

Noise pollution



Noise is any unwanted sound. Noise can increase stress. Very loud noise can damage your hearing, or even make you completely deaf.

Activity 1: Identifying sources of noise

Read the following statements. Who might say each of these things?

- The weaving machines are very old and noisy. We have all learned to lip-read so that we can chat at work.
- I have the television set on all day. It keeps me company.
- When I was young, I used to walk in the countryside at night. Then, you could experience complete silence. There's nowhere around here like that any more.
- The village is quieter since they built the by-pass. And there aren't so many fumes.
- I can only do my homework if there is some good music to listen to on the radio.
- I can tell when it's lunchtime, because of the terrible noise coming from the school playground.
- The drills we use make lots of noise and vibrations. But without the coal, there would be no electricity to keep our homes lit and our factories working.
- All day long, I hear the sewing machine going in my neighbour's flat. Sometimes it's good to know there's someone there, but sometimes it gets too much.
- I used to be woken by the birds singing at dawn. But I never hear that now.
- Every night, I am woken by people leaving the club and slamming their car doors.

Now, list the different sources of noise mentioned. Can you add any more to the list?

Which of these sources may be harmful to someone's health? Try to list them from most harmful to least harmful. (The information sheet on Noise pollution may help you.)

Noise pollution Information sheet

Sources of noise

- industrial machinery
- radio and television
- construction work
- vehicles, trains, aircraft
- children playing
- household gadgets

The decibel scale

Each step of 10 dB on the scale represents an increase of 10 times in the loudness. So, for example, 50 dB is 10 times louder than 40 dB.

140 dB	threshold of pain
110 dB	truck horn
100 dB	jet aircraft at 300 m
80 dB	door slamming
60 dB	loud conversation
30 dB	rustle of paper
0 dB	threshold of hearing

Noise pollution in the home

source	noise level (dB)	source	noise level (dB)
television	65 - 67	radio, tape recorder	75
ceiling fan	45	extractor fan	51
refrigerator	44	air conditioner	61
electric grinder	82	flush toilet	76 - 80
vacuum cleaner	87	sewing machine	68
washing machine	61	pressure stove	74
hand pump	70 - 75	generator	80 - 85

Reducing noise pollution

Here are some ideas about reducing noise pollution.

Reduce noise at source: Design quieter machines and cars; reduce vibrations by standing machines on absorbent materials; re-route traffic and aircraft; turn down volume controls on radios and televisions; forbid noise in public places at night.

Reduce noise between source and hearer: Build barriers to reflect or absorb noise; keep doors and windows closed; fit double glazing; use heavy curtains and soft furnishing to absorb noise.

Reduce noise at the hearer: Wear ear protectors.

Activity 2: Decision-making

How could you reduce noise in your environment?

Start by thinking about your home:

- Identify sources of noise.
- Decide which are the most serious. What harm do they do?
- Suggest ways in which they could be reduced.

Now think about another environment you are familiar with: a factory or office, a city street, a park or playground, your school. Suggest some ways of reducing noise there.

Here are some ways you could present your ideas:

- as a poster;
- as a letter to the local authority;
- as a table.

Source of Noise	Person Affected	Reducing the Noise

Noise pollution – Teacher's Notes

Acknowledgement

This module is based on a series of activities developed by Dr Neelima Jerath and colleagues of the Punjab State Council for Science and Technology, India.

Introduction

In this module, students are asked to:

- identify sources of noise pollution;
- consider the problems caused by noise pollution;
- use the decibel scale;
- suggest ways of reducing noise pollution.

Scientific concepts

- sound;
- noise pollution;
- reflection and absorption;
- decibels;
- hearing damage and deafness.

Teaching approaches

Noise pollution has increased in recent decades. This module asks students to consider the many sources of noise and how they may be controlled.

Notes on the activities

Page 1: This page introduces the idea of noise. The statements for discussion are intended to highlight the range of sources of noise. Students should realise that one person's enjoyable sound may be another's noise pollution. The information sheet (page 2) can be used to stimulate and develop students' awareness.

The activity goes on to encourage students to think about the harmful effects of noise, and to prioritise them to establish which are most harmful.

Page 2: This page takes the form of an information sheet about noise pollution. The information they contain is presented in the form of tables and lists, since this will allow students to extract information relevant to their own level of knowledge and understanding. You will have to decide the extent to which you can expect your students to understand the decibel scale.

If a sound level meter is available, you could demonstrate its use, and measure the noise levels of various sources, e.g. conversation, shouting, an electric drill. Students could make measurements of noise levels at different times and at different points around the school.

Page 3: Students can make some practical suggestions for reducing noise in a familiar environment. Start by considering their homes; then move on to other situations.

You might invite a factory inspector or trade union health and safety officer to talk about workplace noise and how it can be controlled.