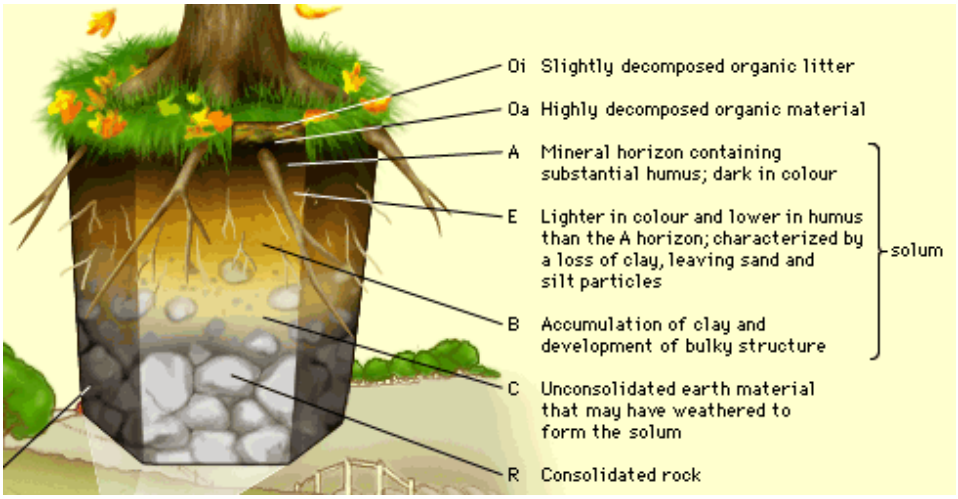
- **Air:** It is a mixture of gases. The most important are oxygen and carbon dioxide.

  Oxygen is the gas that we breath, it is essential for our life, the life of plants and animals. Is carbon dioxide which is eliminated during breathing.

- **Water:** It is a substance that is present in nature in liquid, solid and gas. It is very important because it is used in the home, industry, livestock, agriculture, navigation and power generation.

- **Soil :** Is a thin layer covering the surface of the earth. This consists of clay, sand, minerals and remains of living organisms in decomposition. In soil grow and nourish the plants, plus small living beings like the mole, earthworms, worms, etc..

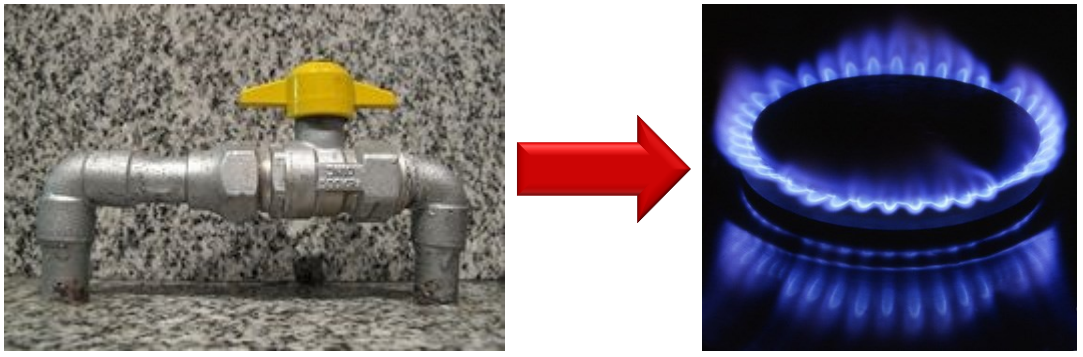
Each region of the country has a diverse range of renewable and nonrenewable resources among which are: agricultural resources, fisheries, livestock, mining, among others.



Nonrenewable resources

Non-renewable resources or fossil fuels (oil, coal and natural gas) are an energy reserve, which is the result of millions of years of decomposition and storage of plants and animals, which were transformed into those elements through complicated processes .

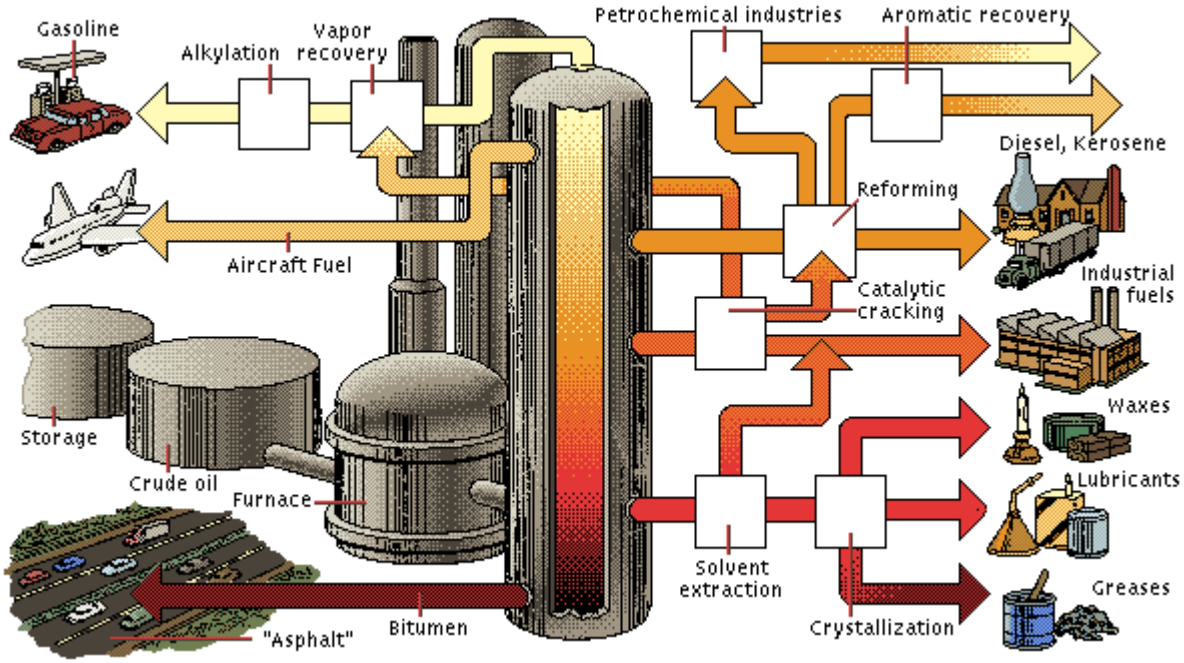
Natural gas. Natural gas is lighter than air and is composed mainly of methane, a highly flammable gas, it is a simple chemical compound of carbon and hydrogen atoms. CH4 chemical formula, which means that each molecule of methane contains one carbon atom and four hydrogen atoms. Methane has a bad odor and therefore it is also called "swamp gas."



