



Haa? Haven't you heard? Noise exposure effects

Modern life includes continuous exposure to noise. We're surrounded by noise throughout the day and sometimes at night too. Exposure events include spiked noise episodes or continuous ones. The effects of noise exposure are accumulative, meaning hearing impairment is not immediate, therefore this prevalent nuisance is usually not considered as high risk.

Can exposure to high levels of noise cause permanent hearing loss?

Hearing loss is the 2nd most prevalent health issue globally. Short-term exposure to loud noise can cause a temporary change in hearing: your ears may feel stuffed or a permanent ringing in your ears might appear (tinnitus). These short-term problems may go away within a few minutes or hours after cessation of noise. However, repeated exposures to loud noise can lead to permanent tinnitus and/or hearing loss.

Is noise exposure damage expressed only in the auditory system?

Recent studies suggest an association between noise exposure and high blood pressure, cardiovascular disease, infarctions, strokes and sleep disorders. A 2018 study in the Journal of the American College of Cardiology, showed that people who are constantly exposed to noise for an extended period of time stand a risk of developing one or more types of coronary artery diseases, arterial hypertension, stroke, and heart failure. A 5-decibel noise reduction would reduce the prevalence of high blood pressure by 1.4 percent and coronary heart disease by 1.8 percent.

Pregnancy and Kids

Studies published by the American Academy of Pediatrics, AAP, reveal that exposure to excessive noise during pregnancy may result in high-frequency hearing loss in newborns, and may be associated with prematurity and intrauterine growth retardation.

How does noise damage our hearing?

When sound waves enter the outer ear, the air vibrations are shuttled into the ear drum and are transmitted to the middle and inner ear. There, three small bones amplify and transmit the sound vibrations to the inner ear. The inner ear contains a snail-like structure called the cochlea, which is filled with fluid and lined with very fine hairs. These microscopic hairs move along the vibrations axis and convert the sound waves into nerve impulses. the result is the sound we hear. Exposure to loud noise can permanently bend these hair cells thereby causing a hearing loss!

Who is considered as an employee working with harmful noise?

Thousands of employees are exposed throughout their workdays to loud noise levels (harmful noise). Hearing damage due to harmful noise is one of the most prevalent occupational diseases. According to "Harmful Noise Regulations":

1. A person working in one of the occupations listed in the regulations' suffix (needless of a noise level monitoring).
2. An employee working at least 200 annual hours exposed to chronic or spiked harmful noise above the threshold limiting value, i.e. every employee whose work site noise monitoring exceeds the attached table guidelines, for example an employee working at an above 85dB noise level for an entire workday (8 hours/day) or an employee exposed to 88dB over a period of 4 hours/day.

The maximal permissible weight exposure for chronic and spiked noise levels

noise levels	
Decibel	Hours
115*	0.5
112	0.94
109	1.88
106	3.75
103	7.5
100	15
97	30
94	1
91	2
88	4
85	8
82	16
80	24

* Exposure to weighted noise level above 115 dB(A) is prohibited

* חשיפה לרעש משוקלל שמפלסו מעל 115 dB(A) אסורה

חשיפה משוקללת מרבית מותרת לרעש מתמשך והתקפי

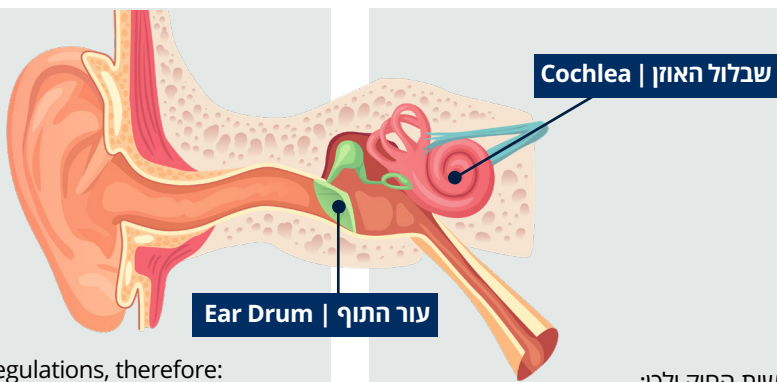
Noise employees are obliged to:

- Wear ear protection upon entering a high-noise level area
- Mark high-noise area
- Go through an annual instruction
- Go through an annual auditory checkup
- Monitor noise level of the working site (biannual) or upon machinery or work process change

Technion employees guidelines

The Technion strives to reduce the noise exposure levels according to regulations, therefore:

1. In any case an employee wishes to monitor the noise level at his working position, he/she must apply to the Safety Unit to perform occupational-environmental noise level monitoring.
2. The Safety Unit will happily advise regarding noise reduction solutions.



העובדים ברעש מזיק נדרשים:

- להתמגן בעת כניסה לאזור רעש גבוה
- לשלט אזור רעש גבוה
- לעבור הדרכה תקופתית (אחת לשנה)
- לעבור בדיקה רפואית תקופתית (אחת לשנה)
- למדוד באופן תקופתי חשיפה לרעש (אחת לשנתיים, או בעת שינוי תהליך עבודה/מכשור)

הנחיות לעובדי הטכניון:

1. הטכניון שואף לצמצם את רמות החשיפה לרעש מתחת לדרישות החוק ולכן:
 1. אם עובד מבקש לבדוק את רמות הרעש במקום עבודתו עליו לפנות ליחידת הבטיחות לביצוע בדיקות סביבתיות-תעסוקתיות לרעש.
 2. ניתן להתייעץ עם יחידת הבטיחות בנוגע לפתרונות להפחתת הרעש

9 Signs of Hearing Loss:

If you experience any of these signs - see the doctor

1. Muffled speech and other sounds
2. Trouble hearing high-pitched sounds (e.g. birds, doorbell, telephone, alarm clock)
3. Trouble understanding conversations when you are in a noisy place, such as a restaurant
4. Trouble understanding speech over the phone
5. Trouble hearing speech consonants (e.g., trouble hearing the difference between s and f, between p and t, or between sh and th in speech)
6. Asking others to speak slower, clearer, louder
7. Turning up the volume of the television or radio
8. Tinnitus
9. Hypersensitivity to certain sounds

Bibliography/ביבליוגרפיה

- תקנות הבטיחות בעבודה (ניהות תעסוקתיות ובריאות העובדים ברעש), תשמ"ד-1984
- משרד העבודה, הרוחה והשירותים החברתיים
- Occupational Noise Exposure/ OSHA (Occupational Safety and Health Administration)
- CDC - Centers for Disease Control and Prevention, Environmental Health

9 סימנים לירידה בשמיעה כתוצאה מרעש:

אם חלק מהסימנים הללו קיימים אצלך - גשי להיבדק

1. דיבור וקולות נוספים נשמעים עמומים
2. קושי בשמיעת צלילים גבוהים
3. קושי בהבנת שיחות בעת הימצאות בסביבה בעלת רעשי רקע, כגון מסעדה
4. קושי בהבנת שיחה בטלפון
5. קושי בזיהוי עיצורים
6. בקשות חוזרות מאחרים לדבר לאט יותר, ברור יותר, בקול רם יותר
7. הגברת עוצמת הקול של אמצעי המדיה שברשותך
8. ציפצופים באוזניים
9. רגישות לקולות מסויימים