

Science

Week 1

EdPlus.ca

What do you want to learn?



Science

Physical science

Chemistry

Engineering & Design

Electricity

Environmental Science

The natural environment

Pollution



We will be covering both environmental and physical science. It is called applied science because we will be taking a very practical approach to help us experience and understand science.

Class participation	15%
Projects	15%
Quizzes	10%
Presentations	10%
Final exam	50%



Create something that can move by itself

Design due on **Friday. Sept 9th**

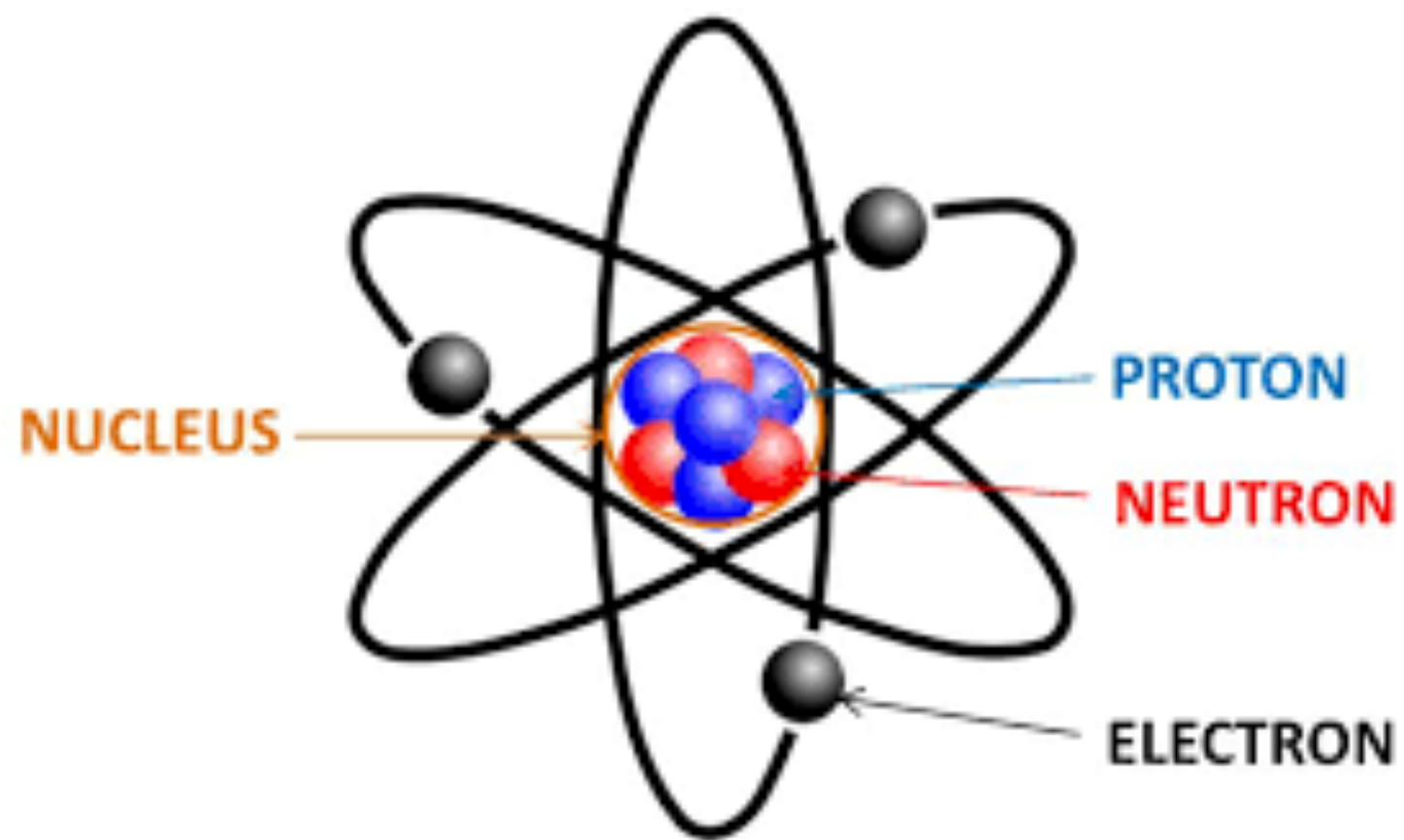
- Drawing & list of parts
- Why you chose this item
- Explain how it moves

