

OUR CARBON FOOTPRINT

The Purpose Of The Activity:

Realizing the importance of sources necessary for living and the importance of recycling. Discovering the concept of global warming. Gaining awareness of our own carbon footprint.

Theme Beyond Disciplinaries:

Sharing The Planet



TUNING IN

Let's arouse curiosity!



FINDING OUT

What Should Little Science People Discover?



SORTING OUT

Let's Start Discovering!, Scientific Explanation For The Curious, Video



GOING FURTHER

What else can we do? ?



TAKING ACTION

Question Of The Day?



MAKING CONCLUSIONS

Activity Pages, Exit Card



INQUIRY CYCLE

OUR CARBON FOOTPRINT

Let's Arouse Curiosity



Students are directed the following questions:

- How old do you think the world is?
- What is environmental pollution? What causes environmental pollution?
- If our feet number grew when we used natural sources senselessly, what would your number be?

They are asked "One of the biggest problems these days is environmental pollution. One of the main reasons for environmental pollution is the increase in population. The increase in human population brings urbanisation, vegetation to be ruined, fast consuming alongside. In the meantime greenhouse gases used also pollute the environment. So what can we do for a clean environment? Should we discover it together?" They are asked to take out the activity materials and examine them.

Let's Start Discovering!

The activity video is watched by pausing. The content of the set is checked before proceeding with the activity. All the lid and package opening stages are done simultaneously with the students.

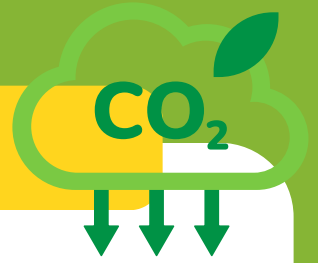
Watch The Video By Pausing!



Content Of The Set

- | | |
|--|--|
| <input type="checkbox"/> Our Carbon Footprint template | <input type="checkbox"/> "Indicator template |
| <input type="checkbox"/> 1 yellow footprint label | <input type="checkbox"/> Pinching/tweezer pushpin |
| <input type="checkbox"/> 1 green footprint label | <input type="checkbox"/> "Recycling Bins" activity sheet |
| <input type="checkbox"/> Footprint template | <input type="checkbox"/> "Have You Calculated Your |
| <input type="checkbox"/> Keychain | Carbon Footprint?" poster |

How Do We Do It?



1. Stick the yellow footprint label onto the footprint template.
2. Thread the keychain through the hole in the footprint template.
3. Place the indicator template over the “World Happiness Indicator” on the Our Carbon Footprint template.
4. Insert the pinching pushpin through the two holes and spread its legs to secure it.
5. Read and discuss the rules listed on the Our Carbon Footprint template.
6. On the left side of the template, the areas on the footprint labeled with factory, trash, packaged food, water, gasoline, etc., correspond to the green labels.
7. As the rules are followed, remove the sections from the green label and stick them onto the yellow sections on the keychain.

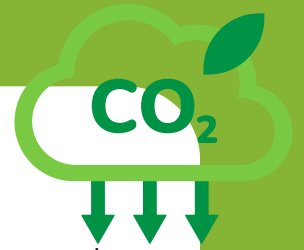
Example: When following the rule “Keep your environment clean and warn those who don’t,” remove the section labeled “trash” from the green label and stick it onto the corresponding yellow section on the keychain. As the footprint template becomes greener, rotate the “World Happiness Indicator” toward a happier world.

What Should Future Science People Discover?

Students are directed the following questions:

- What kind of an impact can using public transportation instead of a private vehicle have on future generations?
- Are there any harmful gases in the air we breath in?
- What are the benefits of recycling for living beings?



