

Grade 8 Life Orientation Worksheet

Air pollution

When we speak of our 'environment', we mean our surroundings and everything in our surroundings that make for a healthy or unhealthy existence for individuals, communities, plants and animals. Population, development and health are all interconnected and both influence the environment and are influenced *by* the environment.

In order to protect our planet for future generations, we need to take care of the environment. That means that we need to be more aware of what damages the environment. That way we can find solutions to improving the environment. We need to look at protecting animals and plants, meeting the growing need for food and protecting forests, lakes and rivers. As pollution is a growing problem, we must find ways of cleaning up polluted air and water and helping to save our planet.

Read the following article.

<http://www.capetown.gov.za/en/Pages/HelpCapeTownbreathemoreeasily.aspx>
by Martin Pollack - 2009/06/18

The City of Cape Town is reviewing its current air pollution by-law to make it stricter and more effective – and to help attain the City's vision of becoming 'the city with the cleanest air in Africa'.

In South Africa, section 24 of our Constitution gives us the right to clean air, and the National Environmental Management: Air Quality Act (2004) makes air quality the responsibility of local government, through air quality management plans, by-laws and other policies.

Cape Town's Air Quality Management Plan (AQMP) intends to not only clean up our air, but to also reduce the health effects of poor air quality on the citizens of Cape Town, especially during periods of Brown Haze.

The City's first Air Quality by-law came into effect in March 2003. It declared the entire municipal area an air pollution control zone, tightened up on smoke emission limits from industries and turbo-charged diesel vehicles, and added a nuisance section to control air pollution-related emissions such as dust, fumes, vapours, grit and smoke from any premises.

It enabled the City to declare smokeless zones, restrict the use of certain fuels and issue spot summonses. This was followed up by the Air Quality Management Plan (2005) and a pilot intervention project in Khayelitsha (2007) (the Khayelitsha Air Pollution Strategy).

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The existing Air Pollution Control By-law is now being amended, because it needs to be brought in line with the Air Quality Management Act and it was felt it was not hitting hard enough at those who are responsible for much of our air pollution.

An intensive public participation process has begun, which will include a public hearing and workshops at various venues with provincial and national government, non-governmental and community-based organisations, business and industry.

The City's proposed draft by-law will consider the following:

Illegal burning of tyres and copper wire
Dust emissions from unpaved surfaces and construction activities
Stricter control of diesel vehicle emissions

It will also attempt to provide a legal mandate for the City to set emission standards.

In addition, several other control mechanisms have been incorporated, which include:

- Appointing environmental management inspectors at local government level (so-called "green scorpions")
- Ensuring compliance, enforcement and licensing of listed activities
- Enhancing financial structures to enable the collection of license fees

Air pollution is a key factor in the city's overall health. Polluted air poses not only a serious health risk to residents but also mars the image of our city with its great natural beauty.

The greatest air pollution danger in Cape Town is particulate matter, from dust, wood-burning and diesel.

For more details of the public participation programme, watch your local press or register to receive the City's weekly news on www.capetown.gov.za

To find out "real-time information" about the air quality where you live or work, visit Cape Town's Air Quality website on www.capetown.gov.za/airqual

What is clean air?

Clean air is made up of nitrogen (78,1%), oxygen (20,9%), carbon dioxide (0,03%), inert gases such as argon (0,9%) and water vapour, as well as particulates (specks of dust, ash, sand and pollen). Other gases such as neon, helium, hydrogen, ozone, carbon monoxide, methane and sulphur dioxide exist in tiny amounts in the air. Polluted air, however, contains quantities of gases and particulates that can make humans or animals ill or unwell;

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interfere with or damage natural eco-systems; or damage useful materials (such as plants or metals).

What causes air pollution?

Any of our activities that involve combustion (heating or burning) create air pollutants.

These activities include:

- Driving or flying (the combustion engine burns fossil fuels)
- Manufacturing (refineries, steel mills, smelters, cement manufacturing, paper manufacturing, brickworks, etc.)
- Generating electricity (using coal)
- Incineration (burning of household or industrial waste, cremation)
- Cooking (using electricity, coal, paraffin, wood or gas)
- Heating (using electricity, coal, wood or gas)
- Mining (burning waste or fuel)

Veld, forest or grass fires (volcanoes and pollen are also sources of pollution).

Activity 1: Read a passage and answer questions

Answer the following questions on the passage above using your own words.

1. What does section 24 of our Constitution say? [2]
2. What is the 'environment'? [3]
3. The City's first Air Quality by-law came into effect in March 2003. What did it declare? [5]
4. What is clean air? [3]
5. What is polluted air? [2]
6. Name five causes of air pollution. [5]

Total marks: 20

Activity 2: Write a report based on the reading passage (Individual activity)

Write a report on air pollution. Discuss the causes and effects of air pollution. Use the reading above as a basis for your report.

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Use the following report writing format as a guide.