Project due on **Friday. Sept 16th**

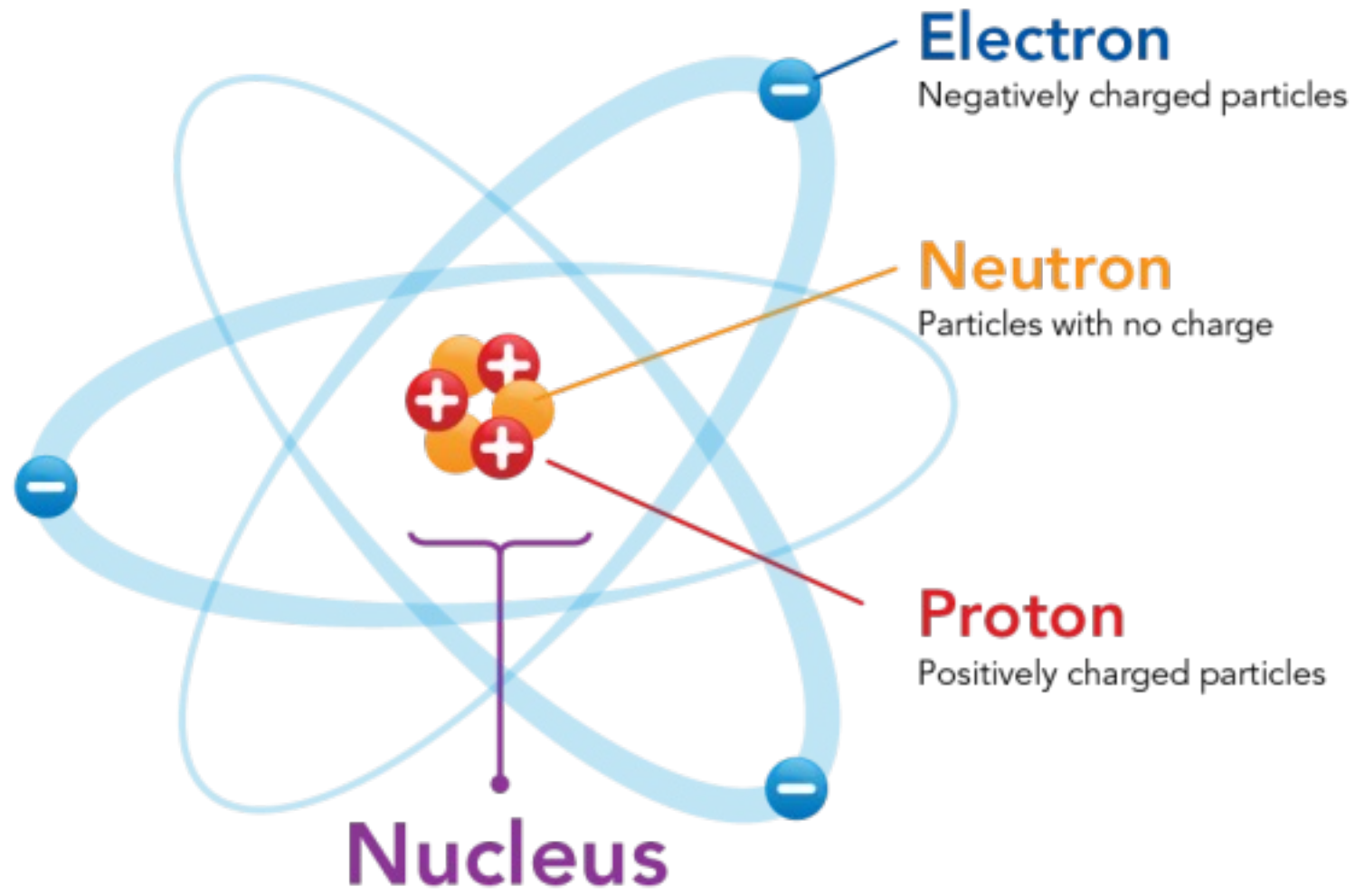
- Bring in project and demonstrate



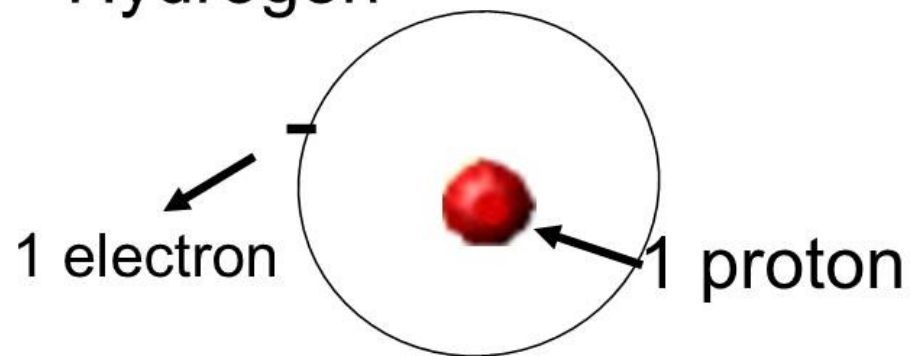




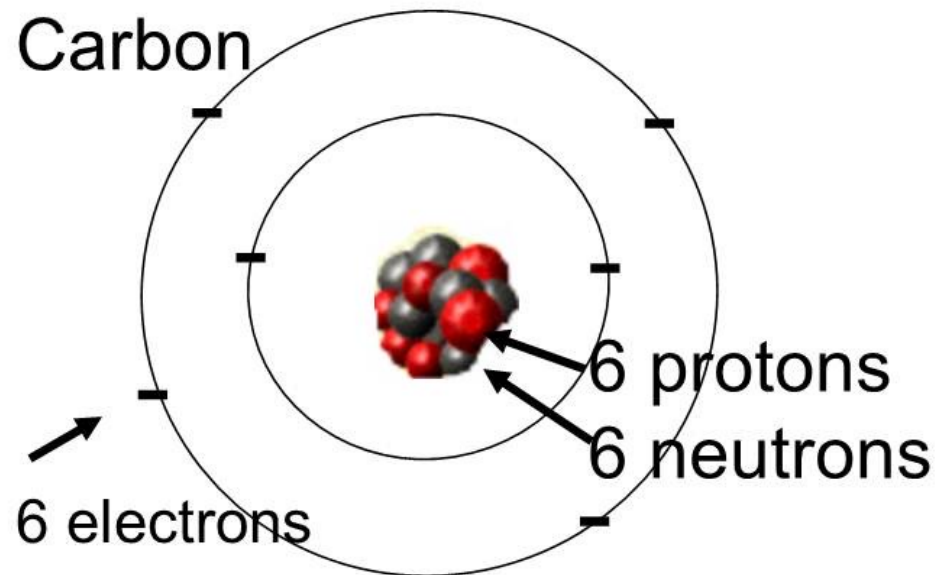
ATOM



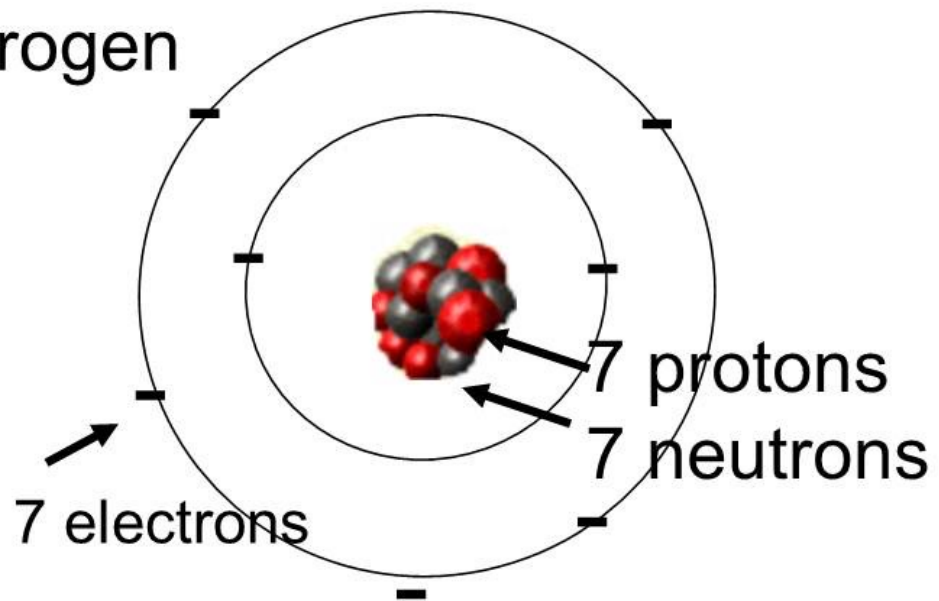
Hydrogen



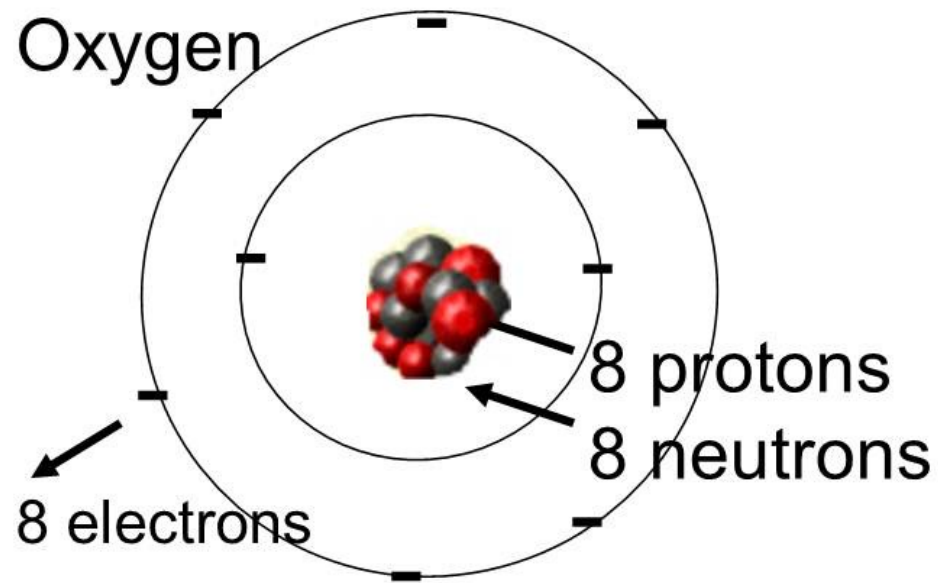
Carbon



Nitrogen



Oxygen



Periodic Table of the Elements

1 H Hydrogen 1.008																	18 He Helium 4.003
3 Li Lithium 6.941	4 Be Beryllium 9.012											5 B Boron 10.811	6 C Carbon 12.011	7 N Nitrogen 14.007	8 O Oxygen 15.999	9 F Fluorine 18.998	10 Ne Neon 20.180
11 Na Sodium 22.990	12 Mg Magnesium 24.305											13 Al Aluminum 26.982	14 Si Silicon 28.086	15 P Phosphorus 30.974	16 S Sulfur 32.066	17 Cl Chlorine 35.453	18 Ar Argon 39.948
19 K Potassium 39.098	20 Ca Calcium 40.078	21 Sc Scandium 44.956	22 Ti Titanium 47.88	23 V Vanadium 50.942	24 Cr Chromium 51.996	25 Mn Manganese 54.938	26 Fe Iron 55.933	27 Co Cobalt 58.933	28 Ni Nickel 58.693	29 Cu Copper 63.546	30 Zn Zinc 65.39	31 Ga Gallium 69.732	32 Ge Germanium 72.61	33 As Arsenic 74.922	34 Se Selenium 78.09	35 Br Bromine 79.904	36 Kr Krypton 84.80
37 Rb Rubidium 84.468	38 Sr Strontium 87.62	39 Y Yttrium 88.906	40 Zr Zirconium 91.224	41 Nb Niobium 92.906	42 Mo Molibdenum 95.94	43 Tc Technetium 98.907	44 Ru Ruthenium 101.07	45 Rh Rhodium 102.906	46 Pd Palladium 106.42	47 Ag Silver 107.868	48 Cd Cadmium 112.411	49 In Indium 114.818	50 Sn Tin 118.71	51 Sb Antimony 121.760	52 Te Tellurium 127.6	53 I Iodine 126.904	54 Xe Xenon 131.29
55 Cs Cesium 132.905	56 Ba Barium 137.327	57-71 Lanthanides	72 Hf Hafnium 178.49	73 Ta Tantalum 180.948	74 W Tungsten 183.85	75 Re Rhenium 186.207	76 Os Osmium 190.23	77 Ir Iridium 192.22	78 Pt Platinum 195.08	79 Au Gold 196.967	80 Hg Mercury 200.59	81 Tl Thallium 204.383	82 Pb Lead 207.2	83 Bi Bismuth 208.980	84 Po Polonium [208.982]	85 At Astatine 209.987	86 Rn Radon 222.018
87 Fr Francium 223.020	88 Ra Radium 226.025	89-103 Actinides	104 Rf Rutherfordium [261]	105 Db Dubnium [262]	106 Sg Seaborgium [266]	107 Bh Bohrium [264]	108 Hs Hassium [269]	109 Mt Meitnerium [268]	110 Ds Darmstadtium [269]	111 Rg Roentgenium [272]	112 Cn Copernicium [277]	113 Uut Ununtrium unknown	114 Fl Flerovium [289]	115 Uup Ununpentium unknown	116 Lv Livermorium [298]	117 Uus Ununseptium unknown	118 Uuo Ununoctium unknown

57 La Lanthanum 138.906	58 Ce Cerium 140.115	59 Pr Praseodymium 140.908	60 Nd Neodymium 144.24	61 Pm Promethium 144.913	62 Sm Samarium 150.36	63 Eu Europium 151.966	64 Gd Gadolinium 157.25	65 Tb Terbium 158.925	66 Dy Dysprosium 162.50	67 Ho Holmium 164.930	68 Er Erbium 167.26	69 Tm Thulium 168.934	70 Yb Ytterbium 173.04	71 Lu Lutetium 174.967
89 Ac Actinium 227.028	90 Th Thorium 232.038	91 Pa Protactinium 231.036	92 U Uranium 238.029	93 Np Neptunium 237.048	94 Pu Plutonium 244.064	95 Am Americium 243.061	96 Cm Curium 247.070	97 Bk Berkelium 247.070	98 Cf Californium 251.080	99 Es Einsteinium [254]	100 Fm Fermium 257.095	101 Md Mendelevium 258.1	102 No Nobelium 259.101	103 Lr Lawrencium [262]



Sept 25 – Oct. 5th
The Earth





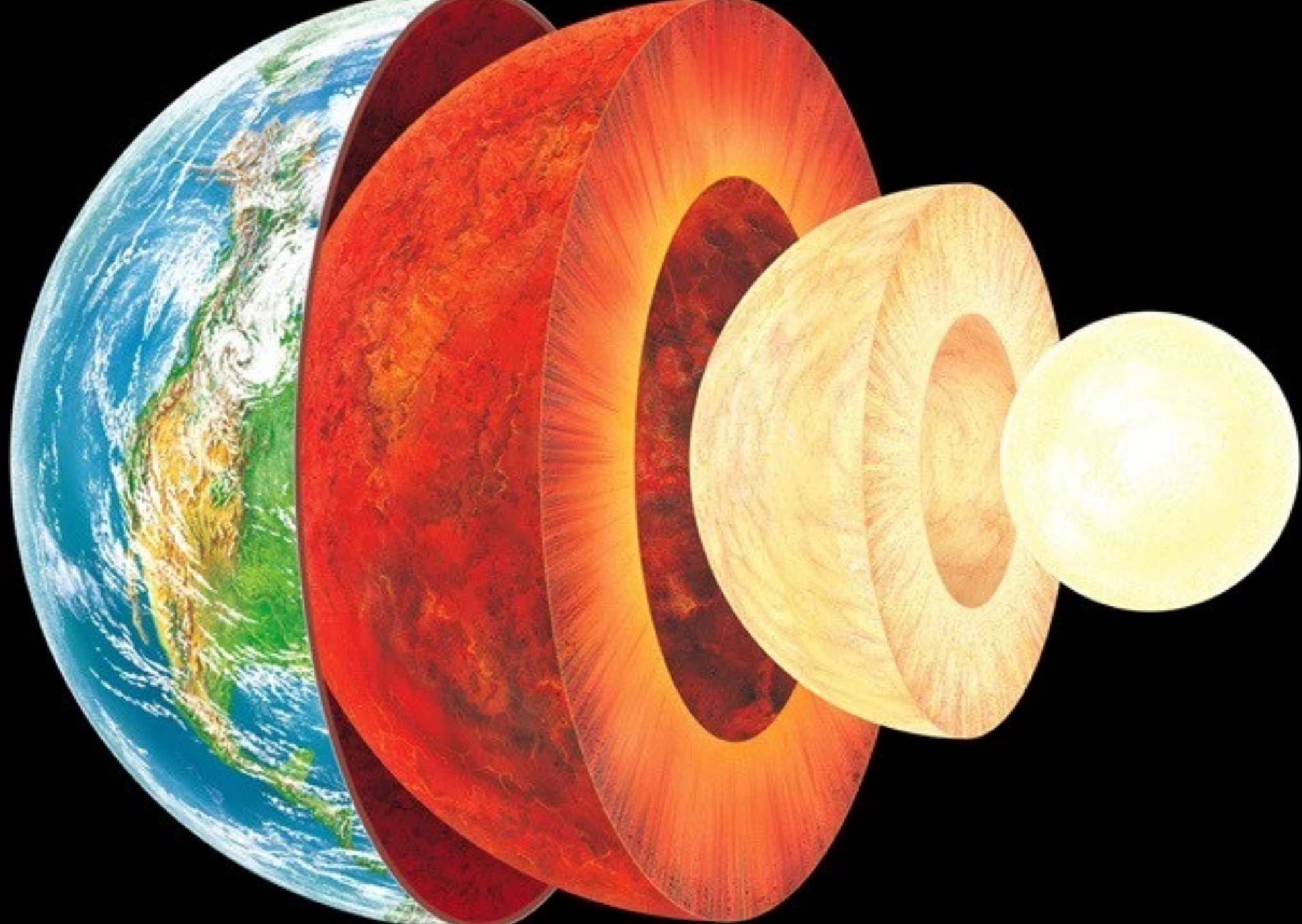
When you think
of nature, what
comes to mind?