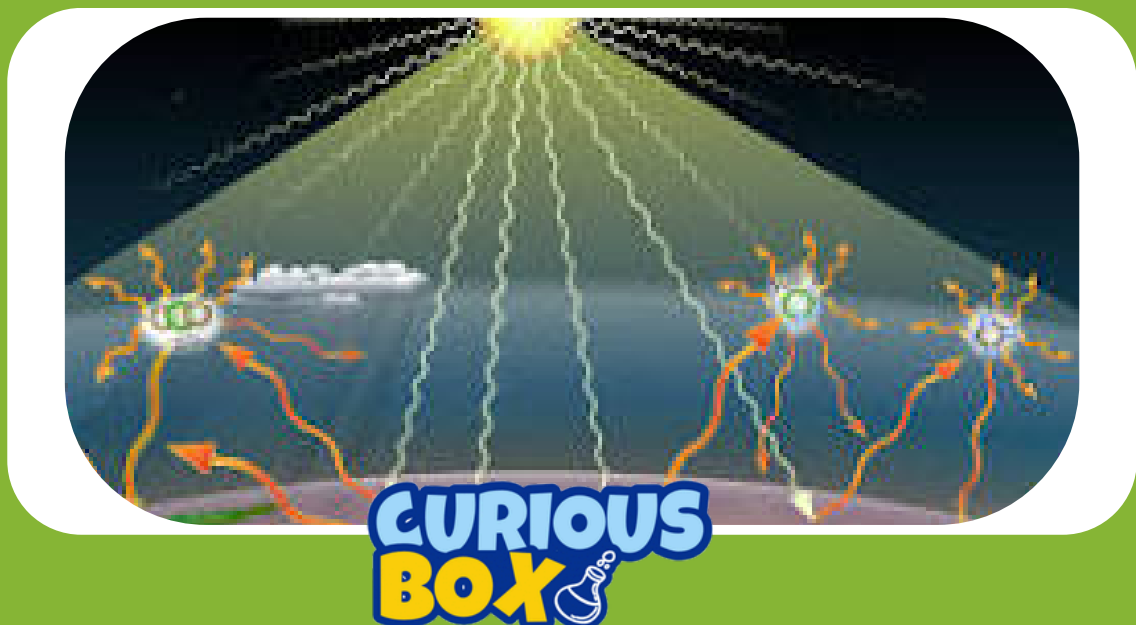


How do we distinguish substances?

The Earth which has been existing for approximately 4.5 billion years and located in the Solar system, is the only known planet to have water and life on it so far. So for 4.5 billion years, has there only been living creatures on Earth? No, living creatures have lived with non living things throughout history and used them when needed. Water, stone, electric, wood, air, fire can be given examples of non living things we use in nature. As the Earth got older, people have used these resources for basic needs like nutrition, shelter, clothing, and also for transportation, communication and many other needs with the developments in technology. This way while people consumed natural resources, they also produced and recycled. So do you think what people gave back to nature is more than what they received from it? If we have only consumed all the resources, could we have left a livable world for the next generations?

What is Carbon Footprint? Let's think about it...

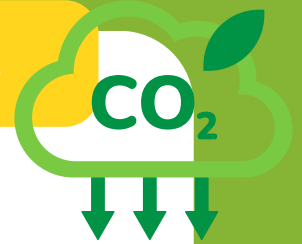
Carbon footprint is a measurement of the total amount of greenhouse gas released to the atmosphere by a person, institution or a country, by their direct or indirect activities, products, services, and energy consuming. Mostly it is stated in the form of carbon dioxide (CO₂) but other greenhouse gases can also be taken seriously. Water vapor (H₂O), carbon dioxide (CO₂), nitrous oxide (N₂O), methane (CH₄) ve ozon (O₃) are the main greenhouse gases. When there is enough amount of greenhouse gases some of the rays of sun can be kept on Earth and warm it. This is necessary for the Earth. But when the amount of greenhouse gases increase it detains heat and overheats the planet. This incident is called global warming.



What should we do to decrease the amount of carbon release?

- 1) We shouldn't run the water in vain.
- 2) We should throw materials like paper, glassy, metal, plastic etc... in recycling bins.
- 3) We should use public transportation, bicycle or by foot when going somewhere.
- 4) We should throw waste oils in recycling boxes.
- 5) We shouldn't use nonrenewable energy sources like coal and natural gas.
- 6) We should keep our environment clean and warn people who don't.
- 7) We should consume local and organic foods.
- 8) We should inform people around us about carbon footprint.

Scientific Explanation For The Curious



Students are directed the following questions:

- Which gases cause air pollution?
- What is carbon footprint to you?

The Earth is the only planet us and other living creatures live on. All places from rain forests to oceans, deserts to lakes, mountains to running waters can be home to living creatures on Earth. Living beings are always in communication with their surrounding environment. The science branch which examines the interaction between living creatures with each other and with the environment is called ecology. We need ecology science to get to know the living creatures on Earth and to live in harmony with them and to learn how to treat our environment.

