

OZONE FOR LIFE



KEM KESEDARAN ALAM SEKITAR DAN
PERLINDUNGAN LAPISAN OZON

SAMBUTAN HARI OZON PERINGKAT
JABATAN ALAM SEKITAR
NEGERI MELAKA





OZONE FOR LIFE

*35 years of ozone
layer protection*

**16 SEPTEMBER
2020**



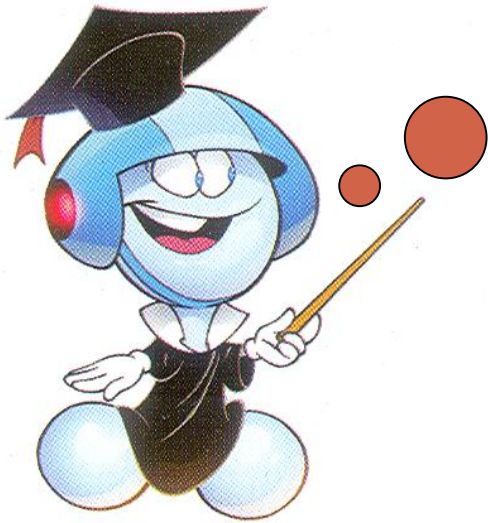
UN 
environment
programme
ozone
secretariat

 Vienna Convention
MONTREAL PROTOCOL

healthy ozone layer to
protect us and our
environment

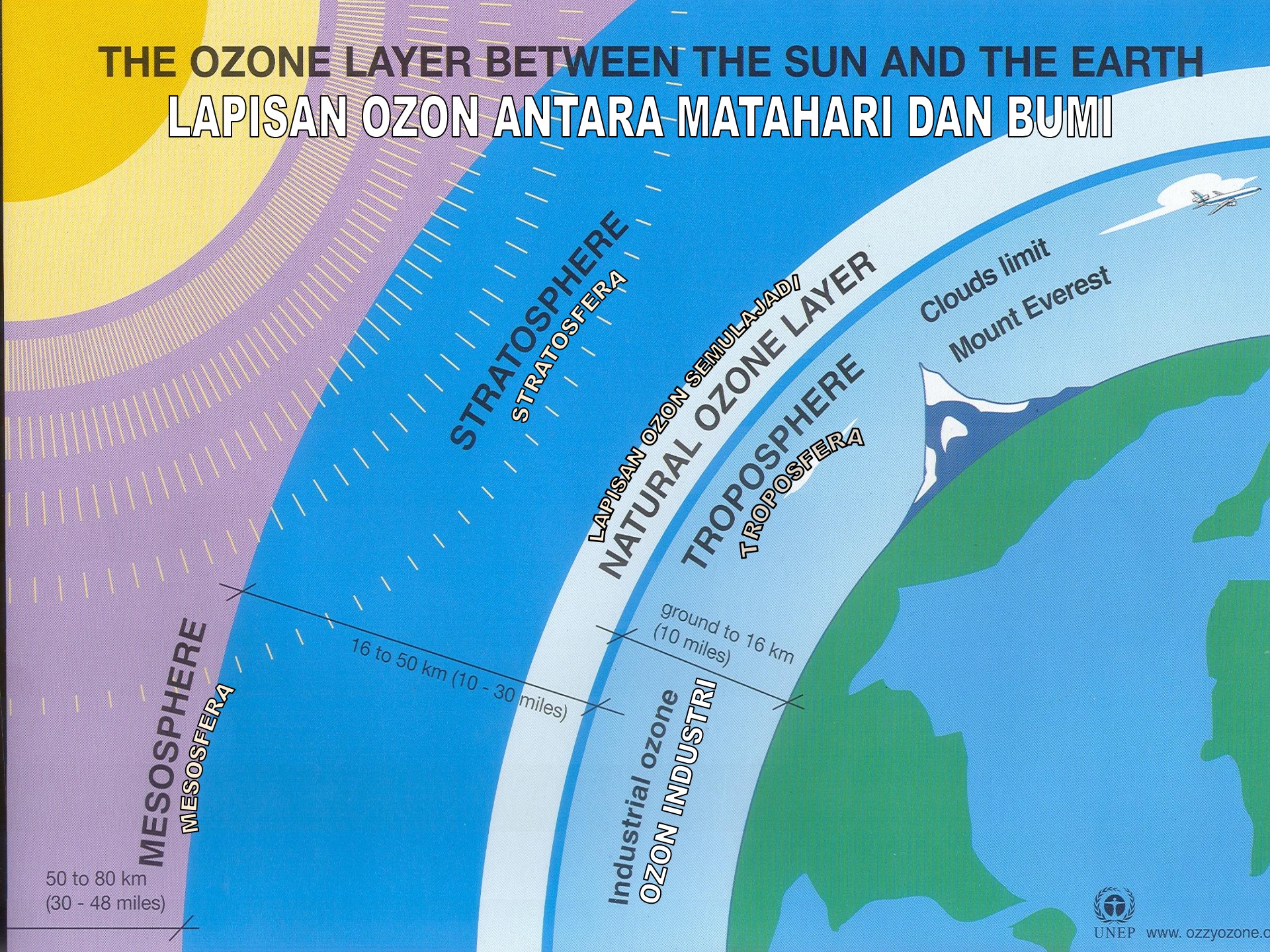
need to safeguard this
for future generations