Environmental project due October 10th

Build a model of your environmental issue – explain it in a 5 – 10 min presentation







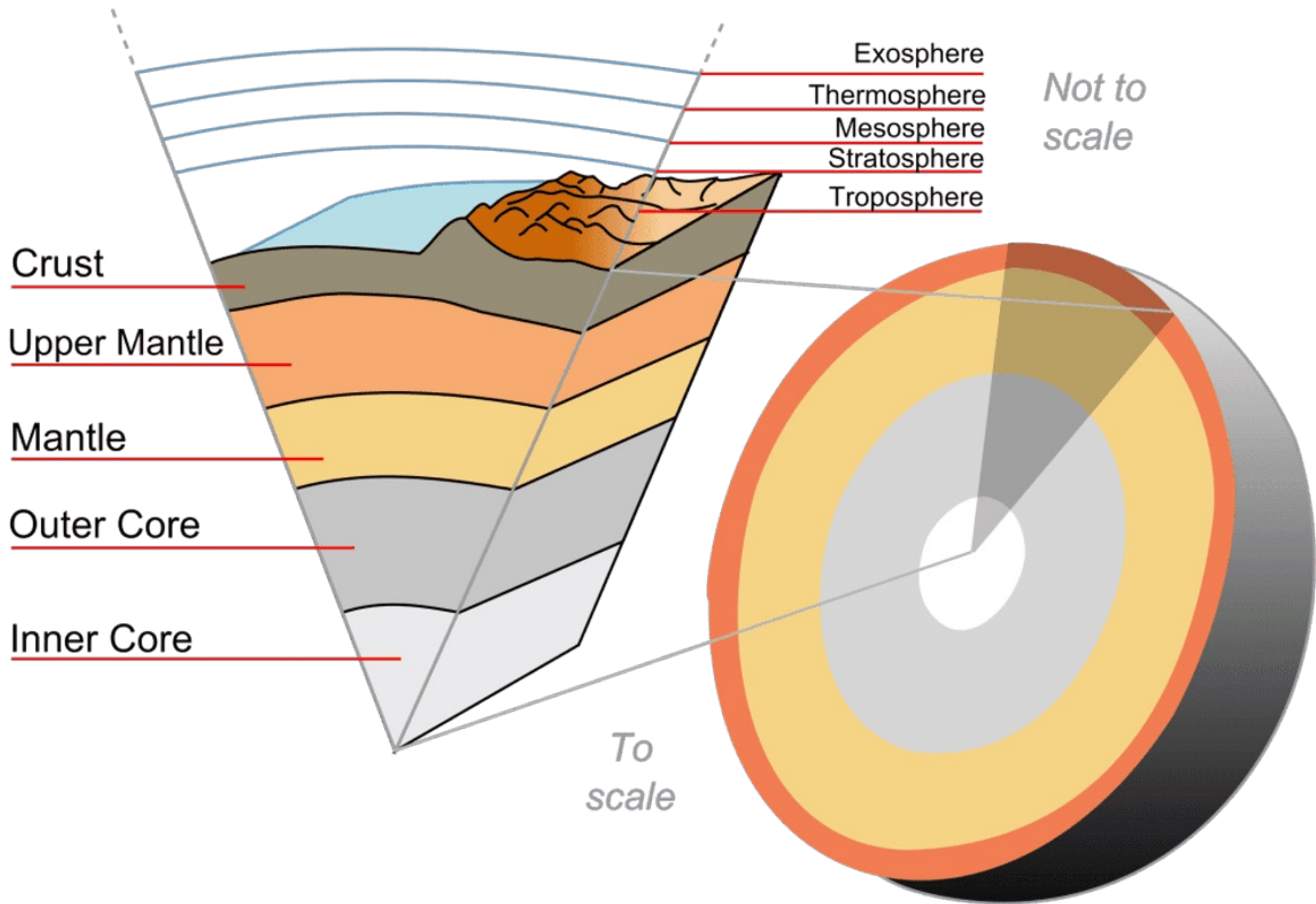
Natural disasters

Review

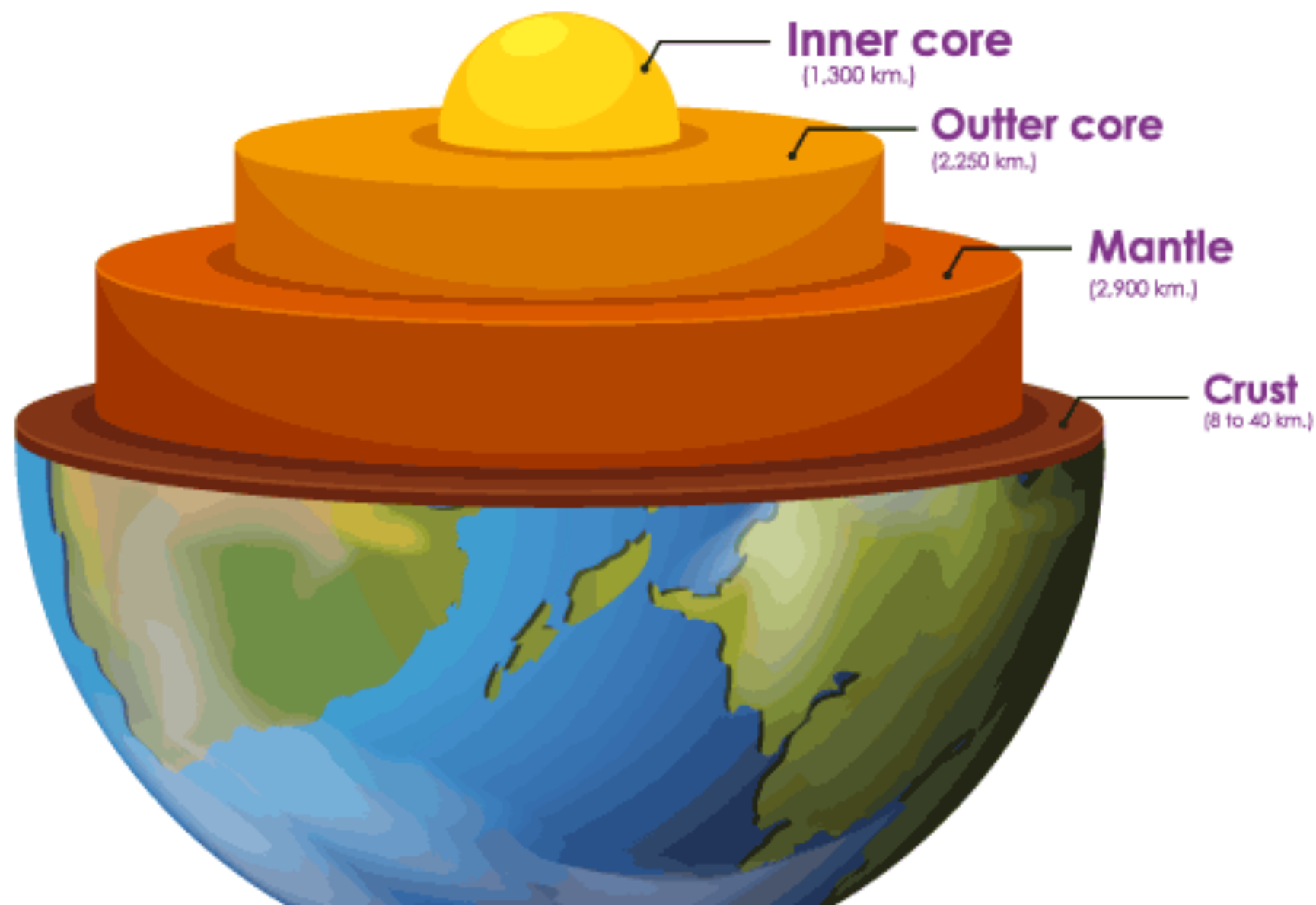
- Volcanoes
- Earthquakes

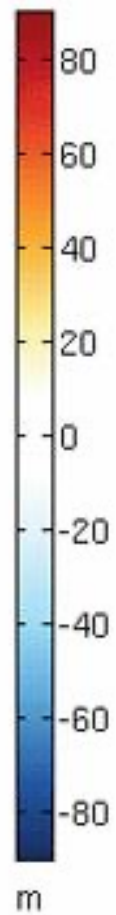
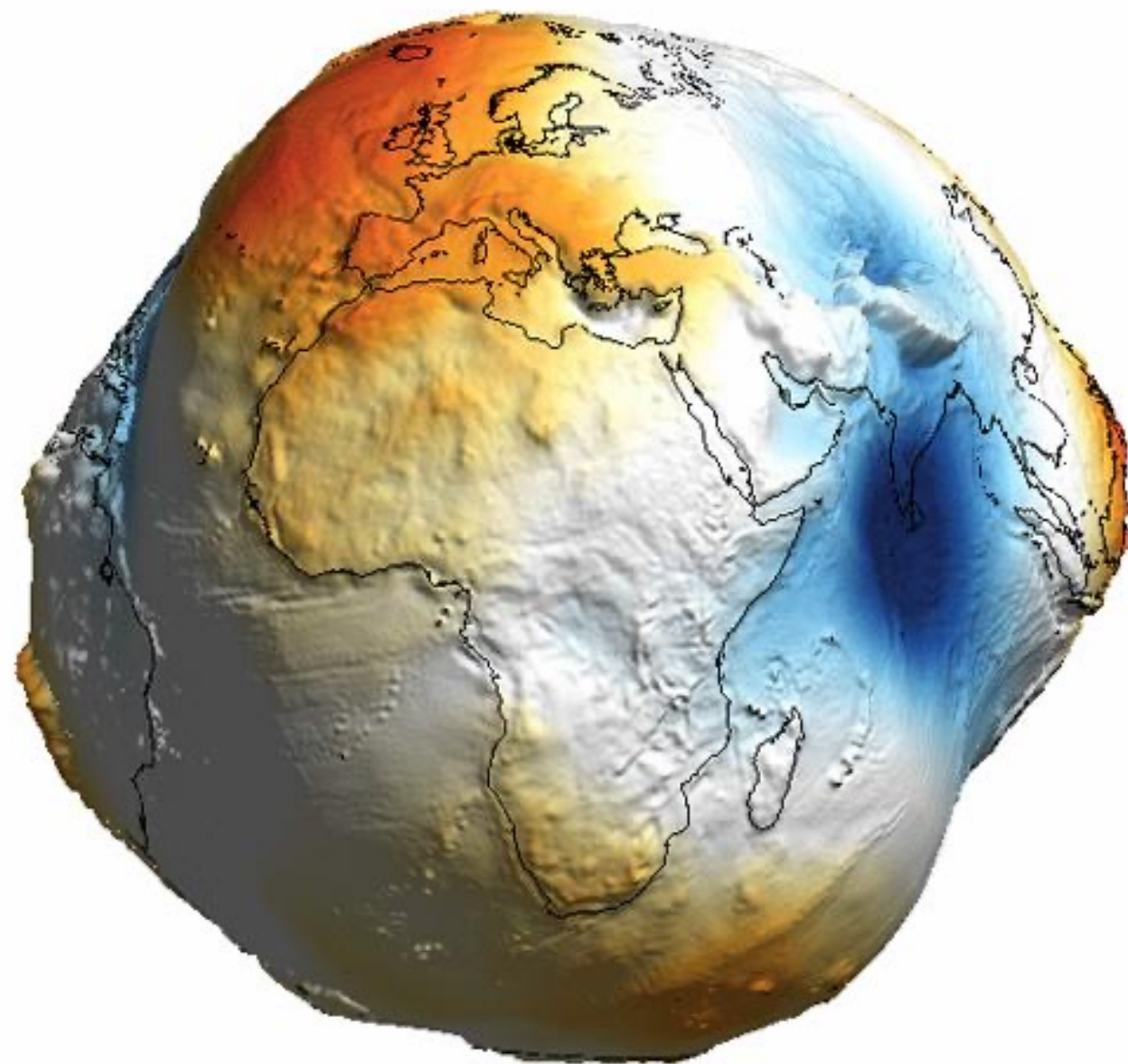
- Hurricanes, tornadoes, cyclones
- Mudslides / Land erosion
- Floods
- Forest fires
- Lightning
- Drought
- Tsunami
- Heat
- Hail
- Avalanches