With the rapid population growth, developing technology and increasing industry, the use of natural resources like coal, natural gases and petrol have climbed. As a result of this gases like carbon dioxide, nitrogen dioxide and sulphur dioxide have caused air pollution in the atmosphere. Air pollution is a very serious environmental problem. Because air pollution brings problems like acid rains and global warming alongside.

Due to this reason it becomes impossible to leave a clean and livable world for the future generations. In order to maintain the natural balance on Earth, natural resources should be used sensibly. Besides for living creatures to maintain their lives natural resources should be used in the right manner and these resources should not be harmed.

According to World Protecting foundation if we keep using natural resources at this speed we are going to need a resource which can be acquired from a space double the size of Earth in the 2030s to keep living in the same standards we do now. In other words we are going to have to move to another planet.

The carbon amount released into the atmosphere as the result of each person's activities like energy consuming, transportation, heating and nutrition is called carbon footprint. Every person's carbon footprint differs from each other according to the ways in which they feed, transport and consume energy. The biggest share in calculating carbon footprint are industrialization, the use of fossil fuel, husbandry, waste materials, and habits and actions people demonstrate in their daily lives.

Researches show that for our planet's ecosystem to get back on its feet, carbon dioxide release should at least be cut in half. It's possible to shrink our carbon footprint with individual efforts and without changing our life style dramatically. We should make an effort to decrease our carbon footprint and be respectful to natural resources. First of all we should review our consumption habits.

What should we do to decrease our carbon footprint?

- In order to decrease the use of fossil fuels, we should use planes and private vehicles less and instead use public transportation, bicycle use and walking more.
- Dependence on fossil fuels should be decreased and renewable green sources like the sun, wind, rain and geothermic energy should be used.
- Houses should be installed with solar panels or we should live in places which use solar panels.
- Devices not being use at the moment should be closed and unplugged at home.
- Power saving lightbulbs which prevent energy to be used in vain should be preferred.
- Laundry and dish machines shouldn't work unless they are filled enough.
- Electronic devices used for different needs should be purchased enough to meet necessary needs.
- The consumption of bovine meat and poultry should be less and vegetable consumption should increase instead because natural resources are used during their production period and energy consuming is too much and that causes carbon dioxide release.
- In order to save energy during transportation local and organic foods should be preferred.
- In order to decrease the amount of food waste, we should only consume as much as we need.
- Paper, glass, packaging, bottles etc... should be distinguished and should be contributed to nature as sustainable energy and productivity.
- We should plant saplings in order to increase green plants and trees which take in carbon dioxide and turn it into oxygen.
- Common living areas like streets, avenues, cities, sea, coast etc... should be kept clean.



What Else Can We Do?

Dear Teacher,

You have learned carbon footprint and discussed what can be done to decrease the amount of footprint we leave behind with the future science people. Also you can talk about “plastic footprint” by using the method reverse brainstorming.

Plastic footprint is a measurement that represents the amount of plastic waste that comes out with the production of plastic products, use of plastic, consumption of plastic, and waste management done by a person, an organization or a country.

Warm Up Before The Activity

- Students are informed about “plastic footprint.”
- Students are asked about their thoughts regarding the plastic types for “plastic footprint” which can stay in our planet without dissolving for years, what are plastics that are used in our daily lives.
- Students are grouped according to class population.
- Groups are asked to prepare a poster about “plastic footprint.”
- Groups debate “plastic footprint” among each other.

During The Activity

- Students are asked to do division of labor for matters like the design of the poster, pictures, photographs and informing.
- After the necessary spadework is done, students design their poster in class.
- After finishing the posters they are asked to present it in class. The class is given feedback.





They are told “ Today we have discussed important topics like carbon footprint, global warming, greenhouse gases and living environments of living creatures, Science people, we have great responsibilities for the future generations. We should implement what we have learned to our daily lives and should inform people around us.

Do we have a deal?” The exit card will be done at the end of the activity.

EXIT

Question Of The Day



Are there any other footprints than carbon footprint? If so, what are those?

**Write three things you
have learned today.**



**Write two things you would
like to learn more about.**



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