**APA ITU OZON?
DI MANA LETAKNYA LAPISAN
OZON?**



THE OZONE LAYER BETWEEN THE SUN AND THE EARTH

LAPISAN OZON ANTARA MATAHARI DAN BUMI

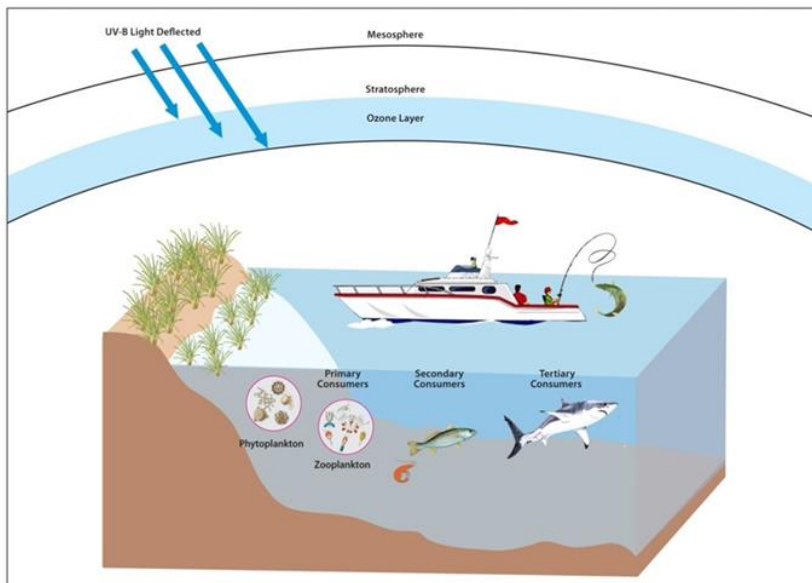
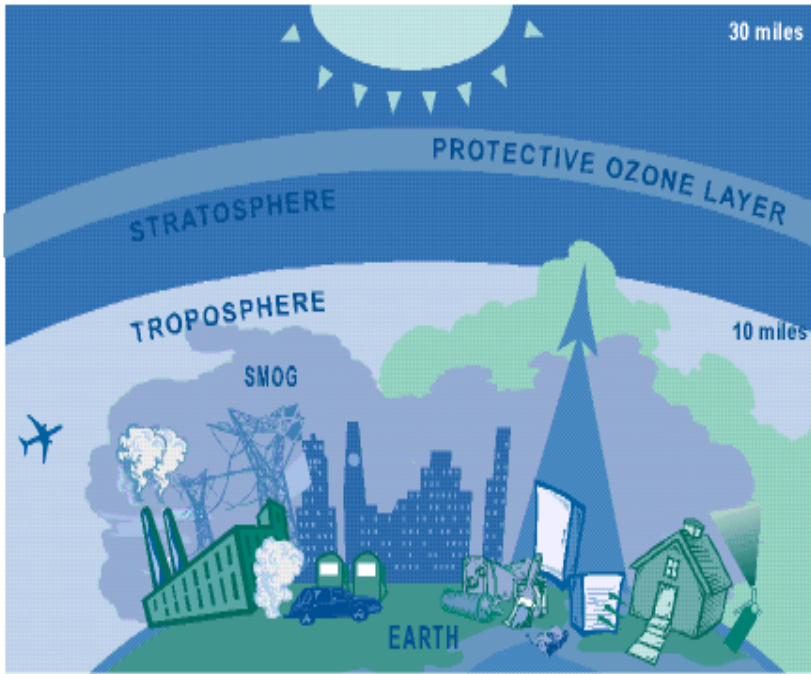


50 to 80 km
(30 - 48 miles)

16 to 50 km (10 - 30 miles)

ground to 16 km
(10 miles)



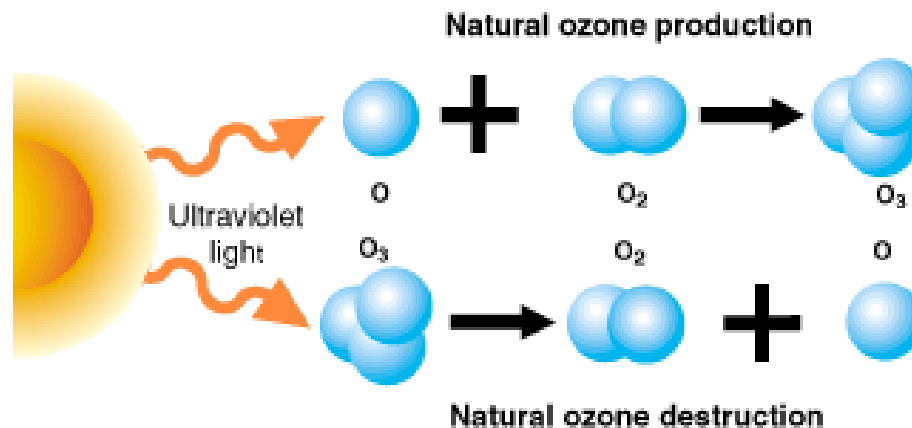


- ❖ Ozon wujud secara semulajadi di lapisan atas atmosfera 10-20 batu dari bumi yang menjadi lapisan pelindung dari sinar ultra violet matahari yang merbahaya.
- ❖ Lapisan ozon dimusnahkan oleh bahan kimia buatan manusia.
- ❖ Pendedahan melampau kepada sinar UV menyebabkan barah kulit, sakit mata dan melemahkan sistem imunisasi.
- ❖ Peningkatan UV mengurangkan hasil tanaman dan rantai makanan marin.

OZON & LAPISAN OZON



- ❑ Ozon adalah molekul yang mengandung 3 atom oksigen, O_3 .
- ❑ Terjadi dari tindakbalas sinar ultra-violet matahari ke atas atom oksigen.



- ❑ Ozon penting kepada manusia dan berfungsi menyerap sinaran ultra ungu matahari.

MONTREAL PROTOCOL

Lapisan Ozon menyerap sinaran UV yang berbahaya daripada sampai ke permukaan bumi.

Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Australia, Austria, Azerbaijan, Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bhutan, Bolivia (Plurinational State of), Bosnia and Herzegovina, Botswana, Brazil, Brunei Darussalam, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Canada, Cape Verde, Central African Republic, Chad, Chile, China, Colombia, Comoros, Congo, Cook Islands, Costa Rica, Côte d'Ivoire, Croatia, Cuba, Cyprus, Czech Republic, Democratic People's Republic of Korea, Democratic Republic of the Congo, Denmark, Djibouti, Dominica, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, European Community, Fiji, Finland, France, Gabon, Gambia, Georgia, Germany, Ghana, Greece, Grenada, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Holy See, Honduras, Hungary, Iceland, India, Indonesia, Iran (Islamic Republic of), Iraq, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Lao People's Democratic Republic, Latvia, Lebanon, Lesotho, Liberia, Libyan Arab Jamahiriya, Liechtenstein, Lithuania, Luxembourg, Madagascar, Malawi, Malaysia, Maldives, Mali, Malta, Marshall Islands, Mauritania, Mauritius, Mexico, Micronesia (Federated States of), Monaco, Mongolia, Montenegro, Morocco, Mozambique, Myanmar, Namibia, Nauru, Nepal, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Niue, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Qatar, Republic of Korea, Republic of Moldova, Romania, Russian Federation, Rwanda, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, Solomon Islands, Somalia, South Africa, Spain, Sri Lanka, Sudan, Suriname, Swaziland, Sweden, Switzerland, Syrian Arab Republic, Tajikistan, Thailand, The former Yugoslav Republic of Macedonia, Timor-Leste, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, United Arab Emirates, United Kingdom of Great Britain and Northern Ireland, United Republic of Tanzania, United States of America, Uruguay, Uzbekistan, Vanuatu, Venezuela (Bolivarian Republic of), Viet Nam, Yemen, Zambia, Zimbabwe