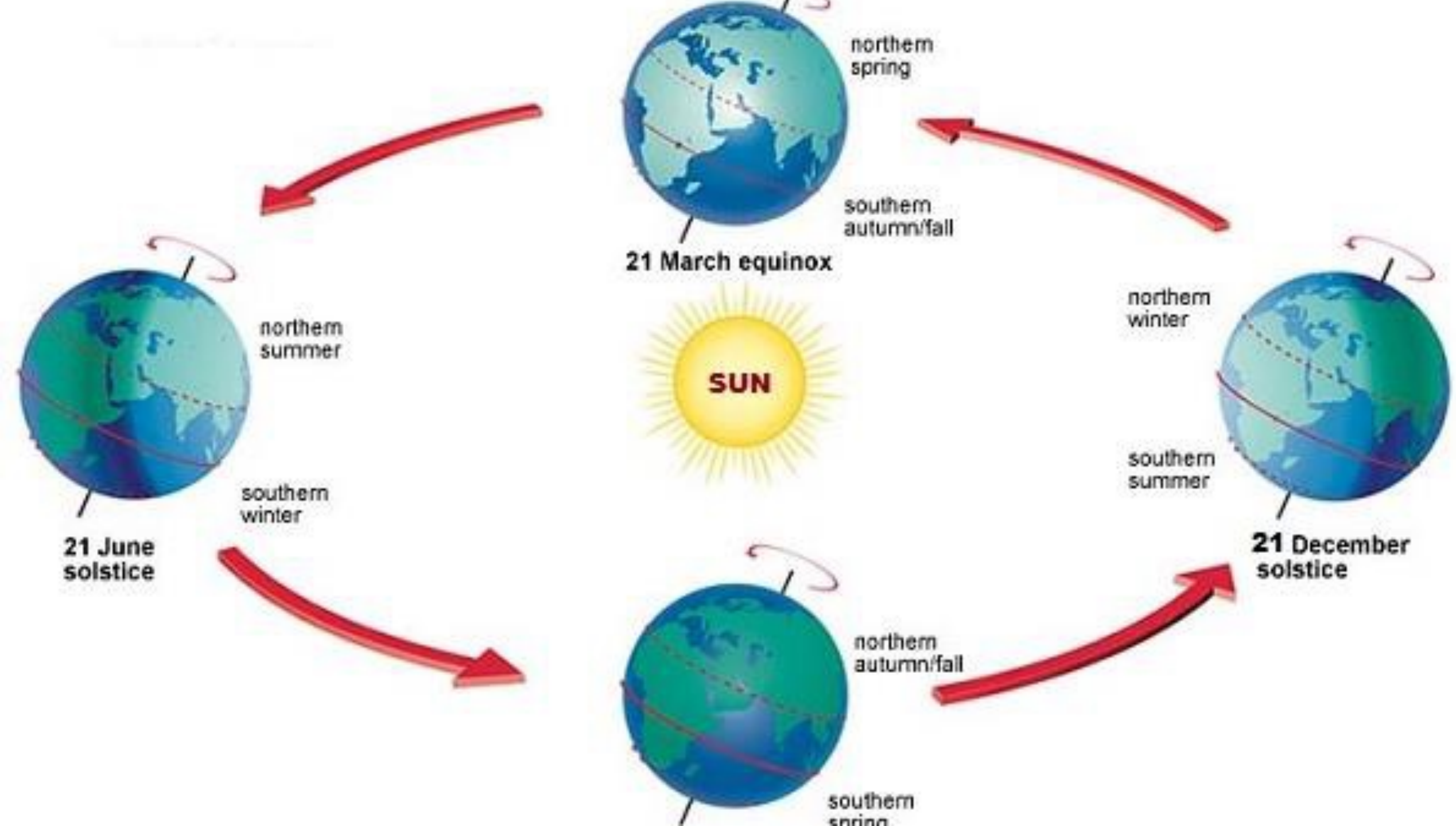




THE LAYERS OF EARTH





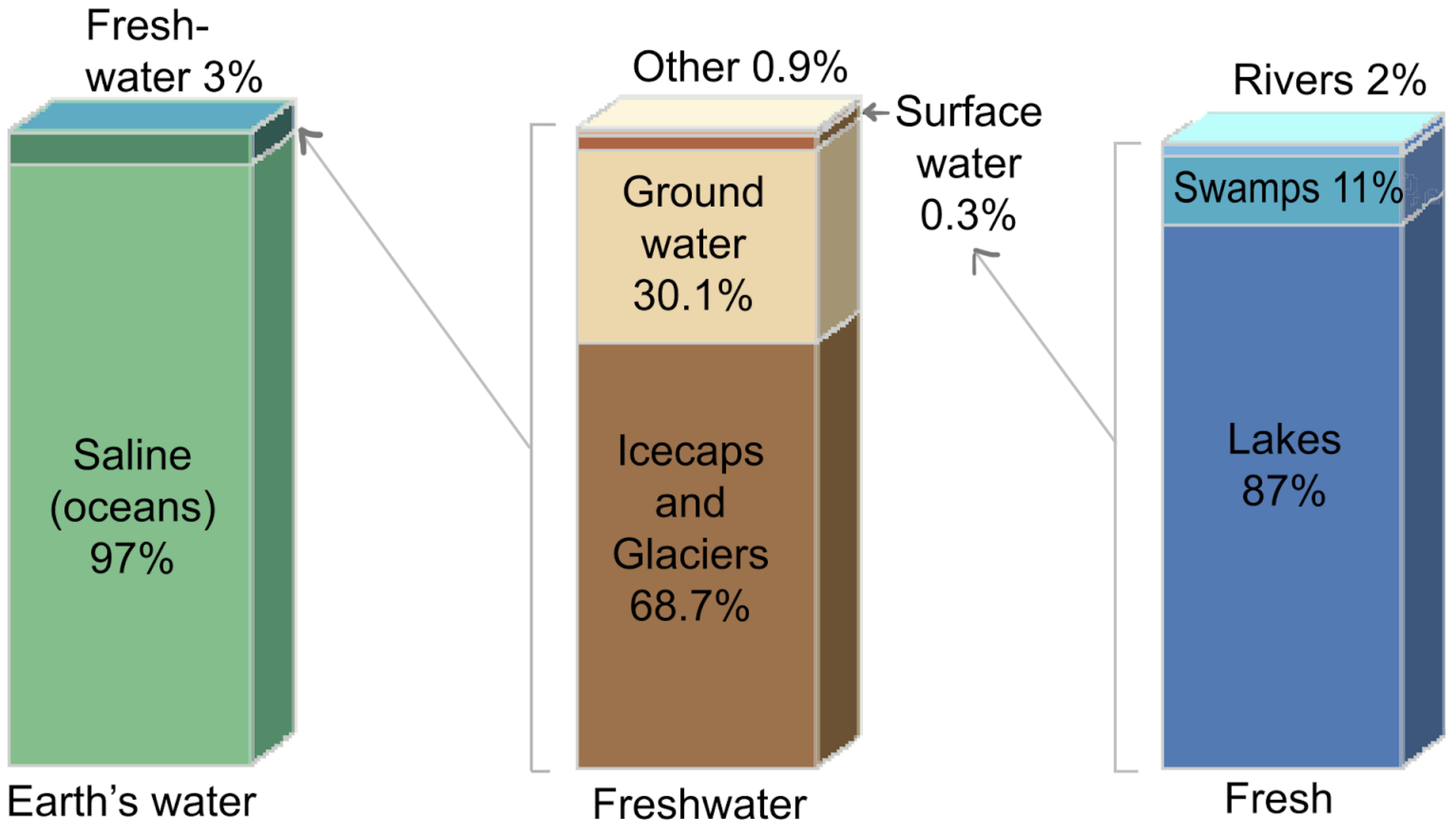


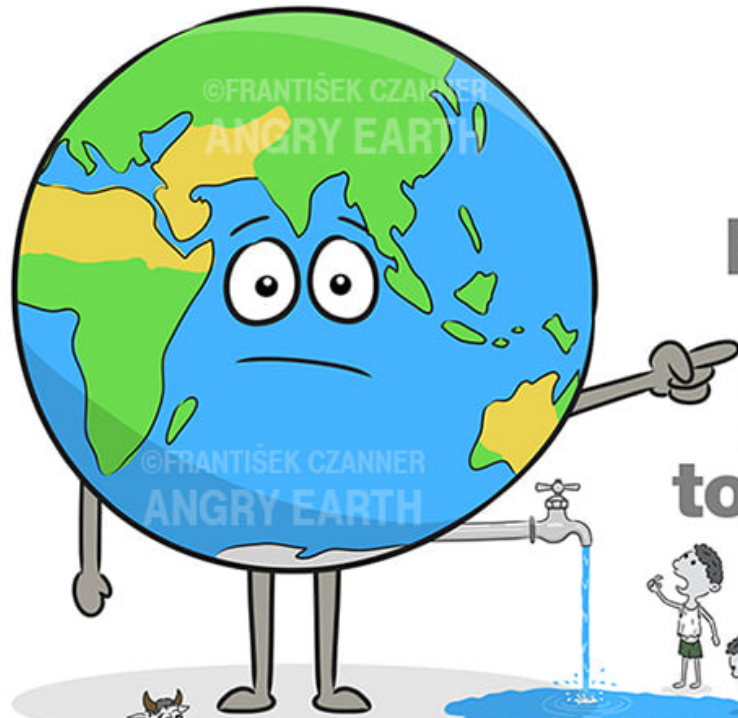
Water

How much of the Earth's surface is covered by water?

Three-fourths of the Earth's surface is covered by water.







How much **water** is needed to produce...?