Report writing format

Your report should contain the headings below in bold (if typed) and underlined (if handwritten). The section between the 'Introduction' and 'Conclusion' forms the main body of your report.

Title

Title of your report

Summary

Summarise the main points, main conclusions and recommendations. Keep your summary short. (Although your summary appears below the title, you should write it last.)

Introduction

State the problem you are investigating, for example: 'Why is it necessary to have laws in place to combat air pollution?' State the purpose of your report.

Problem and theory

Explain the problem you are investigating. Explain any theory that applies to the problem. (E.g.: Air pollution is caused by pollutants in the air.) Define your key concepts, e.g. 'air pollution, smokeless zones, draft by-laws, particulates, etc.'.

Method and results

Explain the method(s) you are using to obtain your result. State what the results are. Include any tables, diagrams and graphs you may be using to record the results.

Discussion

Assess your results. (E.g.: State whether you were able to obtain sufficient information to explain how Cape Town intends to become the city with the cleanest air in Africa.)

Conclusion

Summarise your results. Explain what measures the City of Cape Town is taking and whether you think that it will be successful in fighting air pollution. Make recommendations about how solutions can be found to the problem described.

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Your teacher will assess your report using the rubric below.

Criteria	Level 1	Level 2	Level 3	Level 4	Marks
Format of report [Marks out of 5]	The learner followed the format provided exactly. [5 marks]	The learner mostly followed the format provided. [4 marks]	The learner sometimes followed the format provided. [3 marks]	The learner did not follow the format provided. [1-2 marks]	
Information on air pollution contained in report [Marks out of 5]	The learner included all the relevant points in the report. [5 marks]	The learner included most of the relevant points in the report. [4 marks]	The learner included few of the relevant points in the report. [3 marks]	The learner left out most of the relevant points in the report. [1-2 marks]	
Language usage in report [Marks out of 5]	Excellent language usage with no mistakes. Own words used. [5 marks]	Good language usage with only a few mistakes (fewer than five). Own words mostly used. [4 marks]	Acceptable language usage with more than five mistakes. Some sentences are copied from the lesson. [3 marks]	Little attempt to use correct language or no attempt to use own words. [1-2 marks]	
Total marks out of 15:					

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Suggested Solutions

Question number	Possible marks	Solution
1.1	2	In South Africa, section 24 of our Constitution gives us the right to clean air, and the National Environmental Management: Air Quality Act (2004) makes air quality the responsibility of local government, through air quality management plans, by-laws and other policies.
1.2	3	Our environment is our surroundings and everything in our surroundings that make for a healthy or unhealthy existence for individuals, communities, plants and animals. Population, development and health are all interconnected and both influence the environment and are influenced by the environment.
1.3	5	It declared the entire municipal area an air pollution control zone, tightened up on smoke emission limits from industries and turbo-charged diesel vehicles, and added a nuisance section to control air pollution-related emissions such as dust, fumes, vapours, grit and smoke from any premises. It enabled the City to declare smokeless zones, restrict the use of certain fuels and issue spot summonses. This was followed up by the Air Quality Management Plan (2005) and a pilot intervention project in Khayelitsha (2007) (the Khayelitsha Air Pollution Strategy).
1.4	3	Clean air is made up of nitrogen (78,1%), oxygen (20,9%), carbon dioxide (0,03%), inert gases such as argon (0,9%) and water vapour, as well as particulates (specks of dust, ash, sand and pollen). Other gases such as neon, helium, hydrogen, ozone, carbon monoxide, methane and sulphur dioxide exist in tiny amounts in the air.
1.5	2	Polluted air, however, contains quantities of gases and particulates that can make humans or animals ill or unwell; interfere with or damage natural eco-systems; or damage useful materials (such as plants or metals).
1.6	5	Any of our activities that involve combustion (heating or burning) create air pollutants. These activities include: <ul style="list-style-type: none"> • Driving or flying (the combustion engine burns fossil fuels) • Manufacturing (refineries, steel mills, smelters, cement)

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		<p>manufacturing, paper manufacturing, brickworks, etc)</p> <ul style="list-style-type: none"> • Generating electricity (using coal) • Incineration (burning of household or industrial waste, cremation) • Cooking (using electricity, coal, paraffin, wood or gas) • Heating (using electricity, coal, wood or gas) • Mining (burning waste or fuel) • Veld, forest or grass fires (volcanoes and pollen are also sources of pollution).
Total marks for question 1: 20. Highlight any spelling or grammatical errors and subtract ½ marks to a total of 2 marks for these errors.		
2	15	See the rubric in the Appendix of Assessment Tools.

Report rubric

Criteria	Level 1	Level 2	Level 3	Level 4	Marks
Format of report [Marks out of 5]	The learner followed the format provided exactly. [5 marks]	The learner mostly followed the format provided. [4 marks]	The learner sometimes followed the format provided. [3 marks]	The learner did not follow the format provided. [1-2 marks]	
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Total marks out of 15:					