VIENNA CONVENTION



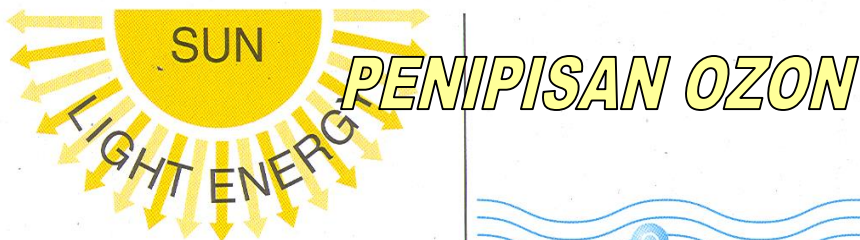
BAHAN PEMUSNAH OZON (ODS)



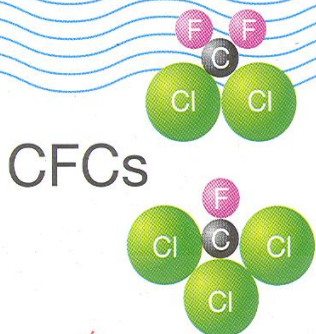
- **CFC** merupakan pemusnah utama ozon di lapisan stratosfera.
- **Hidrokloroflorokarbon (HCFC)** sama seperti **CFC** tetapi mempunyai potensi pemusnahan rendah terhadap ozon. Ia digunakan sebagai suatu alternatif sementara bagi **CFC**, dan akan dihapuskan penggunaannya pada tahun **2040**.
- **Hidroflorokarbon (HFC)** tidak mempunyai potensi pemusnahan kepada ozon (ODP) dan lebih mesra ozon. Tetapi HFC mempunyai potensi pemanasan global (GWP) yang tinggi.

CFCs → HCFCs → HFCs, HFO, HC, ammonia, CO₂

OZONE DEPLETION



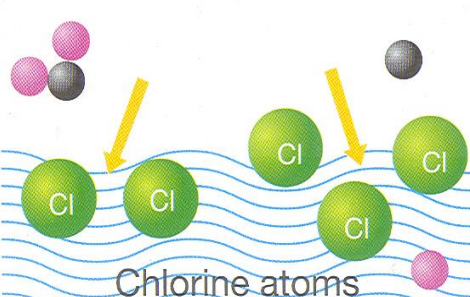
STRATOSPHERE



1

CFCs are released in the air and travel up to the stratosphere

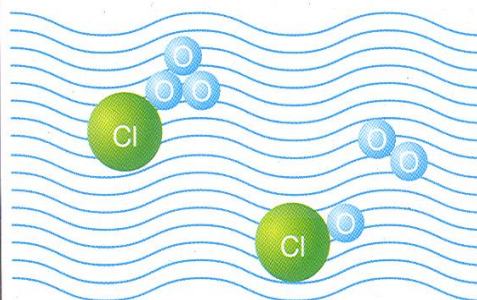
CFC yang dilepaskan ke udara naik ke atmosfera



2

CFCs are hit and broken by the sun's UV rays in the stratosphere. Chlorine atoms are released.

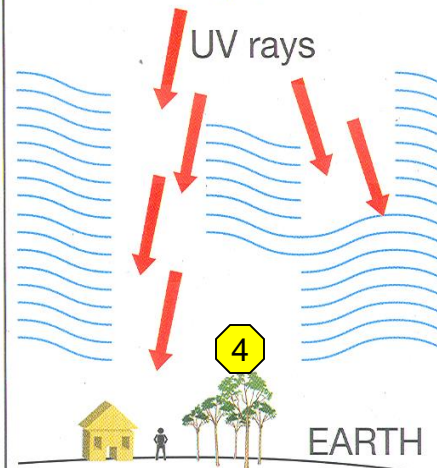
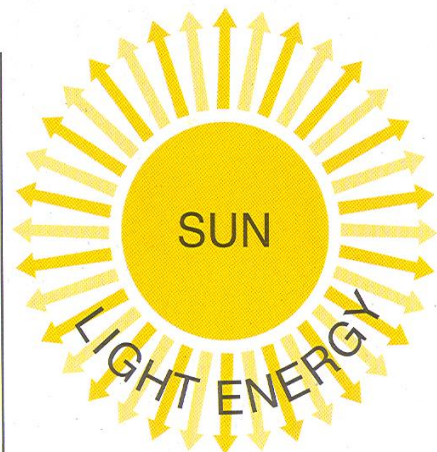
Sinaran UV matahari memecahkan molekul CFC dan membebaskan atom klorin



3

The chlorine atoms hit and break the ozone molecules that form our protective ozone layer. A chlorine atom can spend a hundred years breaking ozone molecules in the stratosphere

Atom Klorin akan meleraikan ikatan molekul ozon, seterusnya memusnahkan lapisan ozon