**BEWARE
OF
AIR**

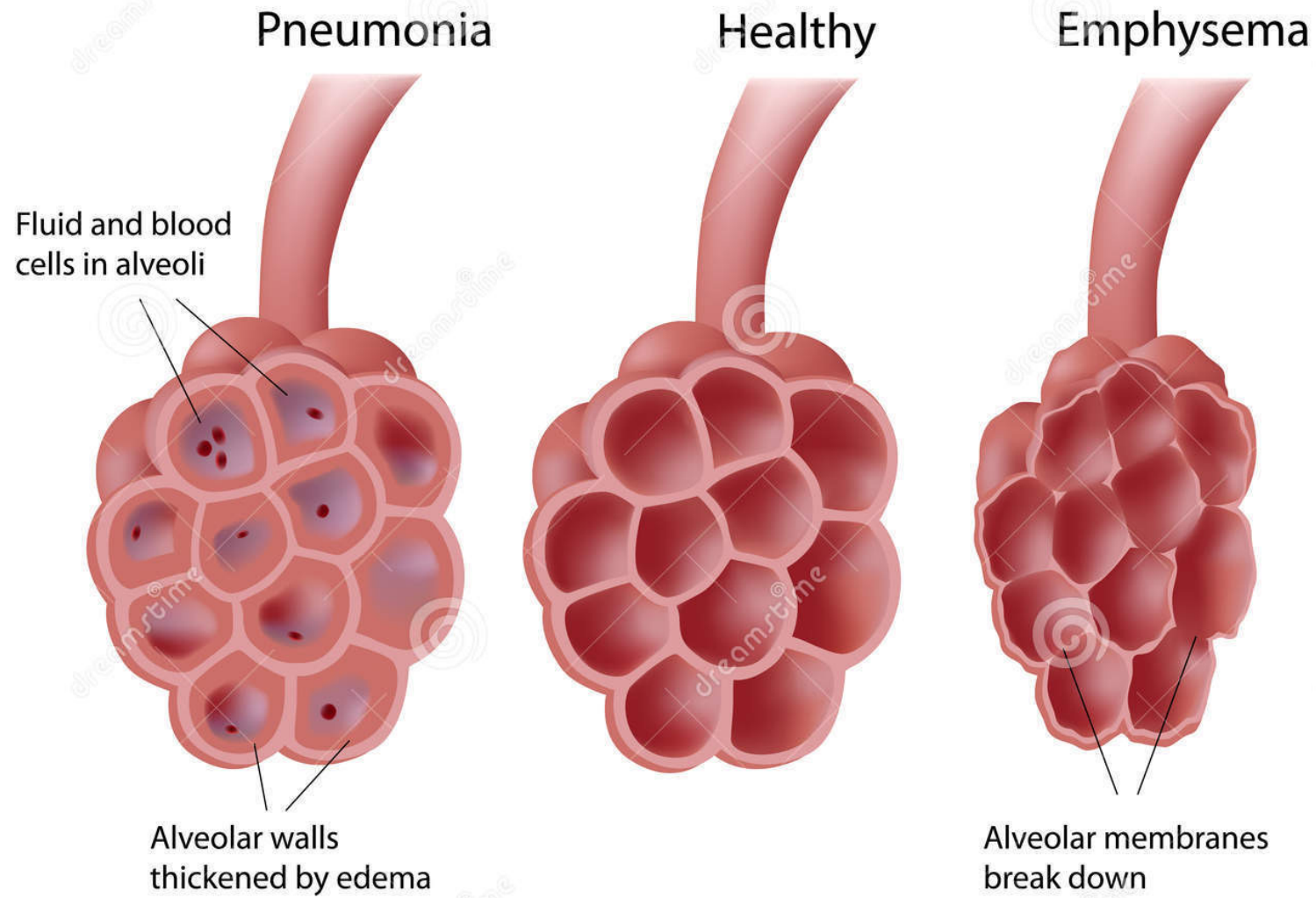


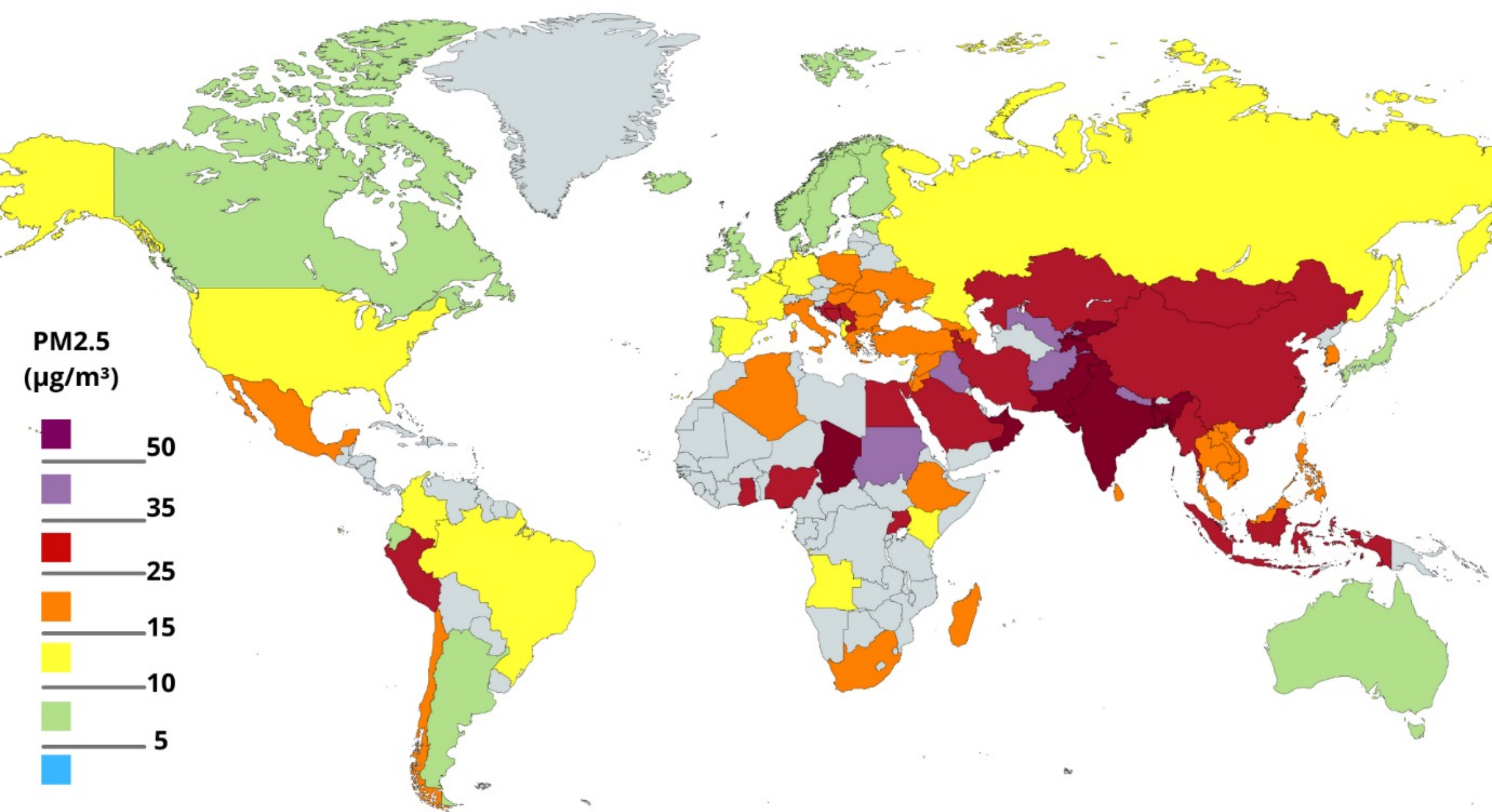




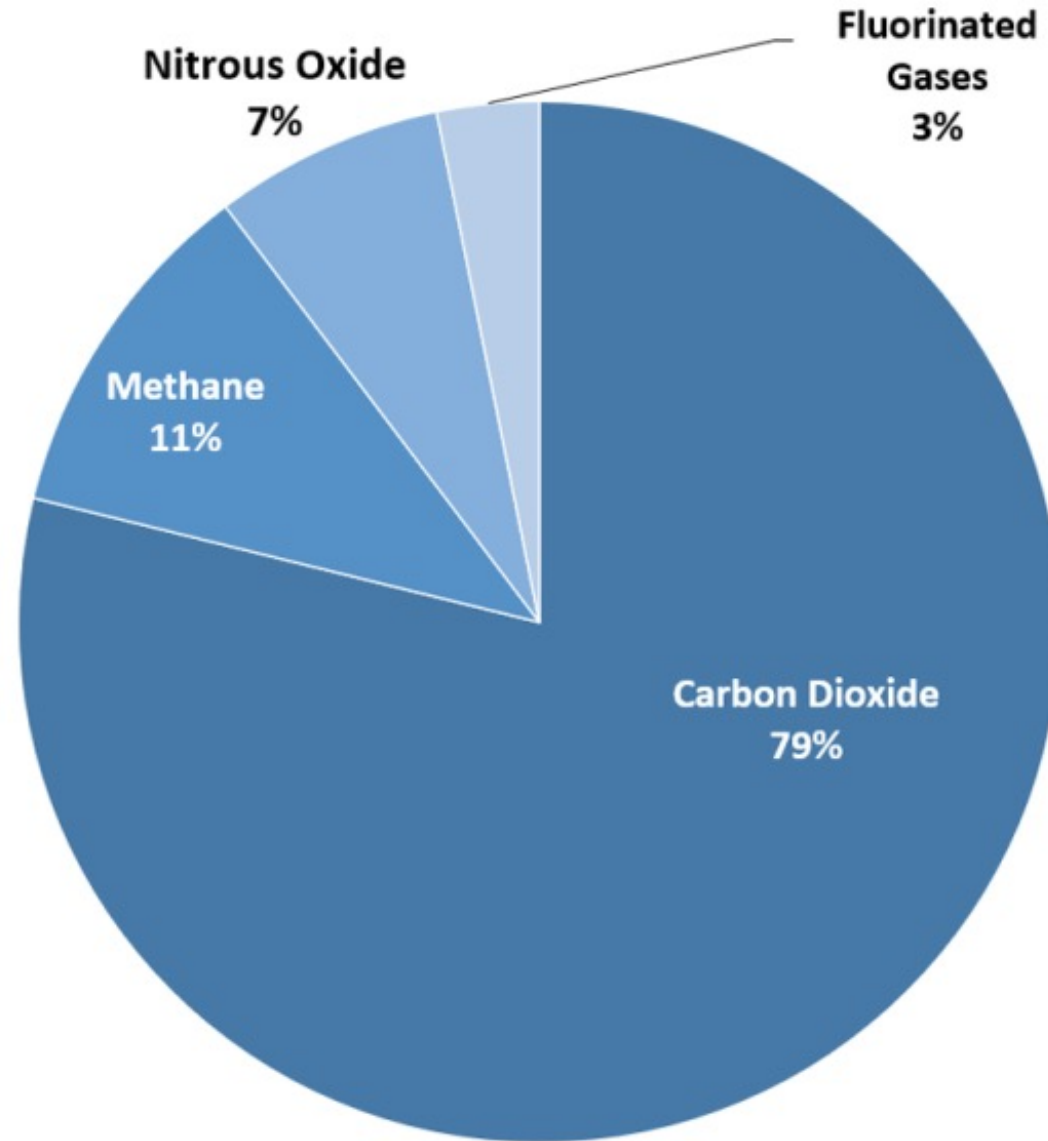


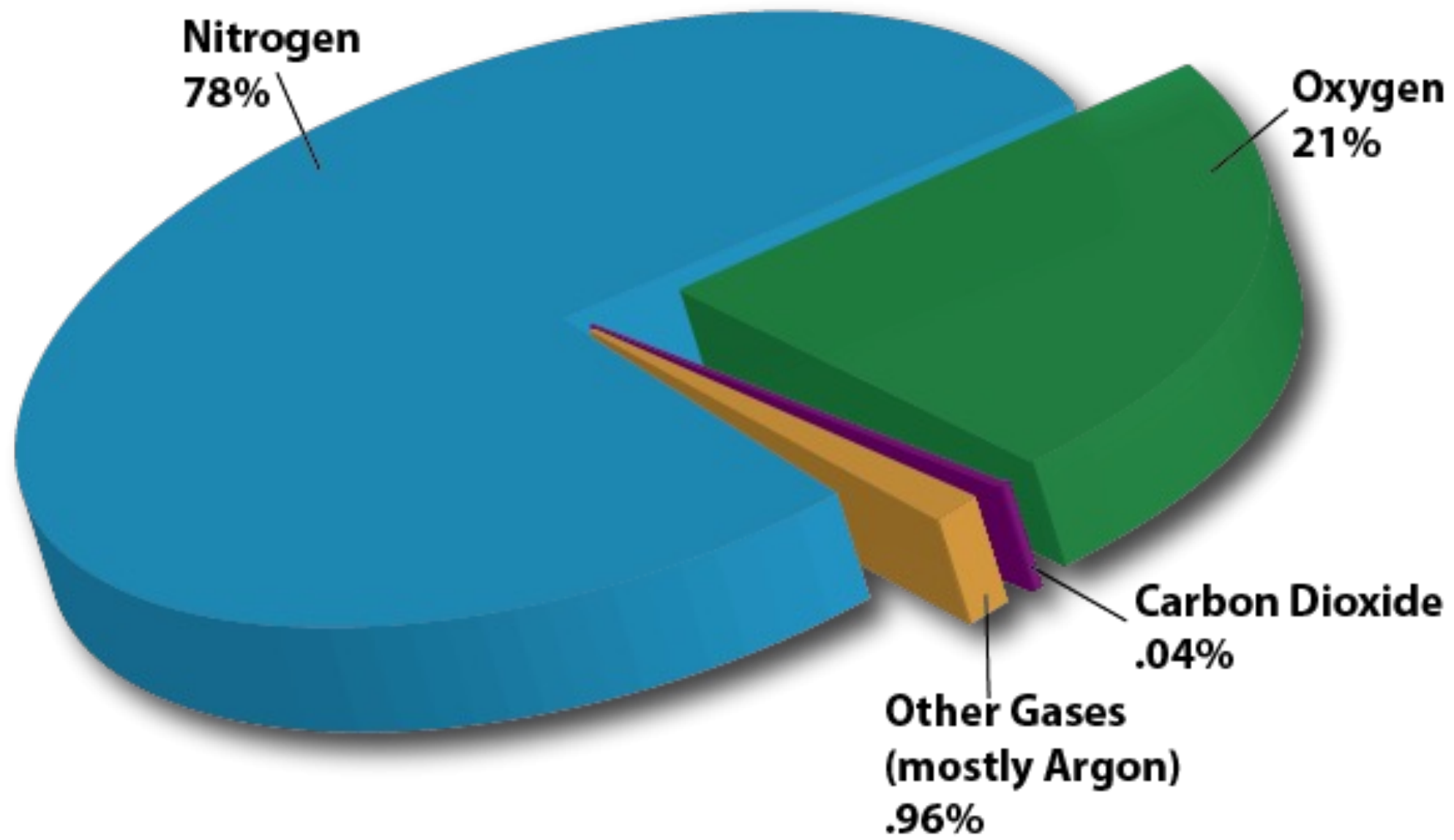
Alveoli Changes in Lung Diseases





