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# FACTS

European Agency for Safety and Health at Work

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## Noise in figures

This report is the first in a series of risk observatory thematic reports dedicated to a specific risk, sector or group of workers. It sets out to describe the situation in Europe as regards exposure to noise at work, to identify groups at risk, to highlight trends and emerging issues of concern. These activities are part of a larger project aiming at the earlier identification of emerging trends and risks at work in order to assist in better targeting of resources and to enable more timely and effective interventions.

A growing proportion of workers are employed in the service sector. This is why the report not only includes information for sectors well known to have high exposure to noise, such as construction, manufacturing or agriculture, but also for more female-dominated, service-oriented activities, such as education or call centres.

### Exposure to noise

Noise levels still regularly exceed limit values in many sectors, such as agriculture, construction, engineering, food and drinks industry, woodworking, foundries or entertainment.

Craftspeople, skilled workers, agricultural workers and the armed forces are most exposed to high noise levels. In selected sectors, women can be considerably exposed to loud noise. The percentage of women reporting noise exposure is much higher in the new Member States than for the EU-15. In the Czech Republic, for example, 75 % of workers exposed to noise in the textile production are female, followed by 50 % in food production.

In the new Member States, the sectors with the highest percentage of workers exposed are agriculture and mining, followed by manufacturing. The proportion of exposed workers in these sectors is also higher than in the EU-15.

Exposure to loud noise also seems to be affecting more and more younger workers. According to the European Foundation surveys, employees on apprenticeship or other training schemes reported more hearing problems in 2000 than in 1995. Special attention therefore needs to be given to the training of young workers, and their health problems should be more specifically addressed.

### Health effects

#### ■ Hearing loss

Noise-induced hearing loss is still one of the most prevalent recognised occupational diseases. The cost of hearing loss represented about 10 % of the total cost of occupational diseases from 1999 to 2001 (1). While there may be some under-reporting and under-recognition especially for female workers, figures also depend on the threshold applied for the definition of hearing loss. Trends vary depending on country and recognition policy. In Germany, for example, the number of recognised cases are stabilising, and decreasing with regard to the degree of impairment.

Self-reported hearing problems have increased slightly. According to European survey results (2), 7 % of European workers consider that work affects their health in terms of hearing disorders. Workers who report high exposure to noise also report more hearing problems.

#### ■ Tinnitus

Noise-induced hearing loss is often accompanied by tinnitus, or ringing in the ears. Data on tinnitus are scarce. Research from 2003 in the UK estimates that 153 000 men and 26 000 women aged 35 to 64 had severe hearing problems attributable to noise at work, and about 266 000 men and 84 000 women had attributable persistent tinnitus. Further monitoring should help assess the dimension of the problem throughout Europe.



(1) 'Costs and funding of occupational diseases in Europe', Eurogip-08-E, August 2004. <http://www.eurogip.fr/pdf/Eurogip-08E-cost.pdf>

(2) European Survey of Working Conditions, ESWC.

## ■ Acoustic shock

Acoustic shock is a term used to describe the physiological and psychological symptoms a person may experience after hearing a sudden, unexpected, loud sound, via a telephone headset or handset. Call centre telephone operators are the workers most at risk. The problem may be exacerbated if call centres are so noisy that operators need to turn volume controls up higher than would be necessary in a quieter place. Acoustic shock was also highlighted by the agency expert surveys on emerging physical risks as an issue of concern.

## ■ Combined effects

Hearing loss can also be caused or increased by the use of chemicals. Known ototoxins include solvents, metals, drugs and asphyxiants. Occupations with high exposures to noise and to dangerous substances or vibrations are printing, painting, boat building, construction, manufacturing, chemicals, petroleum, leather products and furniture making, agriculture and mining. Combined exposure to noise, vibration and heat can also occur in foundries. Many of these sectors are more predominant in the new Member States than they are in the EU-15.

## ■ Noise and accidents

Noise does not just harm a worker's hearing: it can also be a cause of accidents because it interferes with communication. Workers wearing hearing protection may not be able to hear verbal instructions and acoustic warnings. Several projects have set out to develop a method of predicting speech intelligibility and the perception of acoustic signals while wearing hearing protectors. Additional accident risks for workers with hearing impairment have also been identified in this report.

### Noise is reported as a problem by education workers in several Member States and voice disturbances have a significant impact on teachers' absenteeism rates.

WHO guidelines recommend a noise level of 35 dB(A) for school classrooms. Actually, noise levels in schools can reach as much as 60–80 dB(A) in normal classes and can even go beyond limit values for workplaces in school workshops and sports areas. Measurements of classrooms have revealed acoustic conditions that allow less than half of the speech to be understood.



The importance of the voice as an occupational tool is also growing with the development of voice-activated technology and the increase in the number of call centres, where vocal demands are high.

## ■ Non-auditory health effects

There is evidence of several health effects due to medium-level noise, including voice problems, stress, cardiovascular diseases and neurological issues. Noise below the levels causing hearing damage can lead to non-auditory health effects if they chronically interfere with sleep and relaxation, if they disturb communication and speech intelligibility, or if they interfere with mental tasks that require a high degree of attention and concentration.

### Prevention

Further efforts are needed to reduce noise in workplaces. In studies of noise control measures at workplaces, there were a range of different approaches and some effective hearing protection programmes found. Smaller companies had very limited noise control procedures and relied heavily on personal protective equipment.

Further improvements are also needed to effectively lower emission levels at the source. Professions with high noise levels in the workplace typically use a wide range of processes and machinery. This report presents some exposure profiles for noisy sectors, such as agriculture, construction and the food and drinks industry.

Where concentration is needed, noise levels need to be kept low. Considerable reductions could be achieved by acoustic measures. The complexities of work and administrative tasks have increased in professions such as healthcare and teaching, but also in industrial production. Some recommendations for noise levels in offices, schools and healthcare are therefore included in this report.

### Research needs

#### Targeted investigations in selected occupations (healthcare, hotels and restaurants, transport, call centres) would help identify issues to be addressed by prevention.

Further data are also needed to assess:

- the exposure to medium-level noise;
- combined effects of noise and vibration, noise and chemicals;
- the effect of noise on pregnant workers.

Research should also support prevention efforts regarding hearing-impaired workers and the interference with warnings and signals.

### Further information

Complete results from the risk observatory are available at: <http://riskobservatory.osha.europa.eu>  
Data on noise exposure and hearing loss, including national data, are available at <http://riskobservatory.osha.europa.eu/noiseexposure/> and <http://riskobservatory.osha.europa.eu/hearingloss/>

European Agency for Safety and Health at Work

Gran Via, 33, E-48009 Bilbao

Tel. (34-94) 479 43 60, fax (34-94) 479 43 83

E-mail: [information@osha.europa.eu](mailto:information@osha.europa.eu)