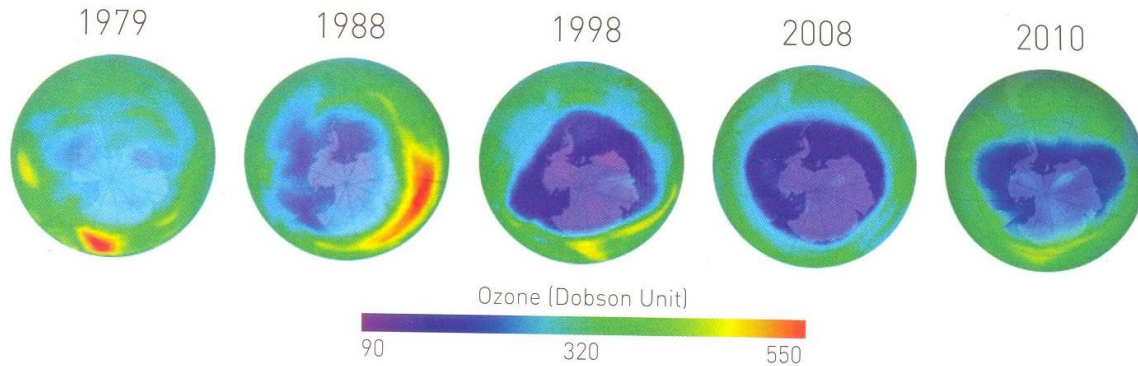


4

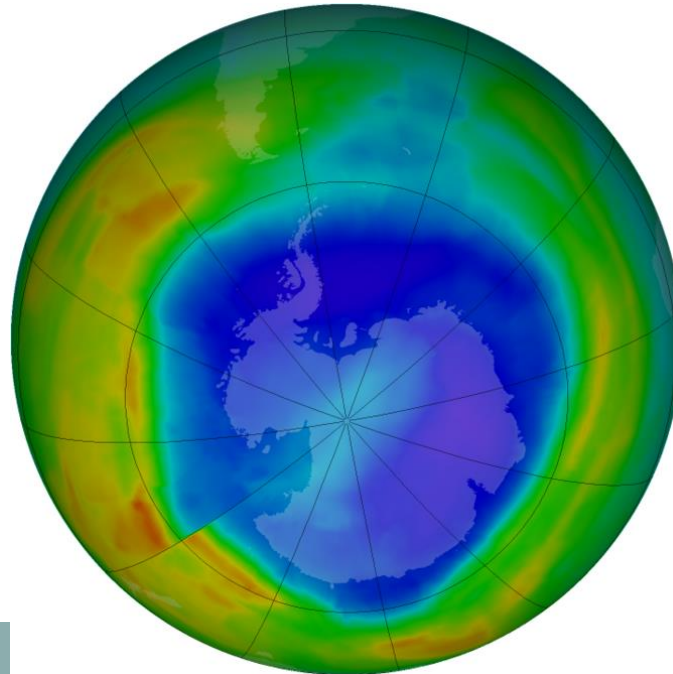
While the ozone layer is depleted, more UV rays can go through and harm us.

Apabila lapisan UV terhakis, lebih banyak sinaran UV menembusi dan membahayakan manusia

PROTECT YOURSELF; PROTECT THE OZONE LAYER



Global Total Ozone Change

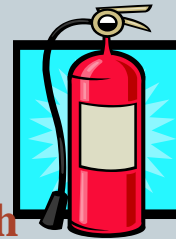


7 September 2014 - NASA

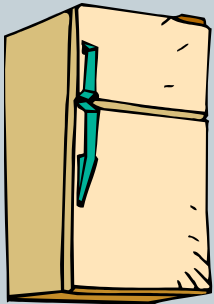
SUMBER-SUMBER ODS



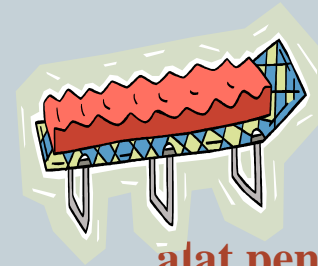
PENGHAWA DINGIN BANGUNAN & KENDERAAN – lokasi kemudahan awam, unit mudah alih pada kereta dan bas



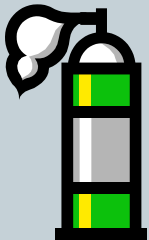
ALAT PEMADAM API - halon pada alat pemadam api segera dan mudah alih



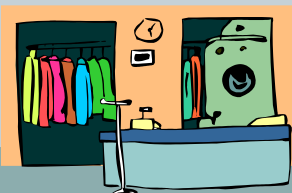
PETI SEJUK DOMESTIK – peti sejuk, alat penghawa dingin, kabinet pameran, peti ais, mesin ais dan mini-bar



FOAM – pembungkus makanan, alat penghidang dan bekas takungan, paip insulator, tempat duduk dan kusyen sandar, pembalut barang perabot, kenderaan dan hiasan dalaman bas.



AEROSOL – alat pencuci permukaan, semburan cat, pelekat adhesif, dan racun serangga perosak.



PENCUCI KERING DAN NYAH GRIS – pelarut yang digunakan untuk cucian kering dan cucian khas

CFCs in asthma patients' "metered dose inhalers"



CFC dalam alat penyedut bermeter pada pesakit asma



Solvent in dry cleaning – (1,1,1 – TCA @ Methyl Chloroform)



Pelarut dalam cucian kering – (1,1,1 – TCA @ Metil Klorofom)

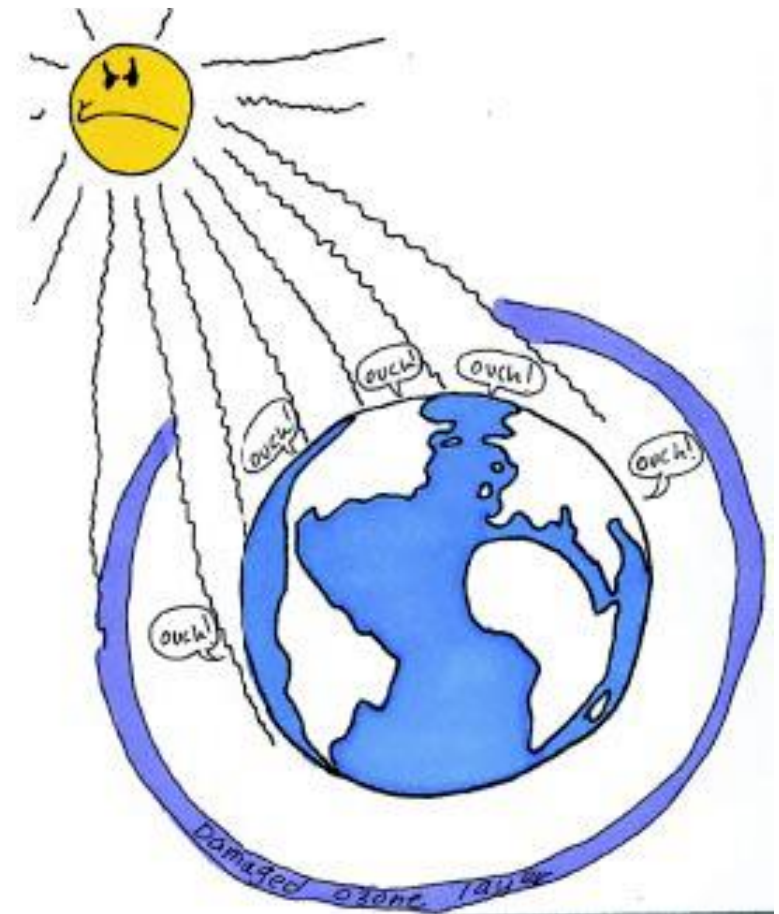
Methyl Bromide – use in soil fumigation, quarantine preshipment treatment, maintenance of grass at golf course



Metil Bromida – digunakan untuk fumigasi tanah, rawatan keatas kuarantin dagangan terutamanya perabot kayu dan balak, serta penyelenggaraan rumput di padang golf

“If the Ozone layer depletes, more harmful UV radiation will reach the earth through the damaged ozone layer”

“Lebih banyak radiasi UV yang berbahaya akan sampai ke permukaan bumi melalui lapisan ozon yang telah menipis”



