

3 THE ATMOSPHERE

3.1 Vocabulary

stress within words • prefixes

A Discuss these questions.

- 1 What key gases make up the lower atmosphere?
- 2 What are some of the key functions these gases play in relation to life on Earth?

B Study the pictures on the opposite page.

- 1 What does each picture show? Talk about each picture using words from box a.
- 2 How does/did each item affect the atmosphere?

a
aerosol altitude
atmosphere atom bromine
chlorofluorocarbon composition
exhaust molecule ozone
pesticide pollutant radiation
smog ultraviolet

C Study the words in box a.

- 1 Underline the stressed syllable in each multi-syllable word.
- 2 Which word(s) have the same stress pattern as *composition*?
- 3 Sort the other words into groups, according to their stress patterns.

D Complete each sentence with a word from box a. Change the form if necessary (e.g., change singular to plural).

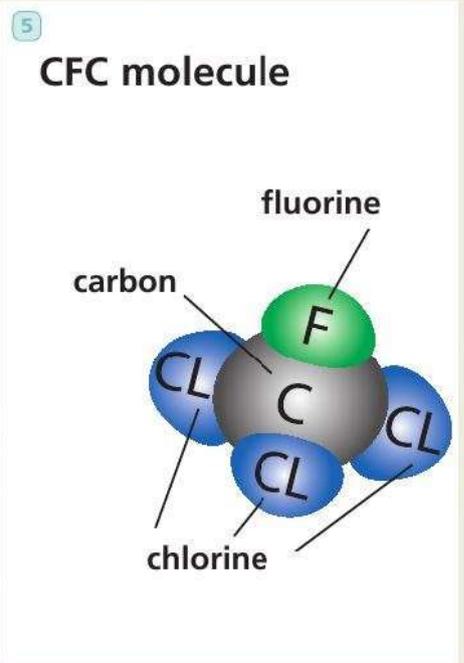
- 1 Most modern passenger aeroplanes travel at an _____ of around 9,000 metres.
- 2 An _____ consists of electrons, protons and neutrons.
- 3 _____ radiation is a key factor in the development of skin cancers.
- 4 Man-made _____ have contributed to the destruction of the ozone layer.
- 5 Nitrous oxide is produced by _____ gases.
- 6 An _____ is a substance stored in a container under pressure, normally with a propellant gas, for use as a fine spray.
- 7 _____ help farmers but sometimes damage the environment.

E Study the words in box b. Find the prefix and try to work out the meaning in each case.

b	denitrify	photosynthesis	biological	thermocline	multicellular
	deoxygenate	photodissociation	bioethics	thermometer	multilayered
	depletion	photochemical	biodiversity	thermosphere	multinational

F Complete each sentence with a word from box b. Change the form if necessary.

- 1 The oldest known _____ organism is a red algae found in 1.2 billion-year-old rock.
- 2 Many soil-based microorganisms _____ compounds and release nitrogen back into the atmosphere.
- 3 The _____ is a layer of water or air where temperatures rapidly change with depth or altitude.
- 4 It is well known that _____ processes play a key role in the amount of nitrogen in the lower atmosphere.
- 5 The end product of _____ is oxygen and energy-rich carbohydrates.



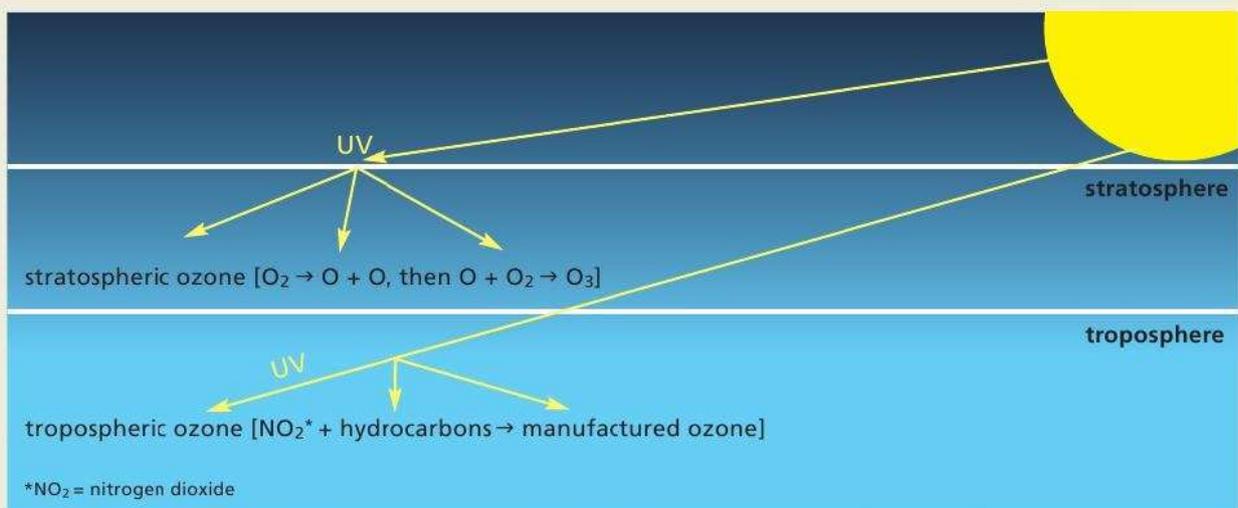


Figure 1: Production of tropospheric and stratospheric ozone

Chemical	Use	Effect(s)/other information
chlorofluorocarbons (CFCs)	aerosols, refrigerants	release chlorine which destroys ozone
hydrochlorofluorocarbons (HCFCs)	same as above	replaced CFCs; far shorter lifespan but act more quickly than CFCs
methyl bromide	pesticide	releases bromine (bromine is 40 times more powerful at destroying ozone than chlorine)
halons	fire extinguishers	release bromine
tetrachloroethane	solvent in medicines	releases chlorine
methyl chloroform	solvent in cleaning products	releases chlorine