Oil. In order to find and extract oil and natural gas drilling off the land is located on bedrock deposits at great depth, in which many millions of years ago were deposited layers of vegetation and animal remains. Recall that this subject matter or energy is stored food by plants through the process of photosynthesis, and through complex changes, the remains of plants and animals became oil and natural gas.

Refineries. After removing the oil from wells, the "raw" is stored in large tanks to be sent, for example, oil tankers to other countries, or through pipelines to refineries, where it is converted into gasoline, diesel and other fuels for aviation, shipping, boilers, power plants, etc..

However, it is very important to know that oil can be converted into other useful products for humans, such as fertilizers for agricultural crops, synthetic fibers for making clothing, plastics and many other applications.



The resources are transformed

The metal industry, metal ores transforms (such as iron, aluminum, copper ...) into basic elements (bars, ingots, slabs, beams ...) which are used by other industries such as the construction.

Heavy chemical industry, working with raw materials such as coal, oil, minerals ... and turn them into finished products such as fuels, acids, among others.

Take care of natural resources

Everything we have is due to naturally occurring resources. In fact, even those most sophisticated elements have their primary origin in nature.
Therefore, they run on these resources disappear products we use for our everyday living.

Having land deforestation, soil takes to dry and thus more prone to suffer the effects of wind, a process of erosion. Because of erosion, Brazil lost 500 million tons of land per year.
Consequently, agricultural production decreases while the number of mouths to feed increases.
Finally the water resource is disappearing, especially freshwater. According to a report published in 2002 there are more than one billion humans without access to clean, drinkable water.

Waste and environment

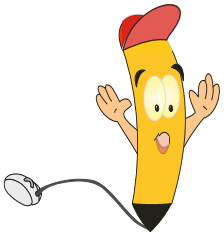
Trash

Are all waste produced in homes and, in general, establishments or places where man does business, producing waste shells, plastic, paper, bottles, bones, rags, cartons, etc..

The collection and inadequate disposal of waste allows the development of insects that feed her man producing some diseases such as typhoid, paratyphoid, amebiasis, infant diarrhea and other gastrointestinal diseases.
When garbage accumulates in a landfill are formed that cause discomfort to people, generating odors, becoming breeding of flies, cockroaches, mice and polluting water sources, soil and air in general.

The garbage that is dumped in the open cause deterioration in the environment and affect the health of the population contaminating the water, soil, air, producing odors and allowing the proliferation of insects and rodents that cause disease in humans.

You know...



Each year, worldwide industries released into the atmosphere 24 billion tons of CO_2, of which only half the sea absorbs and plants

Waste sorting

The wastes consist of elements or substances which decompose (biodegradable) and others that do not decompose.
Biodegradable substances are organic residues which are easily decomposed, such as food scraps, shells, fruits, etc..
It should be stored in sealed containers or bags to prevent the breeding of insects and rodents.
Organic waste can be used as fertilizer or food for some animals.
The substances do not decompose, biodegradable or not, are mineral residues or the result of chemical processes that do not break down easily as plastic, glass, cans etc.

Trash pollutes

In 1982 there were approximately 48,000 tons of garbage daily in the country. In Mexico City gathering involved an expenditure of $ 75,000,000.00 and it is estimated that by the year 2000, to continue the current rate of waste generation, will produce 100,000 tons of garbage a day. The trash in our city is composed of different materials: plastics, metals (iron, aluminum, etc.), glass (non-returnable), organic (food and yard waste), textiles and others.

One ton of garbage, is what throws a year a family of four members, among which are included hazardous wastes represent 1% of the total, or 10 Kg statements. From this no one likes to talk, but it happens that we are producing garbage than any other living being can use.

Numerous products for domestic use, once used, or the end of their useful life become hazardous waste, both in composition, as their handling, treatment and disposal can lead to the most diverse environmental conditions, with consequent damage to the human health.