EFFECT OF UV FROM THE OZONE LAYER DEPLETION

KESAN UV DARI PENIPISAN LAPISAN OZON



1 - skin cancers
Kanser kulit

2 - eye cataracts
Katarak Mata

3 - less yield from plants
Hasil tanaman berkurang

4 - less productivity from ocean
Hasil laut berkurang

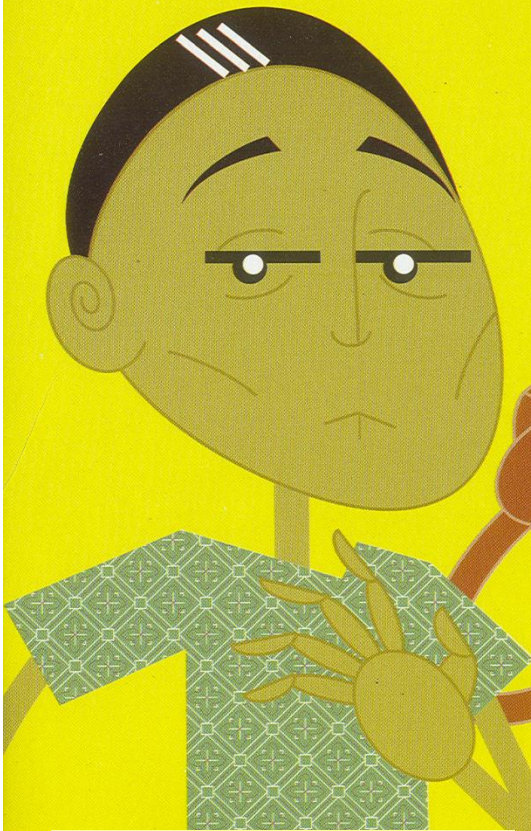
Effect to marine ecosystem
Kesan kepada ekosistem marin