Figure 2: Ozone destroyers

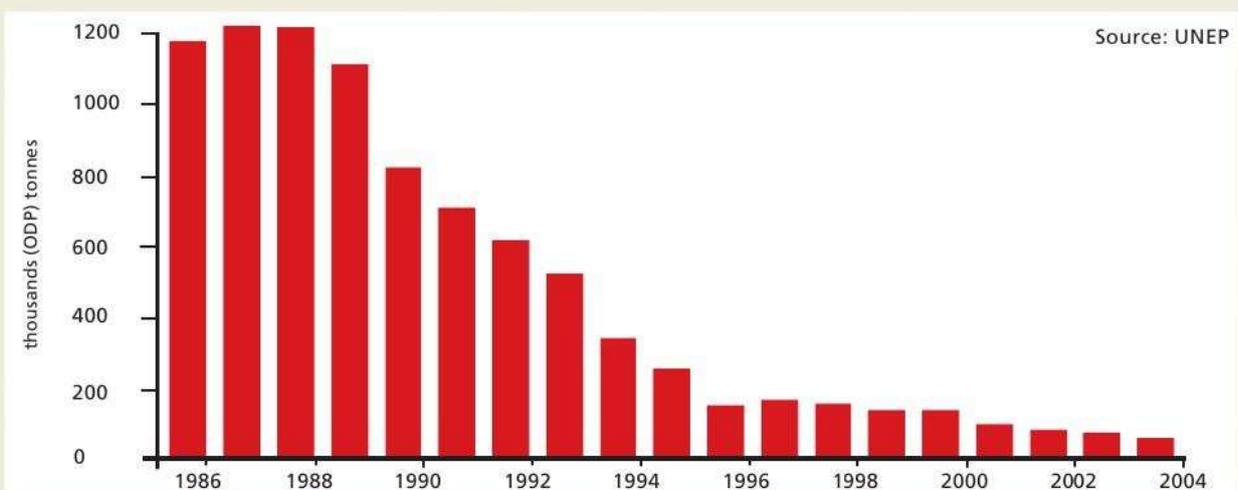


Figure 3: Worldwide CFC production 1986-2004

Vocabulary bank

Stress within words

Nouns, verbs, adjectives and adverbs are called **content words** because they carry the meaning.

One-syllable words

Some content words have **one syllable** or sound. This is always stressed.

Examples:

'gas, 'air, 'smog, 'soil

Two-syllable words

Some content words have **two syllables**. Two-syllable nouns and adjectives are often stressed on the first syllable. Two-syllable verbs are often stressed on the second syllable.

Examples:

Nouns	'chlorine, 'solvent, 'ozone
Adjectives	'global, 'Arctic
Verbs	re'lease, re'act, ex'pand

Exceptions:

Nouns	la'goon, e'ffect, per'cent
Adjectives	u'nique, ma'rine
Verbs	'process, 'strengthen

Multi-syllable words

Some content words have **three or more syllables**. Multi-syllable words are often stressed three syllables from the end.

Example:

Ooo oOoo ooOoo

This is true for most words ending in:

~ize ~ise	'summarize, 'stabilize
~sis	a'nalysis, hy'pothesis
~ate	'accurate, 'calculate
~ify	'classify, 'specify
~phere	'atmosphere, 'hemisphere
~ical	'chemical, 'physical
~ity	simi'larity, responsi'bility
~ular	par'ticular, 'regular
~ium	'helium, equi'librium
~al	ma'terial, po'litical

Exceptions:

Multi-syllable words ending in the following letters are normally stressed two syllables from the end.

~ic	a'cidic, in'trinsic
~tion	con'dition, di'rection
~cian	tech'nician
~sion	com'pression
~ent	com'ponent, e'fficient

Skills bank

Getting information from other people**From the lecturer**

We can sometimes ask a lecturer questions at the end of a lecture. Introduce each question in a polite or tentative way.

Examples:

Could you go over the bit about the formation of ozone again?

I didn't quite understand what you said about the gas content of the lower atmosphere.

I wonder if you could repeat the name of the scientific principle?

Would you mind giving the source of that quotation again?

From other students

It is a good idea to ask other students after a lecture for information to complete your notes.

Examples:

What did the lecturer say about ultraviolet radiation?

Why did the lecturer tell that story about flying on Concorde?

I didn't get the bit about the ionosphere.

Be polite!

It sometimes sounds impolite to ask people a direct question. We often add a polite introduction.

Examples:

Does exposure to high levels of UV radiation permanently damage DNA?

→ *Do you know if exposure to high levels of UV radiation permanently damages DNA?*

What does 'anthropogenic' mean?

→ *Can you remember what 'anthropogenic' means?*

Reporting information to other people

We often have to report research findings to a tutor or other students in a seminar. Make sure you can give:

- sources – books, articles, writers, publication dates
- quotes – in the writer's own words
- summary findings – in your own words