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NOISE LEVELS OF THE MOST COMMONLY USED HAND TOOLS

(The period from 2007 to 2010 year)

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ERAF
EIROPAS REĢIONĀLĀS ATTĪSTĪBAS FONDS

IEGULDĪJUMS TAVĀ NĀKOTNĒ

EIROPAS SAVIENĪBA

"Promotion of International Cooperation Activities of Riga Stradiņš University in Science and Technologies", agreement No. 2010/0200/2DP/2.1.1.2.0/10/APIA/VIAA/006

Laboratory of Hygiene and Occupational Diseases

- Student and expert training in occupational and environmental health.
- Work environment risk factors (chemical substances, noise, vibration, light, microclimate parameters, biological factors, ergonomic and psychosocial factors) evaluation and measurements.
- Elaboration of information materials on occupational health and safety.
- Toxicological analysis of various materials and products.
- Development of material safety data sheets.

- Powered hand tools are commonly used in various work sectors (construction, woodworking, metal proceeding etc.) in different spaces and locations.
- The risk of hearing impairment for workers who work with powered hand tools often is significantly higher than for industrial workers who work with industrial machinery and equipment.
- Powered hand tools noise levels are quite high and hand tools are always located close to worker.

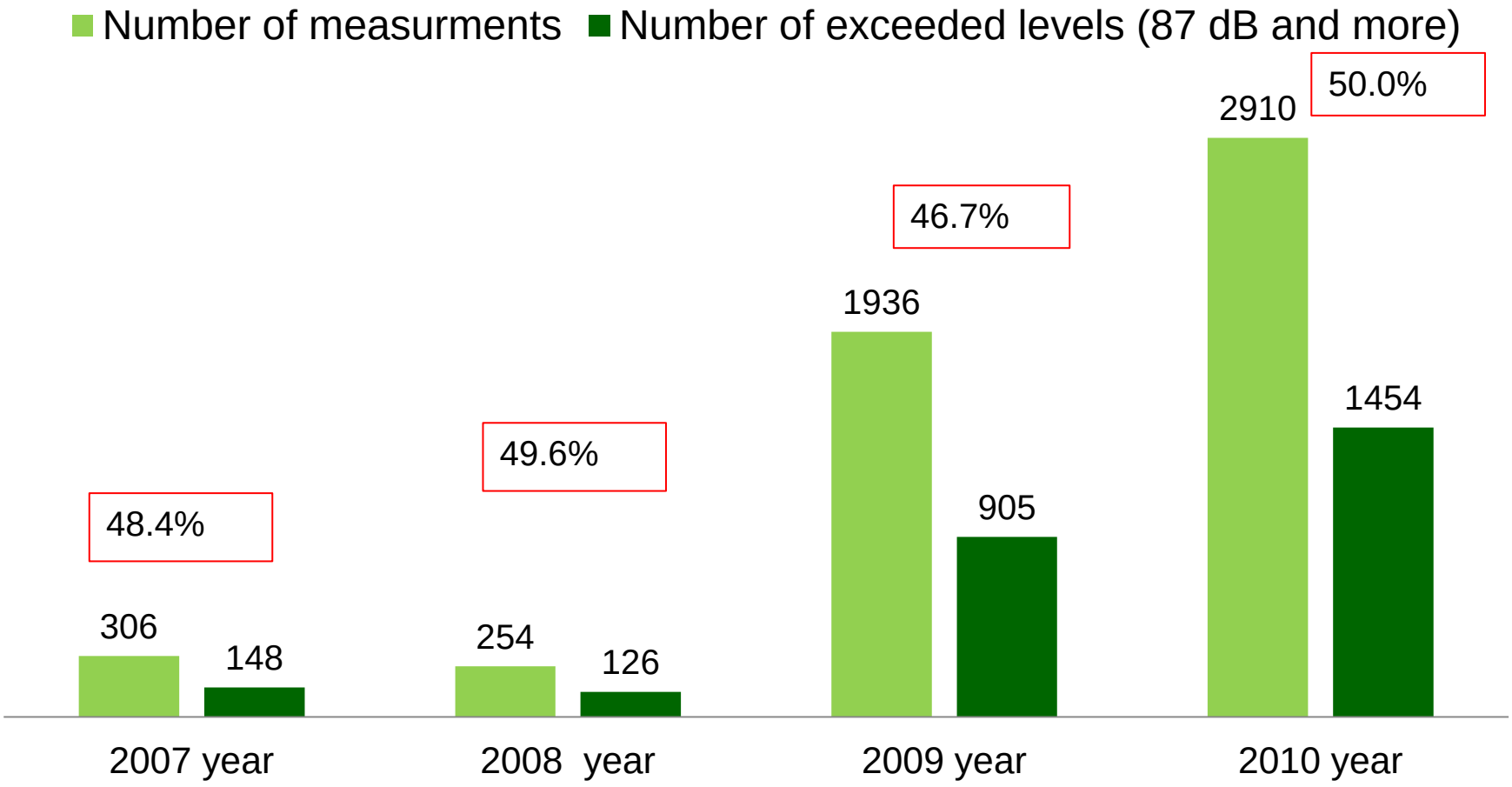
- Health hazards posed by hand tools, is not only noise, but also vibration, dusts, chemical hazards and musculoskeletal disorders.