Disturb our food chain
Mengganggu rantai makanan

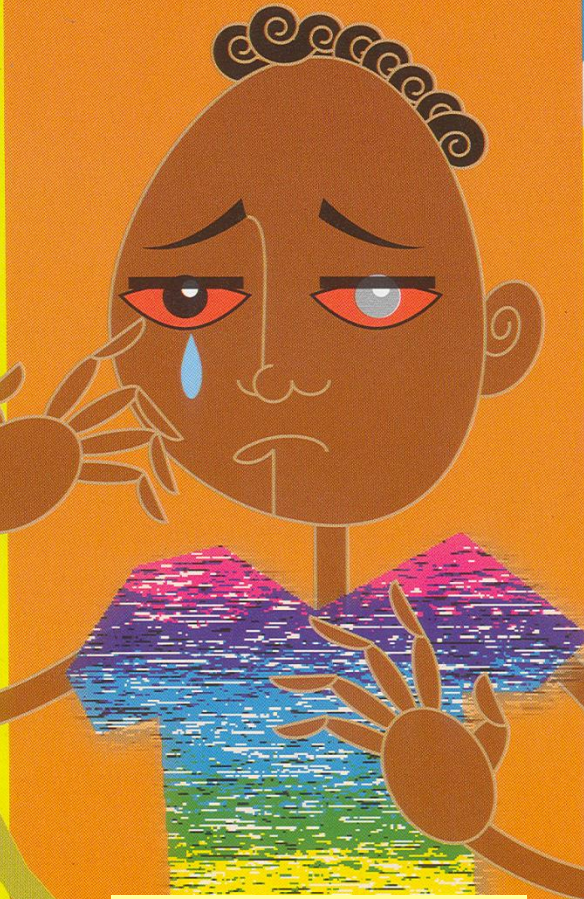


KESAN KESIHATAN

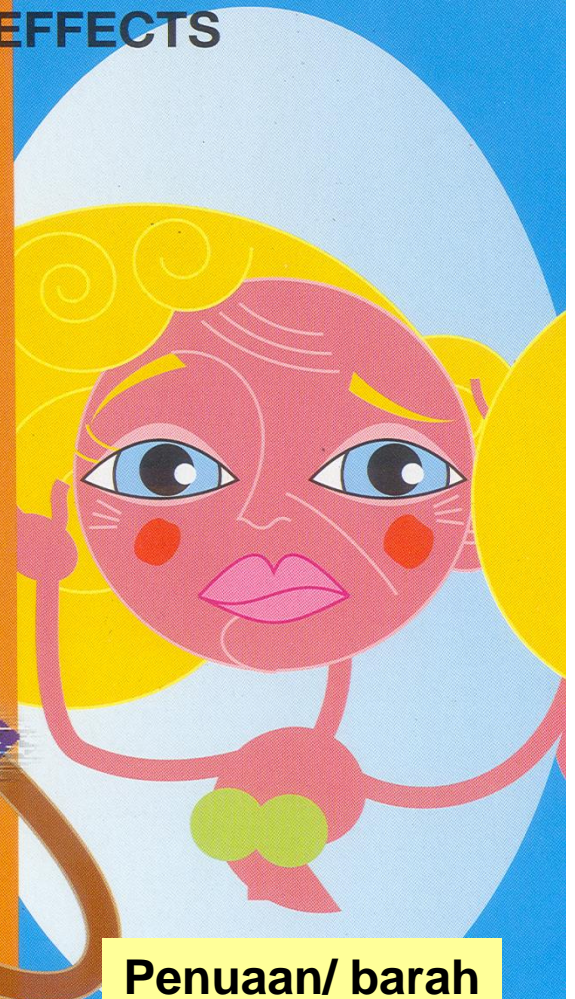
SUN EXPOSURE AND HEALTH EFFECTS



**Melemahkan
sistem imunisasi**



Sakit mata



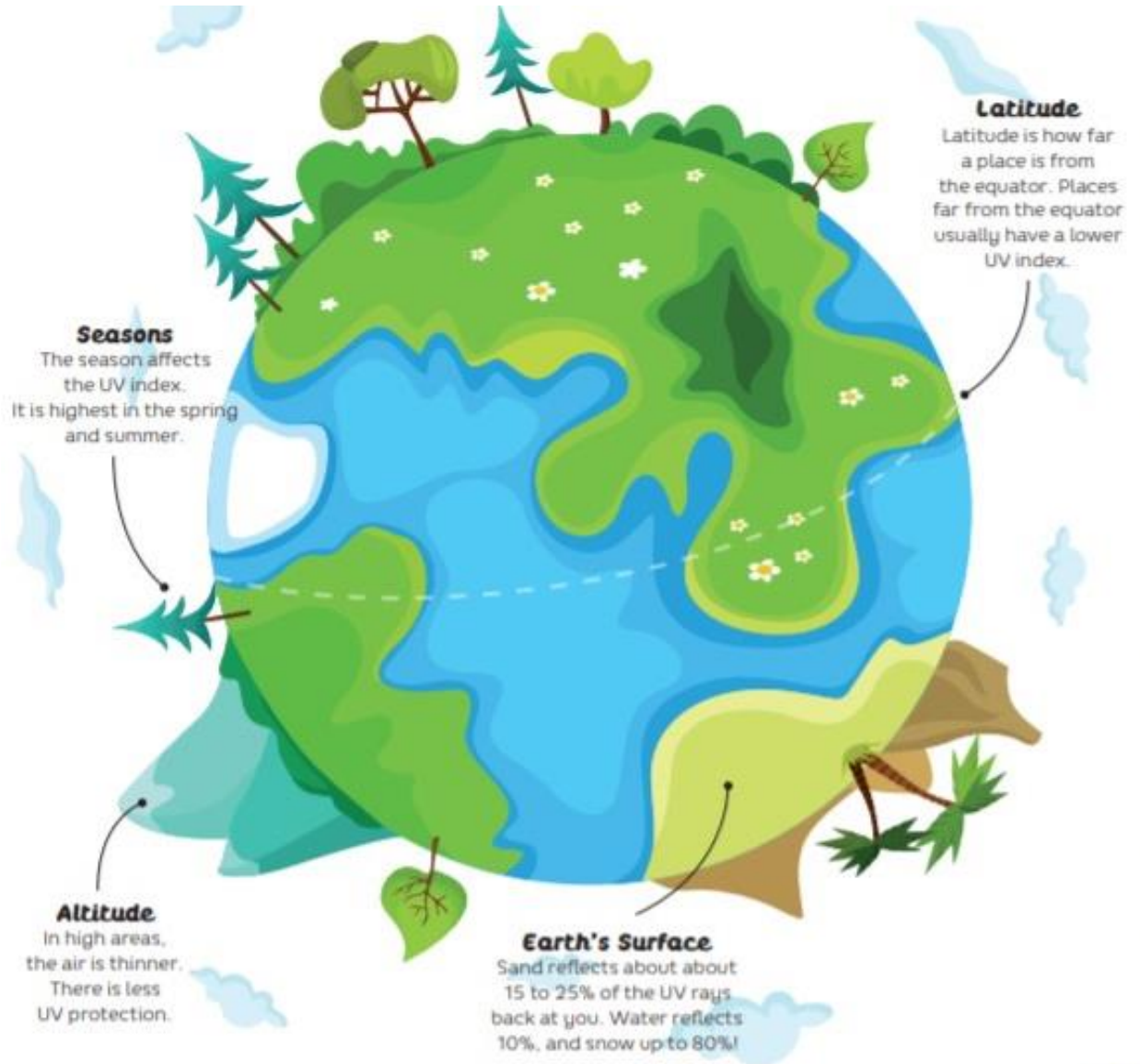
**Penuaan/ barah
kulit**

INDEKS UV

Indeks UV merupakan penunjuk bagi paras UV pada masa dan tempat tertentu.

Indeks UV ini bergantung kepada beberapa faktor, iaitu:

- Musim
- Latitud
- Altitud
- Permukaan Bumi





1-2

LOW

There is not much danger at this level. You may play outdoors. **Wear sunglasses and sunscreen.**

3-5

MODERATE

There is a risk of skin damage. Stay in the shade near noon, when the sun's rays are hottest. **Apply SPF 30+ sunscreen.**

6-7

HIGH

There is a high risk of skin damage. Stay out of the sun during the middle of the day. **Protect your skin and eyes.**

8-10

VERY HIGH

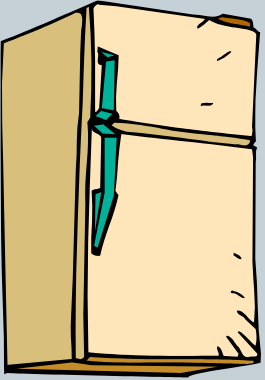
There is a high risk of skin damage. Stay out of the sun during the middle of the day. **Protect your skin and eyes.**

11+

EXTREME

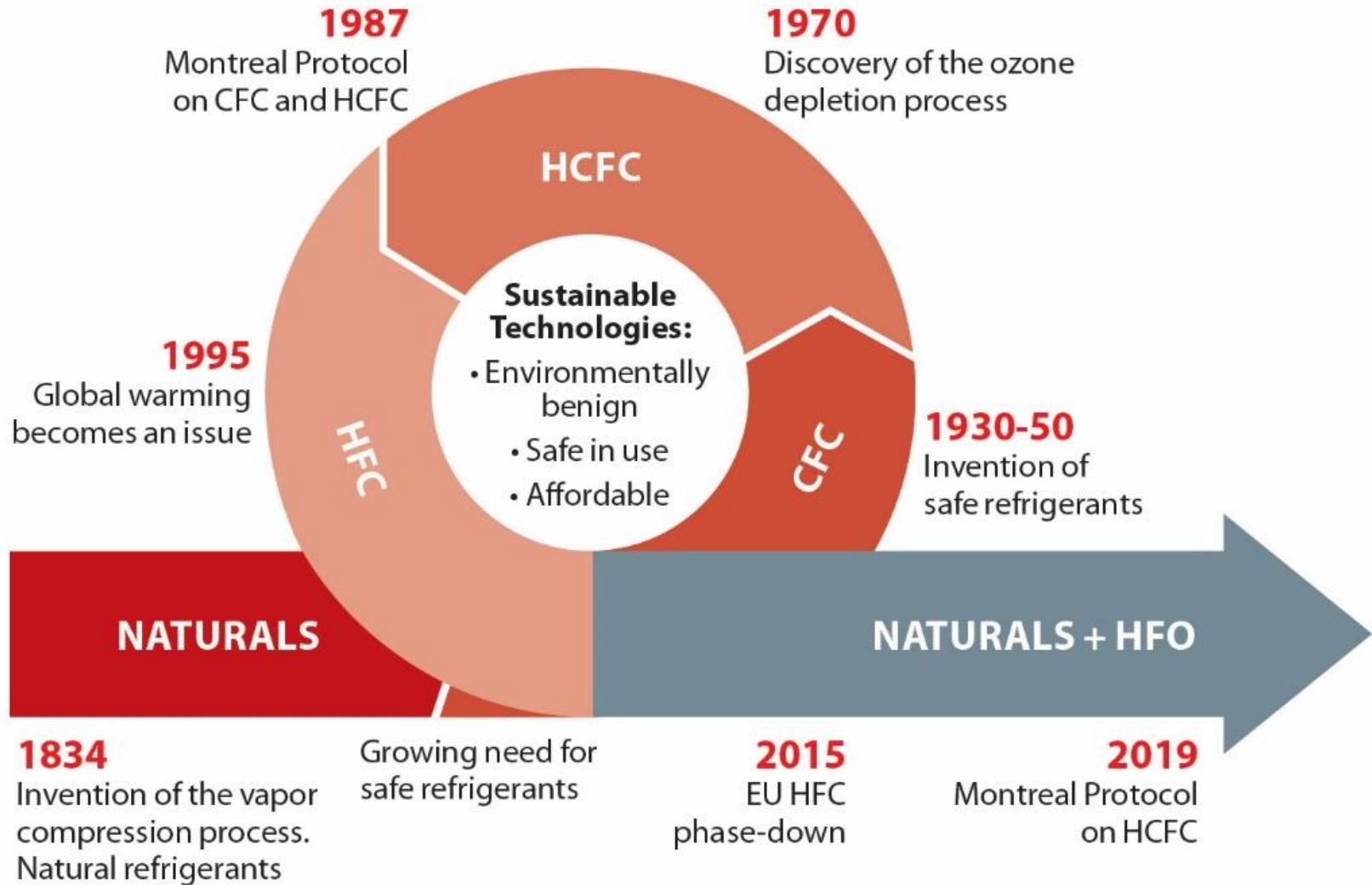
Do not go outside if you can avoid it. Cover your skin. **Wear a hat and sunglasses at all times.**