Overview of U.S. Greenhouse Gas Emissions in 2020

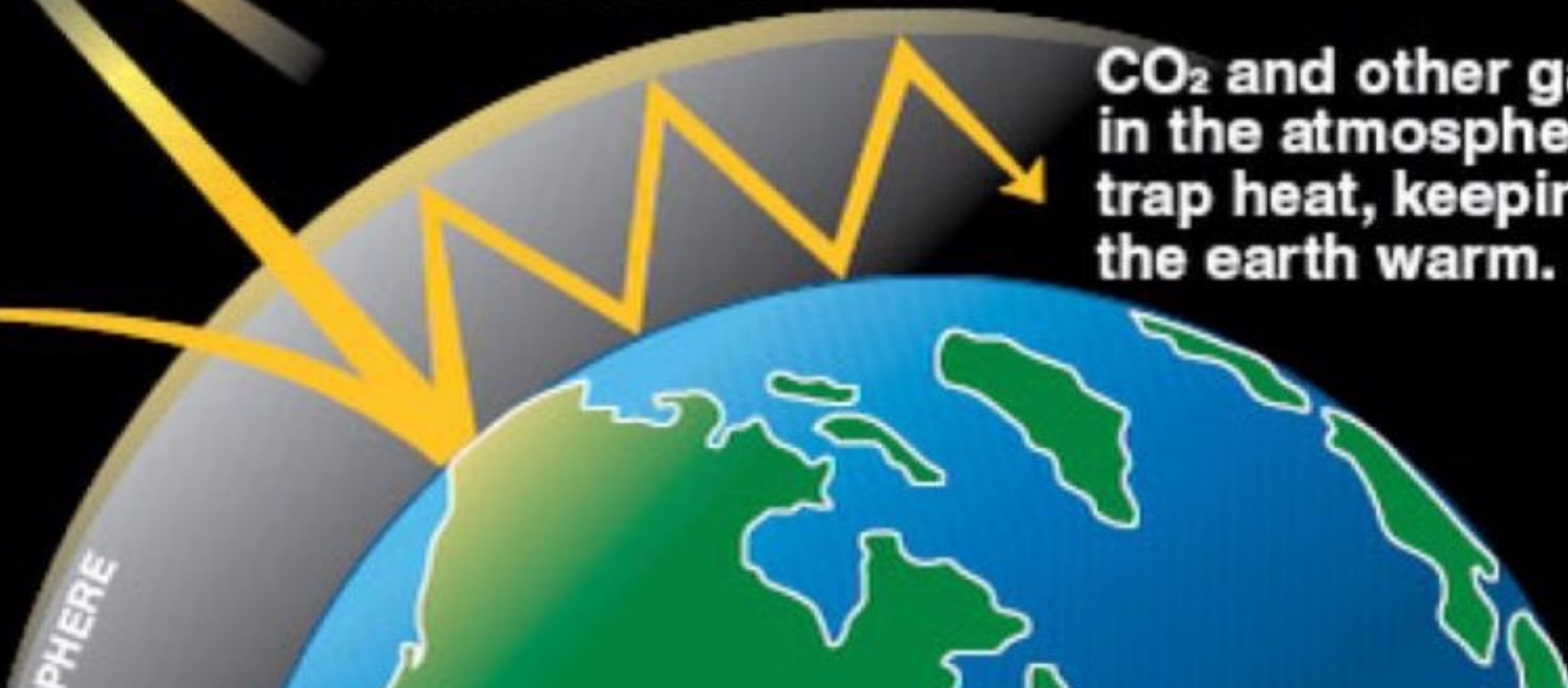




The Greenhouse Effect

Some sunlight that hits the earth is reflected. Some becomes heat.

CO₂ and other gases in the atmosphere trap heat, keeping the earth warm.





