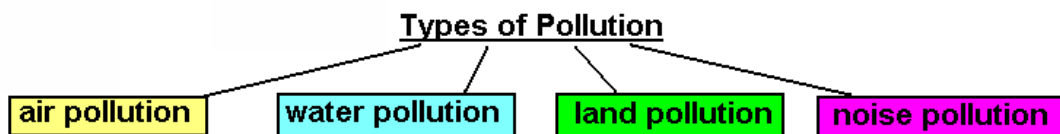


Grade 8 Natural Science Worksheet

Pollution

Part One: Pollutants and types of pollution

1. What is a “pollutant”? What do pollutants do? [5]
- 2.



There are different types of pollution. Explain what is meant by each of the types of pollution mentioned in the mind-map above. Write a short paragraph, including specific examples, for each type of pollution. [20]

Part Two: Ideas to reduce pollution

Is there anything that can be done to reduce or manage pollution levels?

Discuss this question with a partner. Record your ideas and then draft a letter to local government, explaining your concern about increasing levels of pollution and suggesting ways for reducing it.

[15]

[Total: 40 marks]

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Suggested Solutions

Question number	Possible marks	Solution
1.1	5	<p>Pollutants are substances ✓ that cause undesirable changes ✓ in the environment. ✓ Pollutants change the characteristics ✓ of air, water or land. ✓ These changes are not good because they have harmful effects ✓ on the plants and animals living in the area. Sometimes, an area can adjust to changes and adapt successfully. ✓ However, if the pollutants cause extreme damage, an area is unable to adapt to the changes and the plants and animals will become irreversibly damaged. ✓ Remember that pollution affects the health of humans too. ✓</p>
1.2	5 marks per paragraph = 20	<p>Learner paragraphs will differ, but guidelines for content are given below:</p> <p>Air pollution is a change of the natural composition of the atmosphere. Normally the atmosphere has about 78% nitrogen gas, 21% oxygen gas and then smaller quantities of carbon dioxide and other gases, water vapour and atmospheric dust. A change in the proportion of these gases and substances means air pollution.</p> <ul style="list-style-type: none"> ○ Excess industrial waste gases and vehicle fumes put extra carbon dioxide in the atmosphere. ○ Fine particles of soot and dust from industrial processes add to the particles in the atmosphere. ○ Foreign chemical compounds that shouldn't be in the atmosphere are added by industry. <p>This type of pollution is dangerous for humans. Air pollution worldwide is already a probable cause of global warming, acid rain, smog and the destruction of the ozone layer. The major causes of air pollution are motor vehicle exhaust gases, heat and power generation; industrial manufacturing processes and forest fires, some of which are caused by humans.</p> <p>Water pollution is the contamination of water by foreign objects and unnatural substances that lowers water quality. Many of these unnatural substances are poisonous to all forms of life. On a small scale, both natural and human-made pollutants can safely dissolve in water and be carried downstream without causing damage when concentrations are at harmless levels. However, when concentrations of pollutants are high enough to kill aquatic life, bacteria in the water causes the dead matter to decompose. This decreases the oxygen in the water and the natural balance of life is damaged. Some major causes of water pollution include:</p>

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		<ul style="list-style-type: none"> ○ petroleum product spills; ○ agricultural fertilisers; ○ heavy metal compounds of cadmium, mercury, copper and others; ○ hazardous waste from industries like paper production and mining; and ○ infectious organisms from medical, human and animal waste. <p>Land pollution is also referred to as soil pollution and involves:</p> <ul style="list-style-type: none"> ○ depositing solid waste and litter on good soil; ○ the dumping of non-biodegradable materials; ○ accidental spillage or the intentional dumping of toxic chemicals on the land; ○ land degradation by over-grazing and deforestation. <p>Noise pollution is the result of the expansion of the human species which has led to the development of technologies such as vehicles and heavy machinery. Noise levels in living environments can affect people by disturbing their sleep, for instance. Noise can disturb other organisms living in the environment and chase animals away.</p>
2	15	<p>Learner’s letters will differ, but some guidelines for assessing content of letters is given below:</p> <p>There are several responsible approaches to the problem of pollution, such as:</p> <ul style="list-style-type: none"> ● Humankind needs to understand that our own existence is also threatened by destructive behaviour. ● We need to realise that all living things share the same environment. ● Government must enact and enforce environmental protection laws. ● The efficient use of natural resources must be promoted. ● The recycling of materials for re-use must be promoted. ● Processes that produce waste, and that waste itself, should be managed. ● Energy must be conserved. ● Green (“environmentally friendly”) chemistry and technology must be promoted. <p>We don’t know how close we are to causing irreversible damage to global weather systems and the climate due to global warming. However, if we cannot be certain of this, the only ethical and responsible action we should be taking as a community of nations is to change all of the human practices that might be contributing to global pollution. But how can we do this? The catchphrase of the environmental lobbies is: “think globally, act locally”. In other words, as individuals, we must all “do our bit” to solve the problem by changing our own environmentally unfriendly habits.</p>

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		<p>Letter to local government:</p> <ul style="list-style-type: none">* Should look like a letter, i.e. Date, Dear. . . , Yours faithfully, etc. . . . [2]* Paragraphs and logical structuring. [2]* Factual content and personal opinion as described above. [9]* Concerned and respectful tone. [2]
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