# National Environmental Management Certificate SAMPLE RESOURCES

This RMS sample resources pack contains a selection of powerpoint slides together with a supporting lesson plan and are representative of the full set of RMS trainer materials for the NEBOSH Environmental Management Certificate qualification.

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# NEBOSH Certificate in Environmental Management



# Element 8 - Control of environmental noise

### Learning outcomes

- 8.1 Describe the potential sources of environmental noise and their consequences
- 8.2 Outline the methods available for the control of environmental noise



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- 8.1 Sources of environmental noise and their consequences
- 8.2 Methods for the control of onvironmental noise



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- 8.2 Methods for the control of unvironmental noise



- There has been a dramatic increase in the number of noise pollution complaints received during the last ten years
- Mainly due to:
  - The continuing growth of public sensitivity to noise
  - Change in the public's attitude to the environment generally



Many factors affect the degree to which prop'e affected:

- 1) Frequency
- 2) Loudness
- 3) Time of day
- 4) Unexpectedness
- 5) Uncertainty of direction and unfamiliarity
- 6) Irregularity and duration
- 7) Necessity
- 8) General state on health, sensitivity and attitude of the individual towards noise
- 9) Level of hackground noise
- 10) Economics



#### Low frequency

- Low frequency noise ranges from about 10Hz to 200Hz
- For comparison, the lowest Choice on a full range piano is at about 32Hz whilst middle CHs at about 261Hz
- All the low frequency noise range is audible
- High levels are required to exceed the hearing thresholds at the lower frequencies



### Low frequency

#### Sources

- Low frequency noise and infracound are produced by machinery, both rotational one reciprocating, all forms of transport and turbulence
- Structure borne noise, originating in vibration, is also of low frequency, as is neighbour noise heard through a wall
- The word pitch is sometimes used instead of frequency



Low frequency

Control

- Low frequency noise and infracound are difficult to stop or absorb
- Attenuation by an enclosure requires extremely heavy walls
- Absorption requires a thickness of absorbing material up to about a quarter wavelengths thick



#### Speech such as a tannoy

- Public announcement systems are common; they are used at sports grounds, bus and rall suctions and at airport departure and arrivals
- Tannoy systems rely on volume rather than quality of communication
- Announcements are often blurred or intelligible
- The best system design utilises a large number of speakers, covering the evea for communication systematically, at low volume



#### Intermittent such as sirens and explosives

- Sirens are designed to get attention: they often emit sound at levels and frequencies that the painful to hearing
- They are a constant reminder of the emergency services in action, particularly at night resulting in disruption of the local populations' sleep patterns
- Explosives are generally used for commercial or entertainment use
- The most common use of explosives commercially is in the extraction of one from quarries
- The use of explosives in the manufacture of fireworks has grown significantly over the last 10 years



Propagation of noise from source to the community





ground or vibrating surface

Source: IPPC H3.

## The effects of noise

- Loss of sleep
- Effects of noise will vary from person to person
- Noise can cause stress, annoyance, behavioural changes, hearing damage and other physiological effects such as raised blood pressure
- Sources of industrial environmental noise may result in disruption of wildlife including nesting birds
- In January 2004, an article in the national press alleged that Low Ecquency Noise (LFN) emissions from wind turbines had given rise to health effects in neighbours
- Of the 125 wind farms operating in the UK, five have been reported as causing low frequency noise problems



# Sources of industrial environmental noise

#### Environmental noise complaints in the UK per million people)

	1996/7	1997/8	192 7/5	1999/2000
Domestic premises	1455	1647	1280	1368
Industrial and commercial	5051	5050	4330	5149
Construction, etc	242	285	248	292
Road traffic	41	46	66	38
Aircraft	15	34	48	121

Source: RMS.