WHAT IS REFRIGERANTS

EVOLUSI REFRIGERAN



EVOLUSI REFRIGERAN



CFCs

High ODP
High GWP



HCFCs

Low ODP
High GWP



HFCs

Zero ODP
High GWP



HFOs

Zero ODP
Very Low GWP

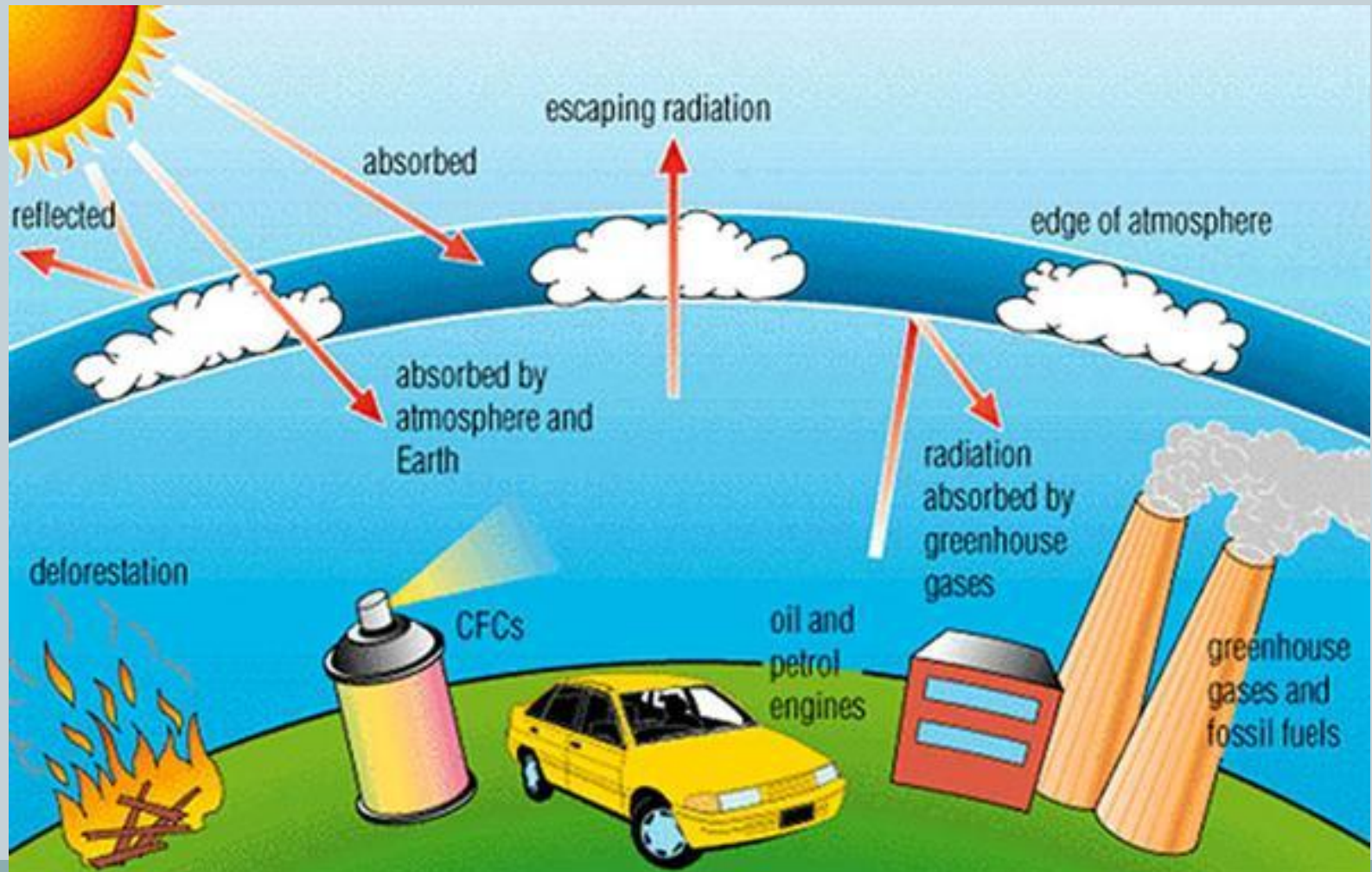
ODP (Ozone Depletion Potential) **GWP** (Global Warming Potential)