GREENHOUSE GAS EMISSIONS



AGRICULTURE



FORESTRY



INDUSTRY



ENERGY SUPPLY



**WASTE AND
WASTE WATER**



TRANSPORTATION



**COMMERCIAL
BUILDINGS**



**RESIDENTIAL
BUILDINGS**



ELECTRICITY SUPPLY



HEAT SUPPLY

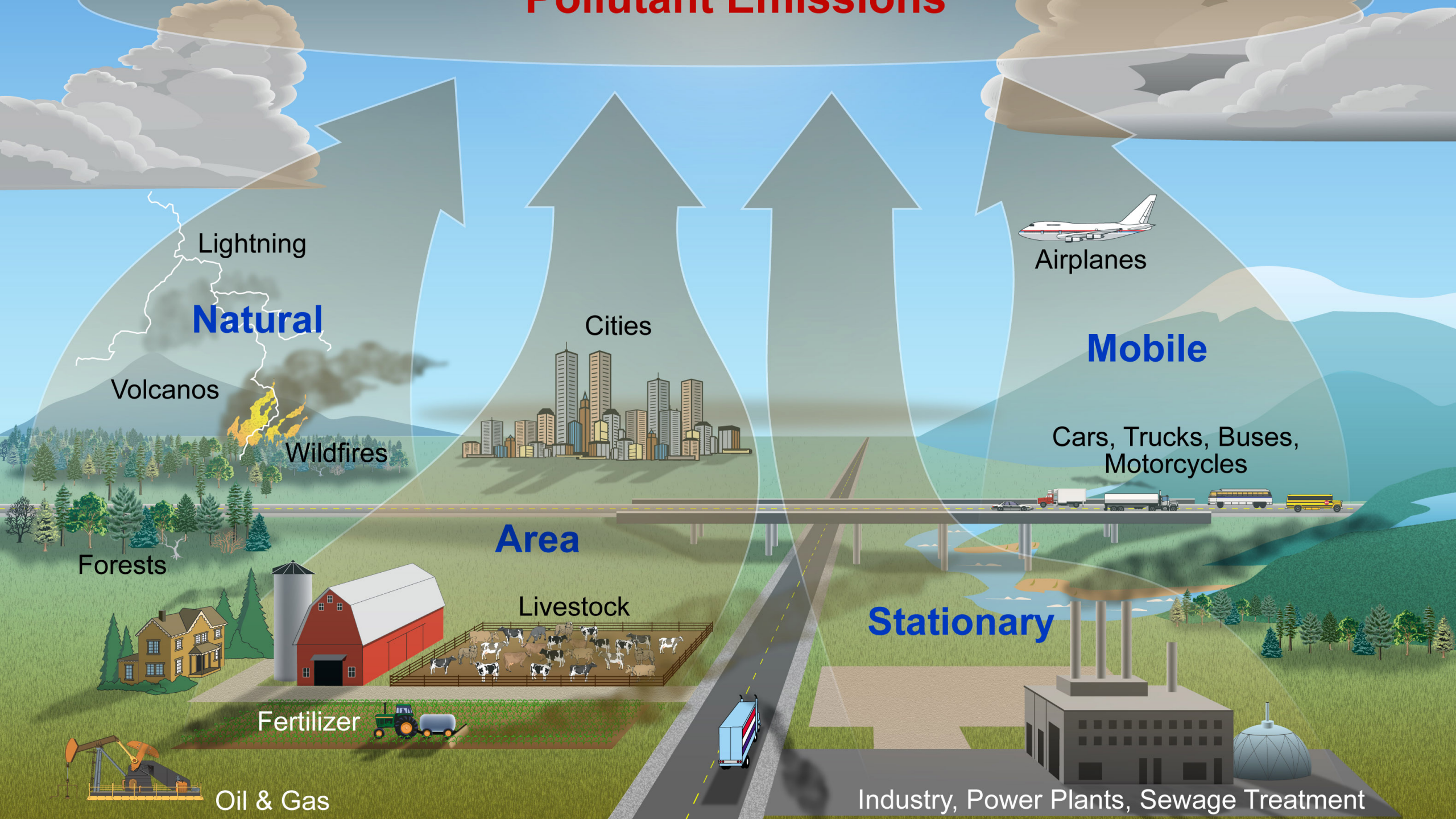


LIVESTOCK



OTHER

Pollutant Emissions



Lightning

Natural

Volcanos

Wildfires

Cities



Airplanes

Mobile

Cars, Trucks, Buses,
Motorcycles



Forests

Area

Livestock



Fertilizer

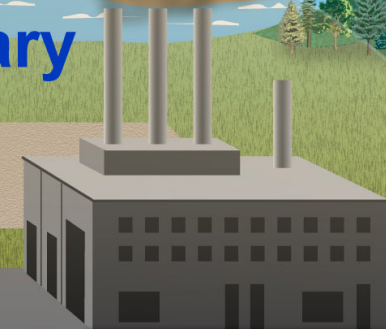


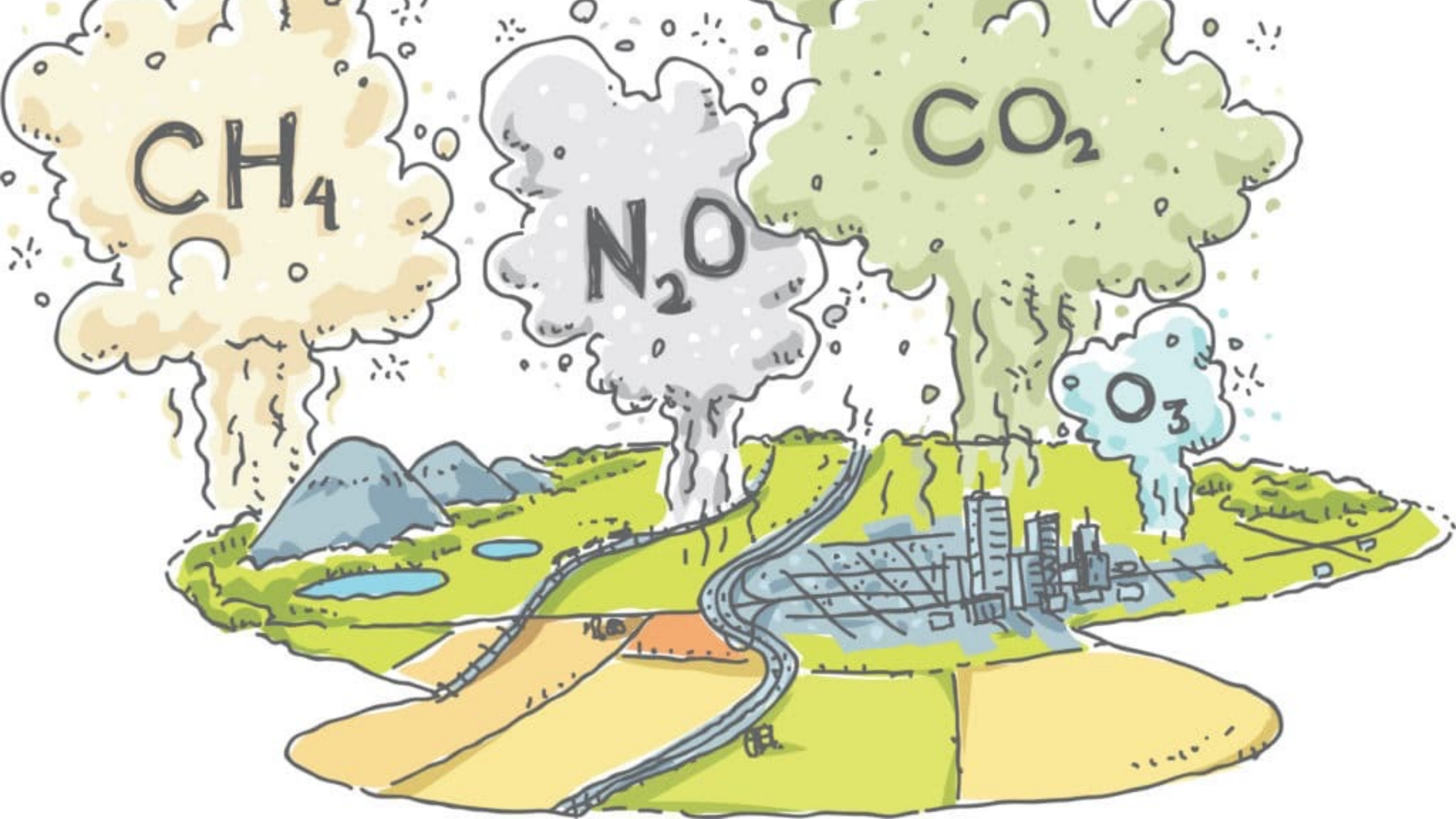
Oil & Gas

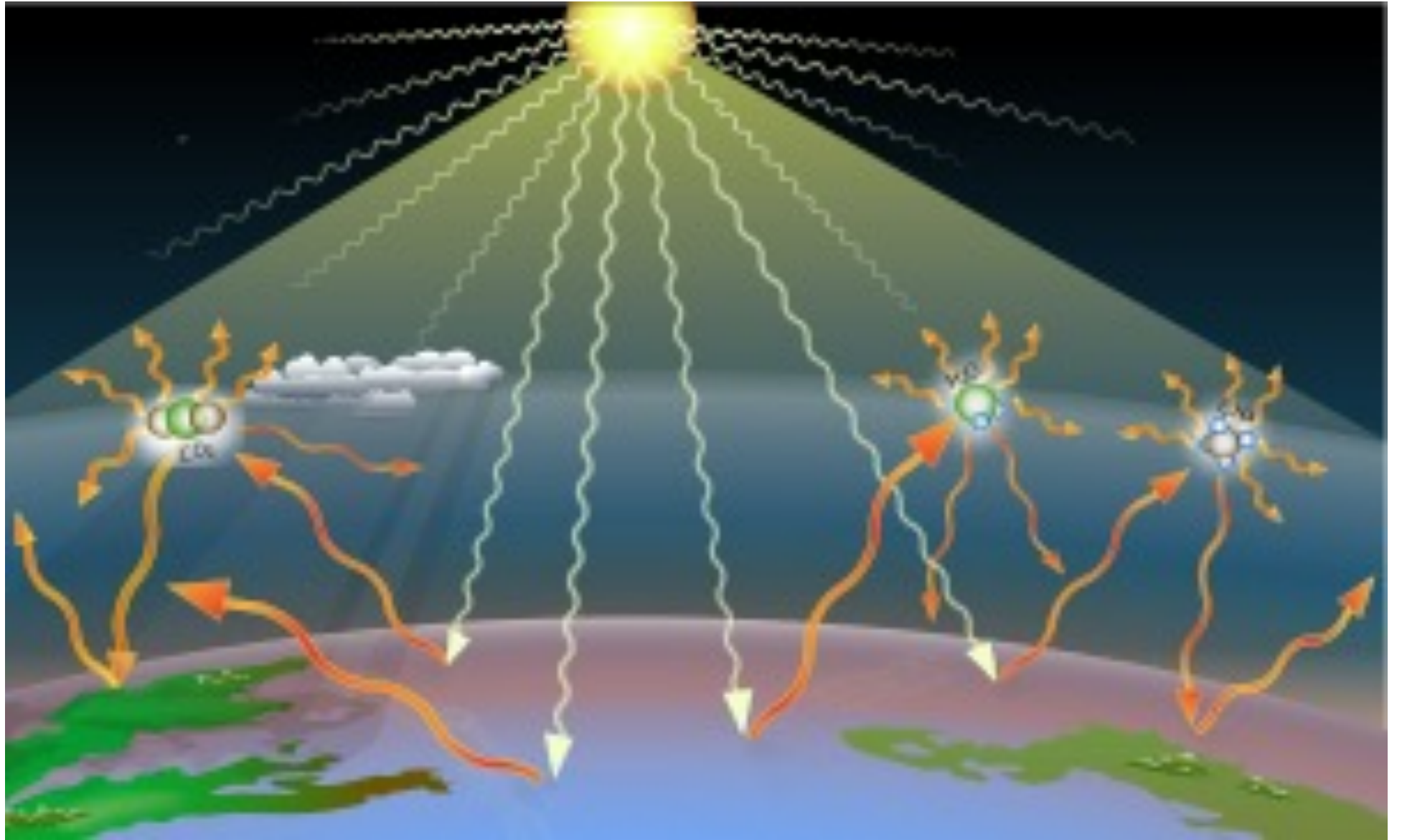


Stationary

Industry, Power Plants, Sewage Treatment



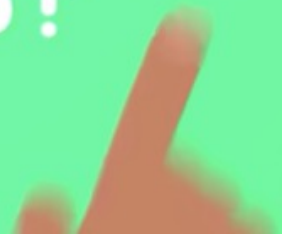




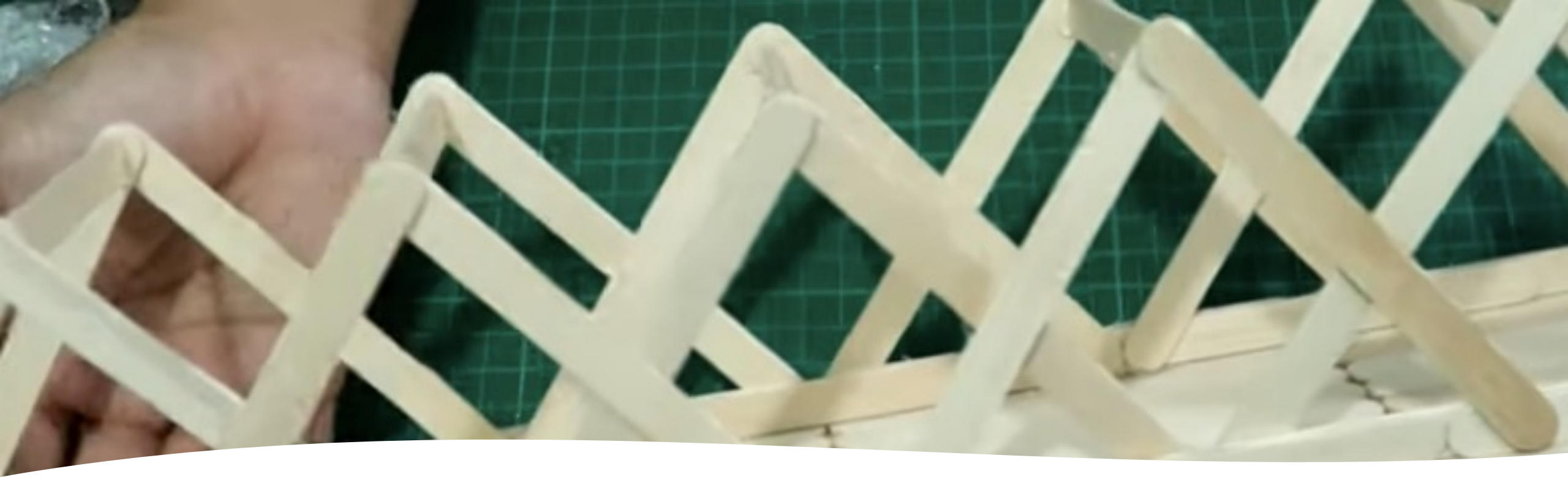
Design &
Engineering



DO YOU **KNOW** WHAT AN
ENGINEER IS?