Limits for noise in Latvia

- Noise exposure limit value is 87 dB(A)
- Lower exposure action value is 85 dB(A)
- Higher exposure action value is 80 dB(A)

*regulated with Cabinet of Ministers regulations Nr. 66 "Occupational health and safety requirements to protect employees from noise at work"

Noise measurments 2007-2010 year



- In four year period **5408** noise measurements were carried out and **12.9%** of those concern working with hand tools.

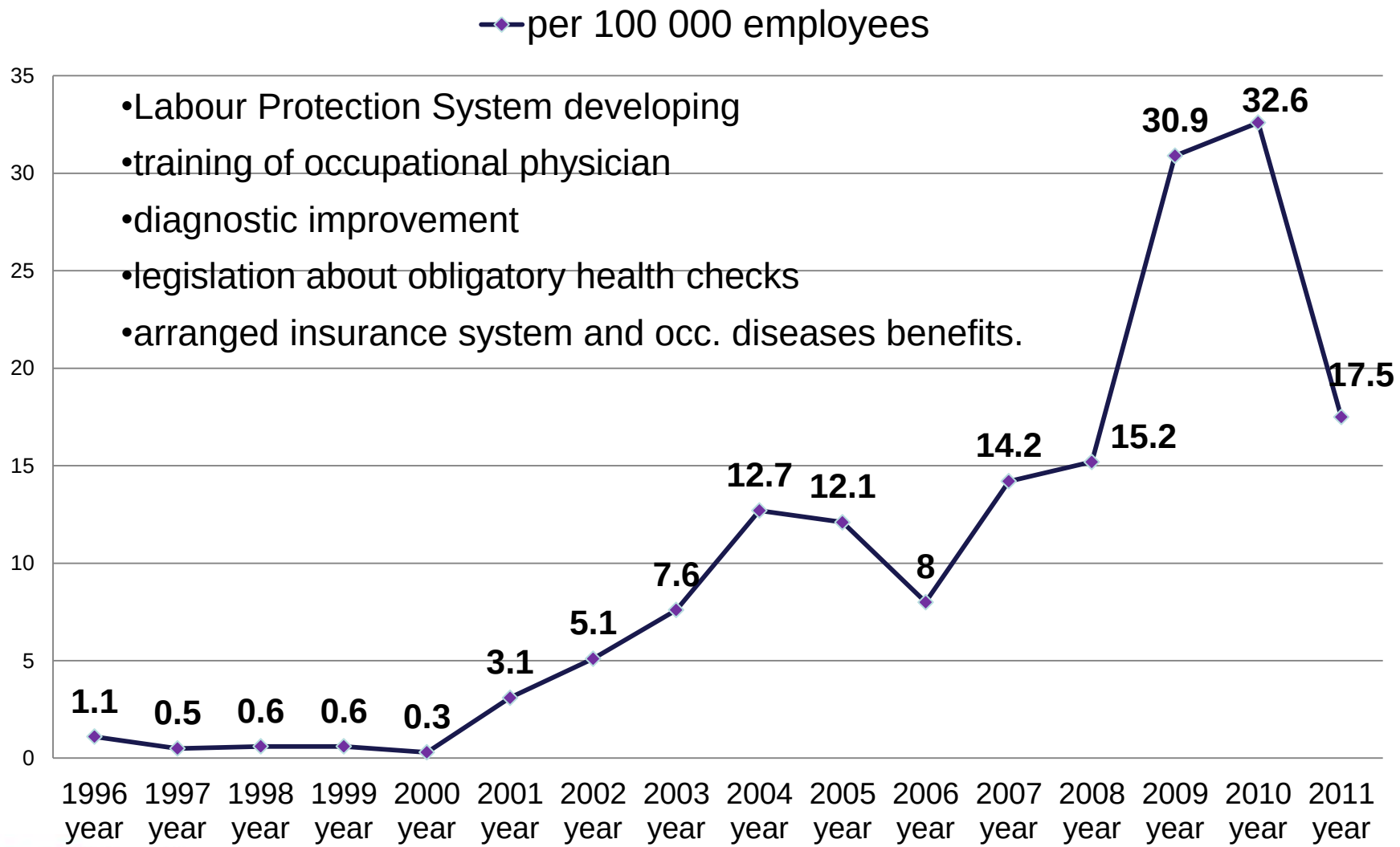
Methods (1)

- Measurements database of Laboratory of Hygiene and Occupational Diseases.
- The noise exposure was assessed by using calibrated Bruel & Kjaer sound level meter Type-2238.
- The measurements in A-weighted scale.
- Noise level (Leq) was measured in a normal working process, with different materials and work loads (0.1 – 0.4 m from workers ear).
- In the results average noise levels calculated of three measurements levels in every work station.

