

1

# WHO KNOWS CARD QUESTIONS



**1/ The sun is:**

- A star     A planet
- 

**2/ The sun sends us** (several correct answers)

- Light     Energy     Fire     Warmth     Rain
- 

**3/ Does the sun revolve around the Earth?**

- Yes     No
- 

**4/ The ozone layer protects us from dangerous UV radiation that comes from:**

- The sun     Space     The moon
- 

**5/ Plants make their own food out of**

(several correct answers)

- Water     Vegetables     The sun's light     Air     Bugs
- 

**6/ To make carbohydrates, plants need**

(several correct answers)

- Carbon dioxide     Hydrogen     Oxygen
- 

**7/ Which vitamin does our skin produce thanks to the sun?**

- Vitamin A     Vitamin C     Vitamin D
- 



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# 1

## WHO KNOWS CARD

# ANSWERS

**1/** The sun is a star at the centre of our solar system. Nine planets orbit (or revolve) around the sun, including the Earth we live in. This star is essential to all life on Earth.

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**2/** The sun sends us light, warmth and energy.

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**3/** No. When we look at the sun in the sky, it seems to turn around us. But in reality, it is the Earth that revolves around the sun.

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**4/** The ozone layer protects us from the dangerous UV radiation contained in the sun's light. UV radiation comes from the sun.

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**5/** Plants grow through a process called photosynthesis. They use water, air and sun's light.

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**6/** To make carbohydrates (a kind of sugar), plants need carbon dioxide from the air and hydrogen from water. They release the oxygen left from water molecules in the air.

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**7/** Thanks to the sun, our skin can produce Vitamin D, which is good for our growth as vitamin D helps make our muscles and bones strong.

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# 2

# WHO KNOWS CARD QUESTIONS



**1/ The ozone layer is low in the sky and we can see it**

True    False

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**2/ In the upper atmosphere, ozone is called:**

Stratospheric ozone    Tropospheric ozone

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**3/ What does the ozone layer protect us from?**

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**4/ The ozone layer is made of:**

Oxygen    Hydrogen    Ozone

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**5/ How many oxygen atoms are contained in one ozone molecule?**

One    Two    Three

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**6/ What do the following signs refer to?**

O    O<sub>2</sub>    O<sub>3</sub>

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**7/ What is tropospheric ozone?**

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# 2

## WHO KNOWS CARD ANSWERS

**1/** False. The ozone layer is high in the sky, located in the stratosphere. We cannot see it, ozone is an invisible gas.

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**2/** In the upper atmosphere ozone is called 'stratospheric ozone' because it is located in the stratosphere (15 to 50 km / 10 to 30 miles above the Earth).

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**3/** The ozone layer protects us from the dangerous UV radiation of the sun.

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**4/** The ozone layer is made of ozone that is a kind of oxygen (three oxygen atoms bound together, written O<sub>3</sub>).

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**5/** 3 oxygen atoms bound together are needed to form an ozone molecule.

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**6/** O refers to an oxygen atom, O<sub>2</sub> refers to an oxygen molecule and O<sub>3</sub> refers to an ozone molecule.

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**7/** Tropospheric ozone is ozone found in the lower atmosphere, at ground level. Tropospheric ozone is dangerous for our health, it is a strong pollutant that can cause shortness of breath, lung disease, asthma.

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3

# WHO KNOWS CARD QUESTIONS



1/ What is the meaning of 'UV' in 'UV rays'?

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2/ Can we see or feel UV rays?

Yes     No

---

3/ Can UV rays reach us when there are clouds in the sky?

Yes     No

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4/ Why are UV rays dangerous for us?

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5/ Does UV radiation affect us on the long run?

Yes     No

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6/ How many categories of UV rays exist?

4     10     3

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7/ 'UV rays' is a synonym for sunlight

True     False

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# 3

## WHO KNOWS CARD ANSWERS

**1/** 'UV' is a short way to say 'ultraviolet'

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**2/** No. We cannot see or feel UV rays. UV radiation is a component of sun's light but it is invisible.