Shapes

Trusses

Stress

<https://www.youtube.com/watch?v=zbOIZC94YUQ>

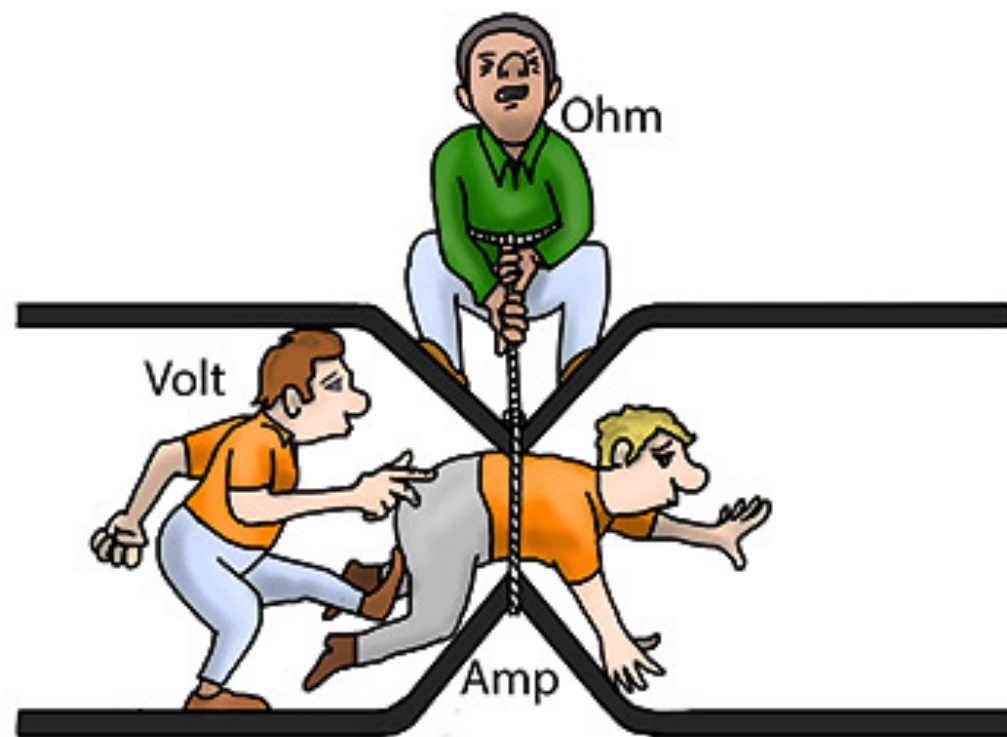
Electricity

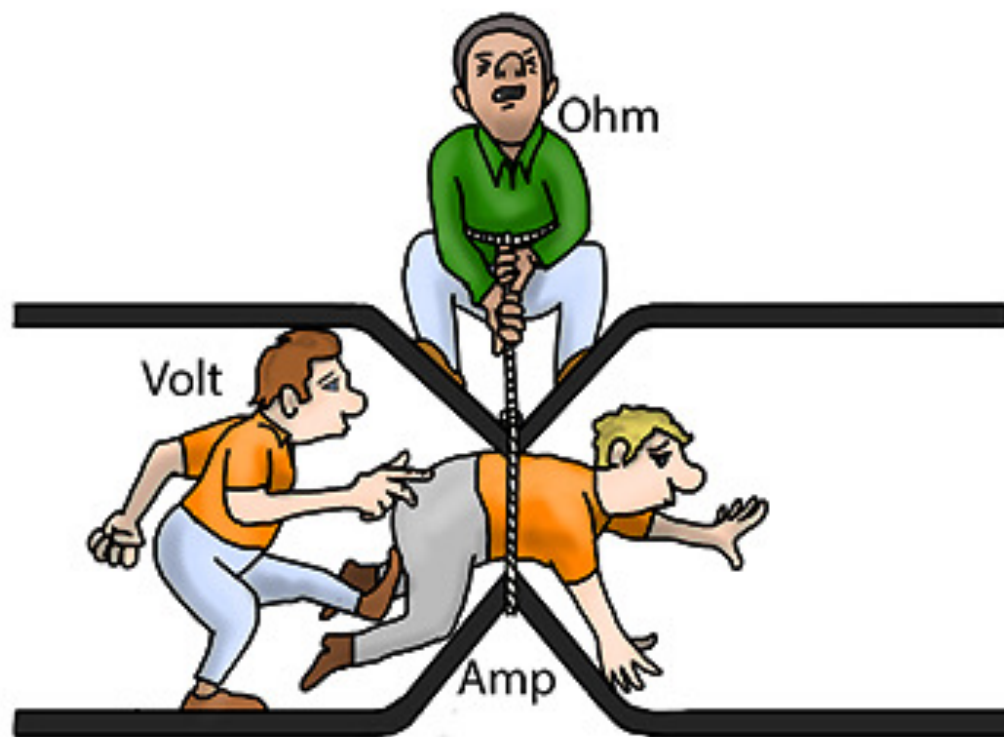
Volts

Intensity

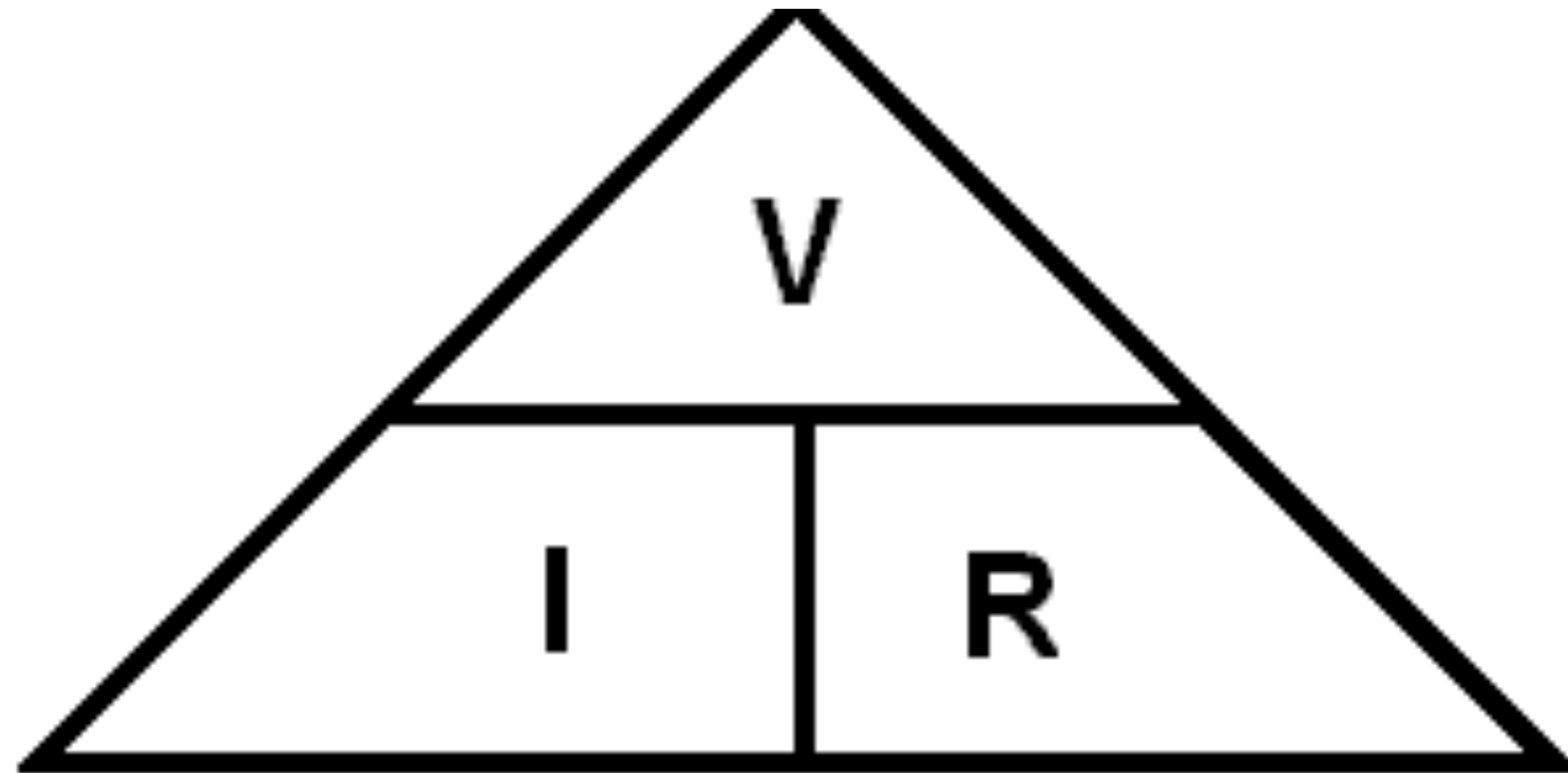
Resistance

Watts





Quantity	Symbol	Unit of Measurement	Unit Abbreviation
Current	I	Ampere (Amp)	A
Voltage	V or E	Volt	V
Resistance	R	Ohm	Ω





Watts = Intensity x Volts

$$P = I \times V$$

Gears

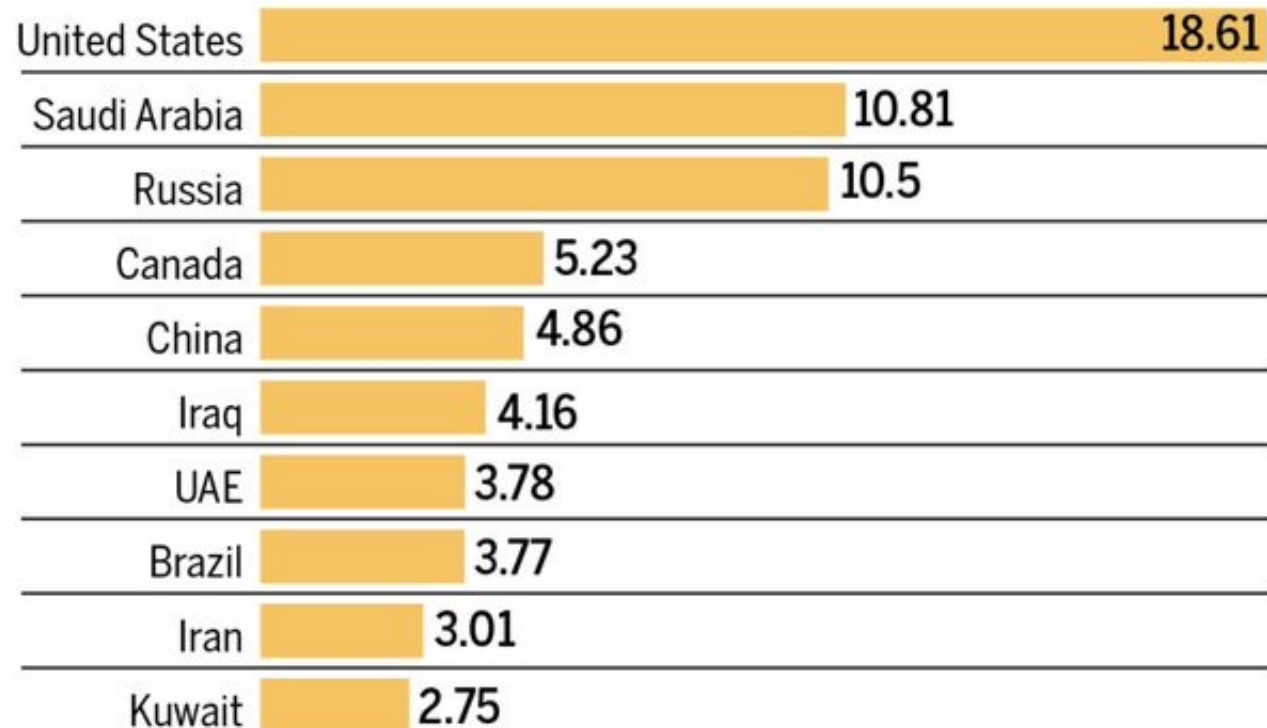
<https://www.youtube.com/watch?v=edZnqd638-w&t=150s>

https://www.youtube.com/watch?v=0PgA6Dz7f_M

Carpe diem, Canada

TOP 10 OIL PRODUCERS IN THE WORLD

Million barrels per day (mbd), as of Dec. 8, 2021



WORLD TOTAL PRODUCTION



SOURCE: U.S. ENERGY INFORMATION ADMINISTRATION

GIGI SUHANIC / FINANCIAL POST







Линия F
1 смена Отв. Зубкова Е.
2 смена Отв. Сидлов А.

ОБОТКО
BNSX

55





Fort McMurray Alberta

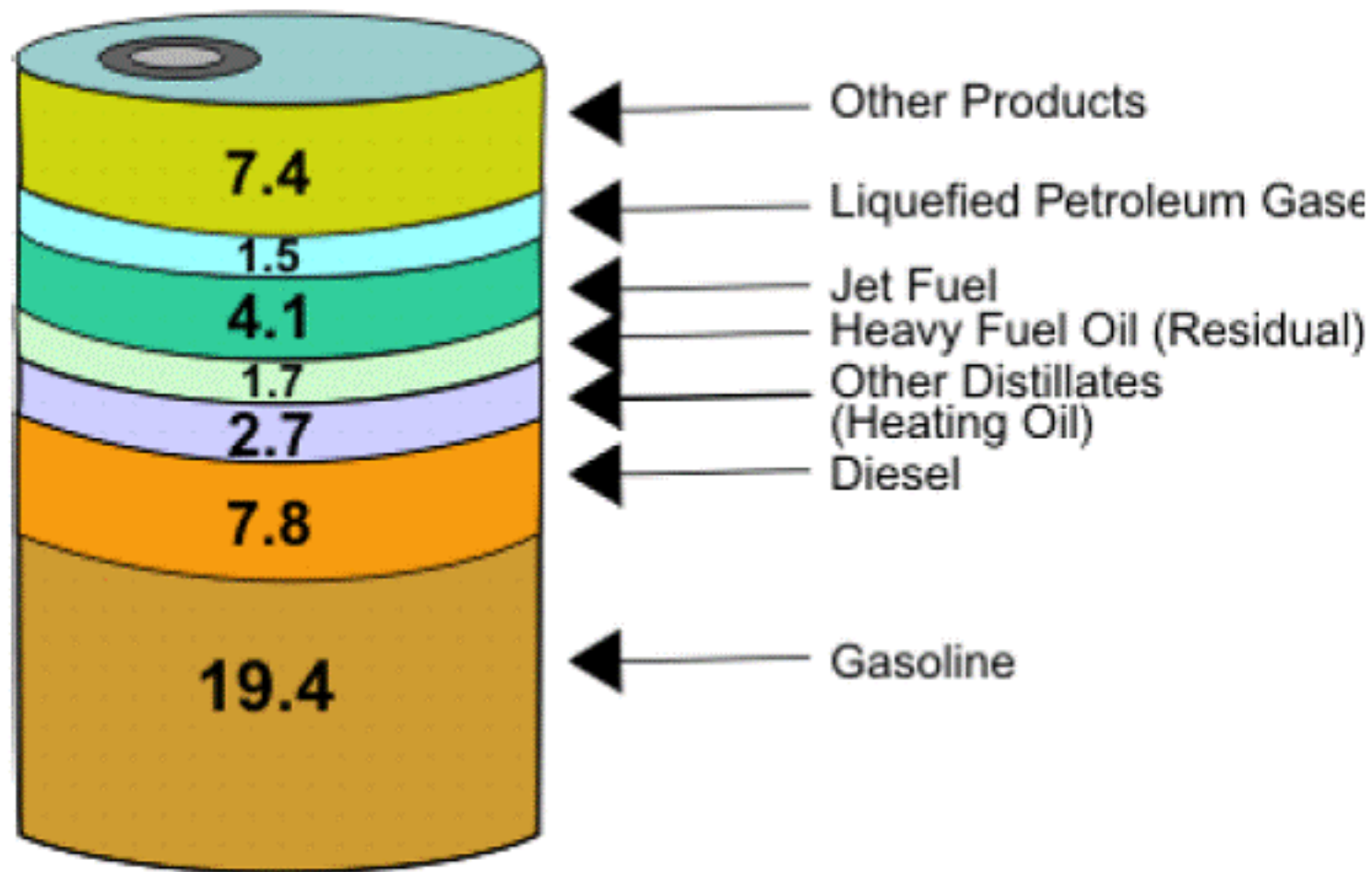












Torque Explained

Torque

Torque is a measurement of the force which causes something to rotate around a point

$$\text{Torque} = \text{Force} \times \text{Length}$$

Torque Explained



Torque

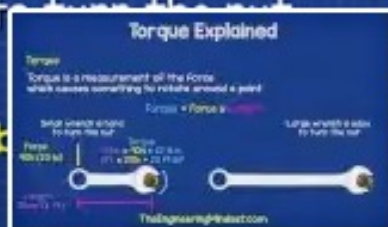
Torque is a measurement of the force which causes something to rotate around a point

$$\text{Torque} = \text{Force} \times \text{Length}$$

Small wrench is hard

× Pull up for precise-seeking

Force:
90N (20 lb)



0:27

Length:

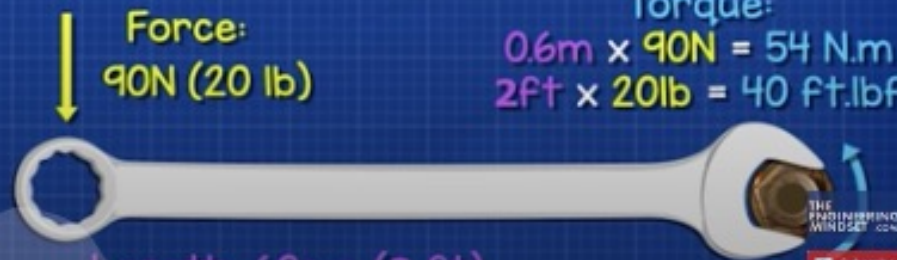
Torque:
 $90\text{N} \times 0.3\text{m} = 27\text{ N.m}$
 $20\text{ lb} \times 2\text{ ft} = 40\text{ ft.lbf}$



Large wrench is easy to turn the nut

Force:
90N (20 lb)

Torque:
 $0.6\text{m} \times 90\text{N} = 54\text{ N.m}$
 $2\text{ft} \times 20\text{lb} = 40\text{ ft.lbf}$



Length: 60cm (2 ft)