PERUBAHAN IKLIM

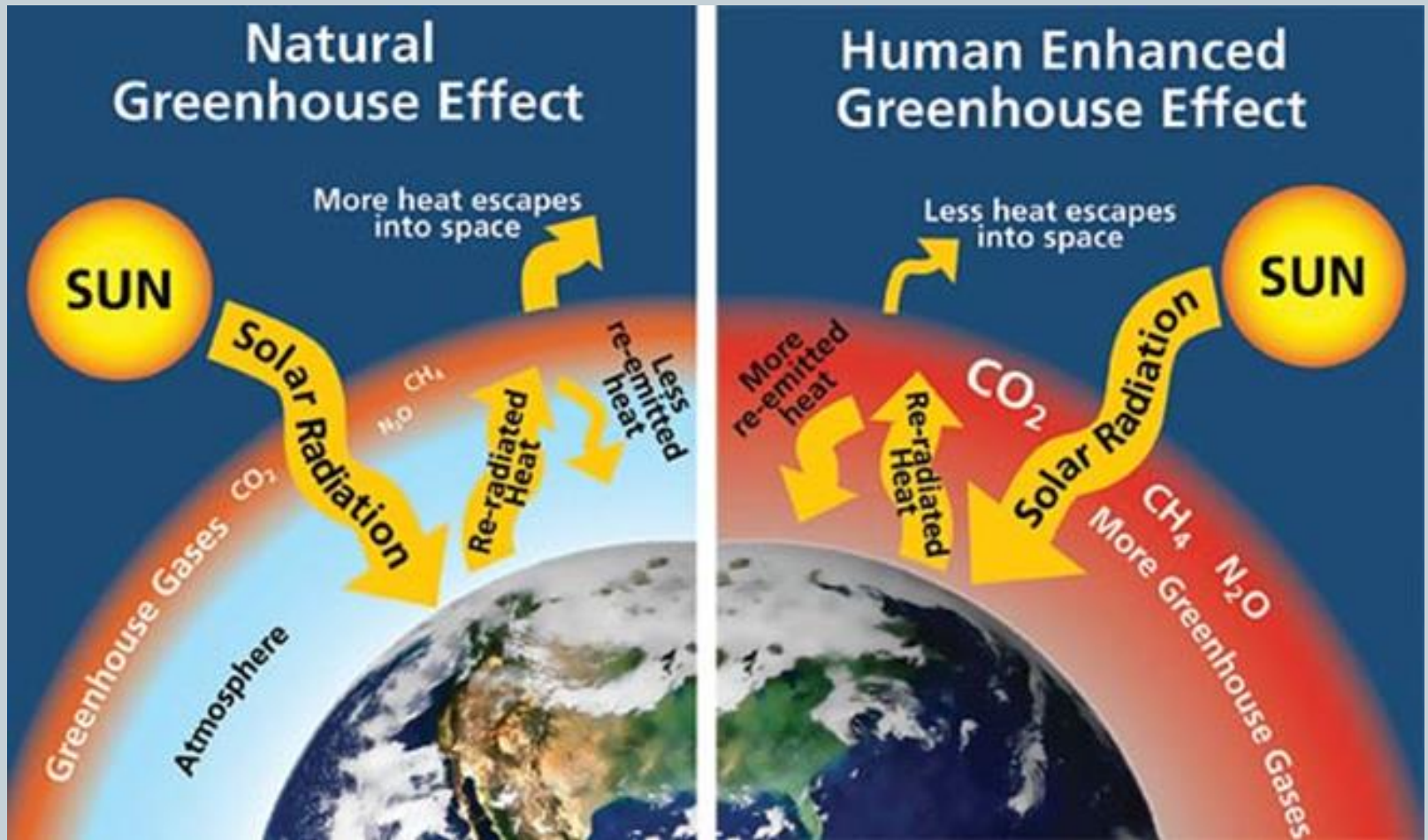


PADA TAHUN 2016, NEGARA PARTI KEPADA PROTOCOL MONTREAL TELAH BERSETUJU DENGAN **PINDAAN KIGALI** DI MANA PINDAAN INI AKAN MEMBANTU DALAM MENGURANGKAN IMPAK **PERUBAHAN IKLIM** MELALUI PENGURANGAN PENGGUNAAN HFC.

PUNCA PERUBAHAN IKLIM



KESAN GAS RUMAH KACA



KESAN PERUBAHAN IKLIM



KESAN PERUBAHAN IKLIM



YOU CAN MAKE A WORLD OF DIFFERENCE

TAKE CLIMATE ACTION

2020-2030 IS THE DECADE OF CLIMATE ACTION! CHOOSE YOUR COMMITMENTS FROM THIS LIST OF TOP CARBON SAVING ACTIONS.



TRAVEL

Transport accounts for 34% of a household's carbon footprint



LIFESTYLE

Making a few changes can dramatically impact the environment.



ENERGY

Switching to an independent & renewable energy supplier can save a minimum of £250 a year



WASTE

Schemes such as RecycleNow can help you recycle almost anything from your doorstep.



FOOD

40% of food is wasted annually. Animal agriculture is responsible for 14.5% of global emissions.

LIVE CAR FREE

2400 KG CO₂

AVOID ONE-TRIP TRANSATLANTIC FLIGHTS

1600 KG CO₂

BUY A MORE EFFICIENT CAR

1190 KG CO₂

REPLACE A TYPICAL CAR WITH HYBRID

520 KG CO₂

WASH CLOTHES IN COLD WATER

250 KG CO₂

HANG-DRY CLOTHES

210 KG CO₂

SHOWER, DON'T BATHE

100 KG CO₂

WORK FROM HOME, 2 DAYS A WEEK

100 KG CO₂

BUY GREEN ENERGY

1450 KG CO₂

REPLACE BOILER IF MORE THAN 10 YEARS OLD

300 KG CO₂

IMPROVE HOME INSULATION

180 KG CO₂

UPGRADE LIGHTBULBS

100 KG CO₂

RECYCLE

210 KG CO₂

COMPOST FOOD

200 KG CO₂

USE A REUSABLE COFFEE CUP

80 KG CO₂

SWITCH TO REUSABLE SHOPPING BAGS

5 KG CO₂

ADOPT VEGANISM

1500 KG CO₂

EAT A PLANT-BASED DIET

800 KG CO₂

WASTE NO FOOD

370 KG CO₂

EAT LESS MEAT

230 KG CO₂

Commit to each action for a whole year to achieve the carbon saving shown



You're never too small to make a difference!



eden project

We see a world where we all contribute to a thriving planet, and together we are a collective force for good.

The Planet Mark is a sustainability certification which recognises outstanding achievements, encourages action, and builds an empowered community of like-minded individuals.

3 STEPS TO SUSTAINABILITY CERTIFICATION:



MEASURE



ENGAGE



COMMUNICATE

info@planetfirst.co.uk

ThePlanetMark.com

@ThePlanetMark

EXAMPLE PERSONAL PLAN

LIVE CAR FREE

HANG-DRY CLOTHES

BUY GREEN ENERGY

RECYCLE

WASTE NO FOOD

4,640 KG OF CO₂ SAVED IN ONE YEAR!

WORLD OZONE DAY

CELEBRATING

35 years of ozone layer protection



UN 
environment
programme
ozone
secretariat


Vienna Convention
MONTREAL PROTOCOL

TERIMA
KASIH

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