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**3/** Yes. UV rays can reach us when there are clouds in the sky. Only dark and rainy clouds can absorb a significant amount of UV rays.

---

**4/** UV rays are dangerous for our health. They can hurt and penetrate deep inside our skin and our eyes, they can also affect our immune system. Exposure to UV radiation can cause health problems today (sunburns, eye irritation) and later in life (skin cancer, cataract).

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**5/** Yes. Exposure to UV radiation also affects us on the long run; the bad effects of the sun are cumulative and they can cause serious health problems in the future.

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**6/** There are 3 categories of UV rays: UV-A (the less strong that are not filtered by the ozone layer), UV-B (strong and dangerous because not all filtered by the ozone layer) and UV-C (extremely strong but all filtered by the ozone layer).

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**7/** False. 'UV rays' is not a synonym for sunlight but UV rays are contained in the sunlight even though we cannot see them.

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4

# WHO KNOWS CARD QUESTIONS



**1/ At what time of the day is UV radiation at its highest?**

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**2/ Why is UV radiation higher in summer?**

- The sun is high in the sky and UV rays have a shorter distance to travel to reach us
  - There is less ozone in the atmosphere
  - The sun is particularly busy in summer
- 

**3/ What are the surfaces that reflect and increase UV radiation? (several correct answers)**

- Sand
  - Wood
  - Water
  - Stone
  - Snow
- 

**4/ When is UV radiation at its highest in our region? Which months?**

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**5/ Where is the Equator?**

- In the northern part of the Earth
  - In the southern part of the Earth
  - Between the northern part and the southern part of the Earth
- 

**6/ In October, why is the UV Index very high in Rio de Janeiro and very low in Paris?**

- Because it rains in Paris
  - Because Rio de Janeiro is in the southern part of the Earth and Paris is in the northern part of the Earth.
  - Because Rio de Janeiro is in South America and Paris is in Europe.
- 

**7/ Is the UV Index about the weather?**

- Yes
  - No
-



4

# WHO KNOWS CARD ANSWERS

**1/** UV radiation is at its highest between 10am and 4pm.

**2/** The sun is high in the sky and UV rays have shorter distance to travel to reach us in summer or hot seasons. In Summer, the sun is more dangerous.

**3/** The surfaces that reflect and increase UV radiation are sand, water, snow.

**4/** Depends on your region.

**5/** The Equator is the imaginary line drawn around the planet halfway between the North and South poles. It is therefore between the northern part and the southern part of the Earth.

**6/** Rio de Janeiro and Paris have opposite seasons. This is because Rio de Janeiro is in the southern part of the Earth and Paris in the northern part of the Earth. October is a cold season, almost winter, in Paris while it is hot season in Rio de Janeiro. As UV radiation is higher in summer than winter, it is higher in Rio de Janeiro than in Paris in October.

**7/** No. The UV Index describes the level of UV radiation in order to tell us how dangerous it is to stay in the sun. It uses all the UV radiation factors that are the time of the day, the time of the year, location and even elevation. It also takes into account the weather, given that in some very specific weather conditions UV radiation can be partly absorbed by dark and rainy clouds.

# 5

# WHO KNOWS CARD QUESTIONS



**1/ Why is the ozone layer depleted?**

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**2/ Which products contain ozone depleting substances?** (several correct answers)

- Refrigerators    Motorbikes    Cars    Sprays  
 Ovens    Fire extinguishers    Pesticides
- 

**3/ What do we call the main ozone depleting chemicals?**

- FFCs    CCFs    CFCs
- 

**4/ What other ozone depleting substances do you know?** (several correct answers)

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**5/ When was the first ozone hole discovered?**

- 1985    1998    2005
- 

**6/ Where are the ozone holes located?**

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**7/ What do ozone layer depletion and global warming have in common?**

- Ozone layer depletion causes global warming  
 Global warming causes ozone layer depletion  
 Global warming may delay the ozone layer recovery
-



# 5

## WHO KNOWS CARD

# ANSWERS

**1/** The ozone layer is depleted because chemicals such as CFCs, halons and methyl bromide that are dangerous to ozone molecules are released in the atmosphere.