## Sources of industrial environmental noise

- Noise from commercial activities
  - Machinery, ventilation extraction systems, compressor systems, public address systems
- Transport noise
  - Road, aircraft, railway
- Agricultural noise
  - Bird scarers, farm animals, harvesting equipment
- Construction noise
  - Hand and oower tools, plant equipment, piledriving, scaffolding
- Quarrying and mining
  - Mining machinery, explosives



## Other sources of noise

- Pubs and clubs, such as music and showing when leaving the premises late at night
- Taxis, sounding of vehicle horns
- Neighbour noise loud music
- Warning sounders (initiated by property intruder detection equipment) and velicle harms



## Other sources of noise

### Wind farms

- Mechanical noise
  - Originates from the relative motion of the various mechanical component: and their dynamic response
- Aerodynamic noise
  - Is typically the dominant component of noise from modern wind turbines





# NEBOSH Certificate in Environmental Management

#### NEBOSH Certificate in Environmental Management Unit EC1 Management and control of environmental hazards

#### Lesson Plan – Day 1

TIME	ELEMENT/TOPIC	CONTENT	RESOURCE/TASK
09.00	Welcome		Complete attendance sheet
	Introduction	Name, job, background, experience	Name cards/flip chart/marker pens Ice breaker. Spilt the group into teams of three or four. Team members to interview each other and find out hobbies/ likes/dislikes etc and represent these pictorially. Team to give themselves a name and introduce their team to the wider group.
	Course plan	Admin arrangements toilets/meals/exist/smoking/ tobile prones etc. Course content, course materials Syllabus and exam structure/arrangements Progression onto other qualifications	Complete paperwork if necessary
	Programme for the day	Topics to be covered, brief al out written exam and practical	Slides
09.30	Element 1: Foundations in environmental management	<ul> <li>Learning outcomes:</li> <li>Outline the scope and nature of environmental management</li> <li>Explain the ethical, learl and financial reasons for maintaining and promoting environmental management.</li> <li>Cutline the importance of sustainability and its relationship with Corporate Social Responsibility.</li> <li>Explain the role of national governments and international bodies in formulating a frame work for the regulation of environmental management.</li> </ul>	Tutor summarises slides Introduction to element
	1.1 The scope and nature of environmental management	Definition of the environment as "the surroundings in which an organisation operates, including air, water, land, natural resources, flora, fauna, humans and their interrelation". 'Surroundings' can extend from within an organisation to the global system	Tutor summarises slides

#### NEBOSH Certificate in Environmental Management Unit EC1 Management and control of environmental hazards

TIME	ELEMENT/TOPIC	CONTENT	RESOURCE/TASK		
		The multi-disciplinary nature of environmental management and the barriers to good standards of environmental management within an organisation (complexity, competing and conflicting demands, behavioural issues)	Tutor summarises slides		
		<ul> <li>The size of the environmental 'problem' in terms of the key environmental issues:</li> <li>Local effects of pollution (noise, waste, lighting, odour)</li> <li>Carbon emissions and climate change</li> <li>Air pollution and the ozone layer</li> <li>Water resources</li> <li>Deforestation, soil erosion and land quality</li> <li>Material resources and land despoliation (land to this etc.)</li> <li>Energy supplies</li> <li>Waste disposal and international waste trauc</li> <li>Agricultural issues arising from trade between developing and developed economies (e.g. create landfill sites in place of a uncultural)</li> </ul>	Delegates to explain their current understanding of the problems / issues and discussion to be held with the tutor whilst summarising slides.		
		Exercise: split class into groups of 2 - 4 a. Choose one of the delegate's workplaces to identify how the chosen organisation influences the above problems / issues.	Exercise and feedback discussion Exercise: note paper and flip chart to summarise findings		
10.45	Break				
11.00	1.2 The ethical, legal and financial reasons for maintaining and promoting environmental management	The rights and expectation of local residents including indigenous peoples, supply chain, customers and employees Exercise: split clast unit of the properties of 2 - 4 and ask them what each stakeholder's rights and expectations at in relation to an organisation. Discuss findings.	Exercise - note paper and flipchart to summarise findings		