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**2/** Refrigerators, sprays, fire extinguishers, pesticides and cars with air conditioning systems can contain ozone depleting substances.

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**3/** The main ozone depleting chemicals are CFCs.

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**4/** The other main ozone depleting substances are halons and methyl bromide.

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**5/** A first ozone hole was discovered in 1985 over Antarctica. Since then, it has been forming each year during spring time when ozone layer depletion is at its highest. Another ozone hole, over the Northern pole, has also formed recently.

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**6/** The Southern ozone hole is located over Antarctica. It forms each year during springtime. There is also an ozone hole forming over the Northern pole. In addition, the ozone layer is getting thinner and thinner over many other regions of the world.

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**7/** Global warming may delay the ozone layer recovery.

---

6

# WHO KNOWS CARD QUESTIONS



**1/ What happens to our skin when it is exposed to UV rays?**

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**2/ What happens to our eyes when they are exposed to UV rays?**

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**3/ What is the function of the immune system?**

- To fight UV rays
  - To fight diseases (virus, infections)
  - To fight warmth
- 

**4/ What are the reasons for children being particularly at risk?** (several correct answers)

- They are smaller than adults
  - Their skin is thinner
  - Their skin is not prepared for the sun yet
  - They spend more time in the sun than adults
- 

**5/ Why is increased UV radiation dangerous for marine life?**

- Because fish gets skin diseases
  - Because it kills plankton that fish eats
  - Because it makes the oceans warmer
- 

**6/ What is 'melanin'?**

- A vitamin
  - A muscle
  - A coloured pigment
- 

**7/ Which part of the eye is affected by cataract?**

- Pupil
  - Lens
  - Iris
-



# 6

## WHO KNOWS CARD ANSWERS

**1/** When exposed to UV rays, our skin reacts. It produces melanin as a self-defence mechanism and consequently gets suntanned. When over-exposed to UV radiation, our skin is harmed and gets sunburnt. Later in life, exposure to UV radiation can lead to serious diseases such as skin cancer.

---

**2/** When exposed to UV rays, our eyes get hurt. They can be inflamed and later in life over-exposure to UV radiation can lead to a serious disease called 'cataract', which is the world's leading cause of blindness.

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**3/** The function of the immune system is to fight diseases (virus and infections) and help us recover from them. Exposure to UV radiation can affect our immune system.

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**4/** Children are particularly at risk when exposed to UV radiation because they are in a process of growth and their skin is thinner. They are also more at risk because they spend more time in the sun than adults: 80% of a lifetime exposure to UV radiation occurs before the age of 18.

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**5/** Increased UV radiation is dangerous for marine life because it kills planktons, which are the basic food supply for all marine life.

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**6/** Melanin is the coloured pigment our skin contains. When exposed to the sun, our skin naturally produces melanin to protect itself from its dangerous rays. Everybody's skin contains melanin but not the same amount: dark-skin contains more melanin than light skin. However, melanin does not protect efficiently against UV rays and everybody, regardless of skin types, needs additional protection.

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**7/** Cataract is a disease that affects the lens of the eye: the lens that lets the light in the eye loses its transparency, which can lead to blindness.

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# WHO KNOWS CARD QUESTIONS



**1/ What can you do for the ozone layer when you are back home?**

- Play football     Tell my parents about the ozone layer, why it is important to protect it and how they can do so.
- 

**2/ What are the common products likely to contain ODS?**

(several correct answers)

- Refrigerators     Ovens     Cars     Motorbikes  
 Spray cans     Fire extinguishers     Pesticides
- 

**3/ Why is it important to handle products with ODS with care?**

- Because they are fragile     Because if not handled with care, ODS can be released into the air and damage the ozone layer
- 

**4/ Products containing ODS are dangerous only when they are used**

- True     False
- 

**5/ Who can participate in the protection of the ozone layer?**

- The countries     The companies     Everyone
- 

**6/ Which agricultural products can be dangerous for the ozone layer?**

- Fertilizer     Pesticides
- 

**7/ What is the objective of the Montreal Protocol on Substances that Deplete the Ozone Layer?**

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# 7

## WHO KNOWS CARD ANSWERS

**1/** When you are back home, you can tell your parents about the ozone layer, why it is important to protect it and how they can do so. They can buy ozone-friendly products and handle used appliances likely to contain ODS with care.

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**2/** The most common products likely to contain ODS are: refrigerators, cars with air conditioning, spray cans, fire extinguishers, pesticides.

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**3/** It is important to handle products with ODS with care so that ODS cannot be released into the air and will not damage the ozone layer. Only mechanics certified to work with ODS should repair or recycle these products.

---

**4/** This is false. Products that contain ODS are always dangerous for the ozone layer, be they new or old.

---

**5/** Everyone can participate in the protection of the ozone layer. That includes countries and companies, but also ourselves.

---

**6/** Pesticides can be dangerous for the ozone layer when they contain methyl bromide. Methyl bromide is an Ozone Depleting Substance (ODS).

---

**7/** The objective of the Montreal Protocol is to gradually eliminate the consumption and production of ODS in all countries.

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# 8

## WHO KNOWS CARD QUESTIONS



**1/ At what time of the day is UV radiation the most dangerous?**

- From 8am to 10am     From 10am to 4pm  
 From 4pm to 8pm
- 

**2/ Is UV radiation high or low when your shadow is shorter than you?**

- High     Low
- 

**3/ What are the sun protection rules?**

(several correct answers)

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**4/ What is the best to protect us from UV rays?"**

- Caps     Hats with a wide brim
- 

**5/ Do shade trees block 100% of UV rays?**

- Yes     No
- 

**6/ What is the safest situation?**

- Under a tree with a hat and protective clothes  
 In the street in the sun with a short sleeved shirt  
 On the beach with sunglasses
- 

**7/ Some animals are active mostly during the night. During the day they sleep in shade, under the trees or the bushes. These animals are said to be:**

- Nocturnal     Diurnal
-



# 8

## WHO KNOWS CARD ANSWERS

**1/** It is between 10am and 4pm that UV radiation is at its highest and is the most dangerous. It is very important to wear protective clothes and to seek shade to safely enjoy being out.

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**2/** When our shadow is shorter than us it means that UV radiation is likely to be high and particularly dangerous. The smaller our shadow is, the more protection we need.

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**3/** Avoid staying in the sun without good protection during the peak hours from 10am to 4pm. Seek shade. Wear a hat and protective clothes. Wear sunglasses / put some sunscreen when possible.

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**4/** Caps do not offer protection as well as hats with wide brim do because they provide less shade to the head and neck.

---

**5/** No. Shade trees do not block 100% of UV rays but only 60%. It is however a very good and easy way to be protected from UV radiation.

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**6/** The safest situation is the first one: under a tree with a hat and protective clothes provide a very efficient protection from UV radiation for the entire body. On the contrary, short sleeved shirts are not protective enough, wherever we are. Sunglasses protect our eyes but on the beach, where UV radiation —reflected by sand and water— is particularly likely to be high, we need to seek shade and be fully protected with protective clothes and a hat.

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**7/** These animals are “nocturnal”. The word “diurnal” refers to animals that are active mostly during the day. Animals that are active during the day protect themselves from the sun: they seek shade, avoid the peak hours, some of them have hairs, shingles or feathers that protect them from UV rays.

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