Methods (2)

- Until the year 2009 Laboratory of Hygiene and Occupational Diseases was accredited for noise standard “Acoustics - Guidelines for the measurement and assessment of exposure to noise in a working environment”, *ISO 9612:1997*.
- Now measurements are carried out according to the standard “Acoustics - Determination of occupational noise exposure - Engineering method”, *ISO 9612:2009*.

Work induced hearing loss incidence 1996-2011 year



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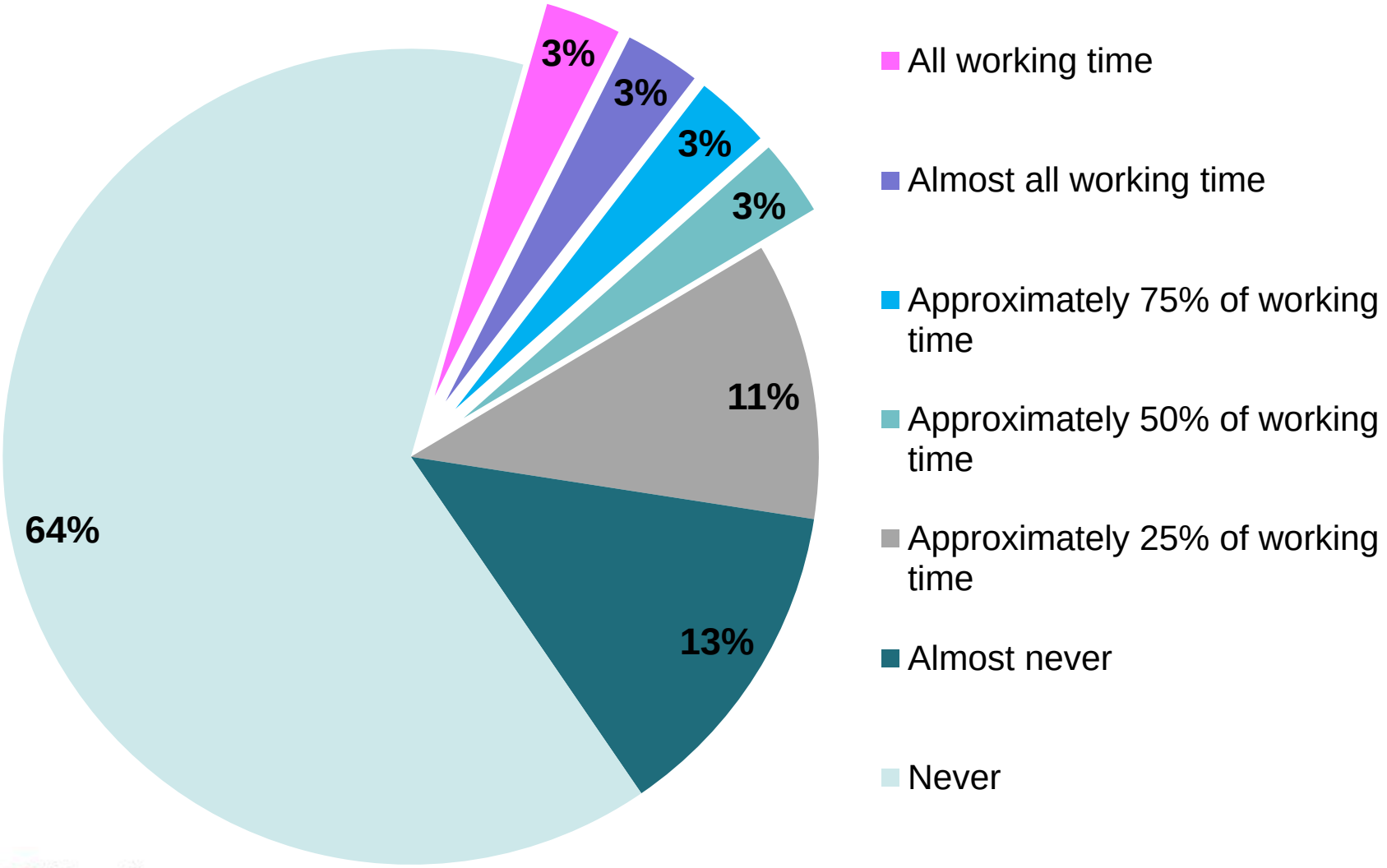
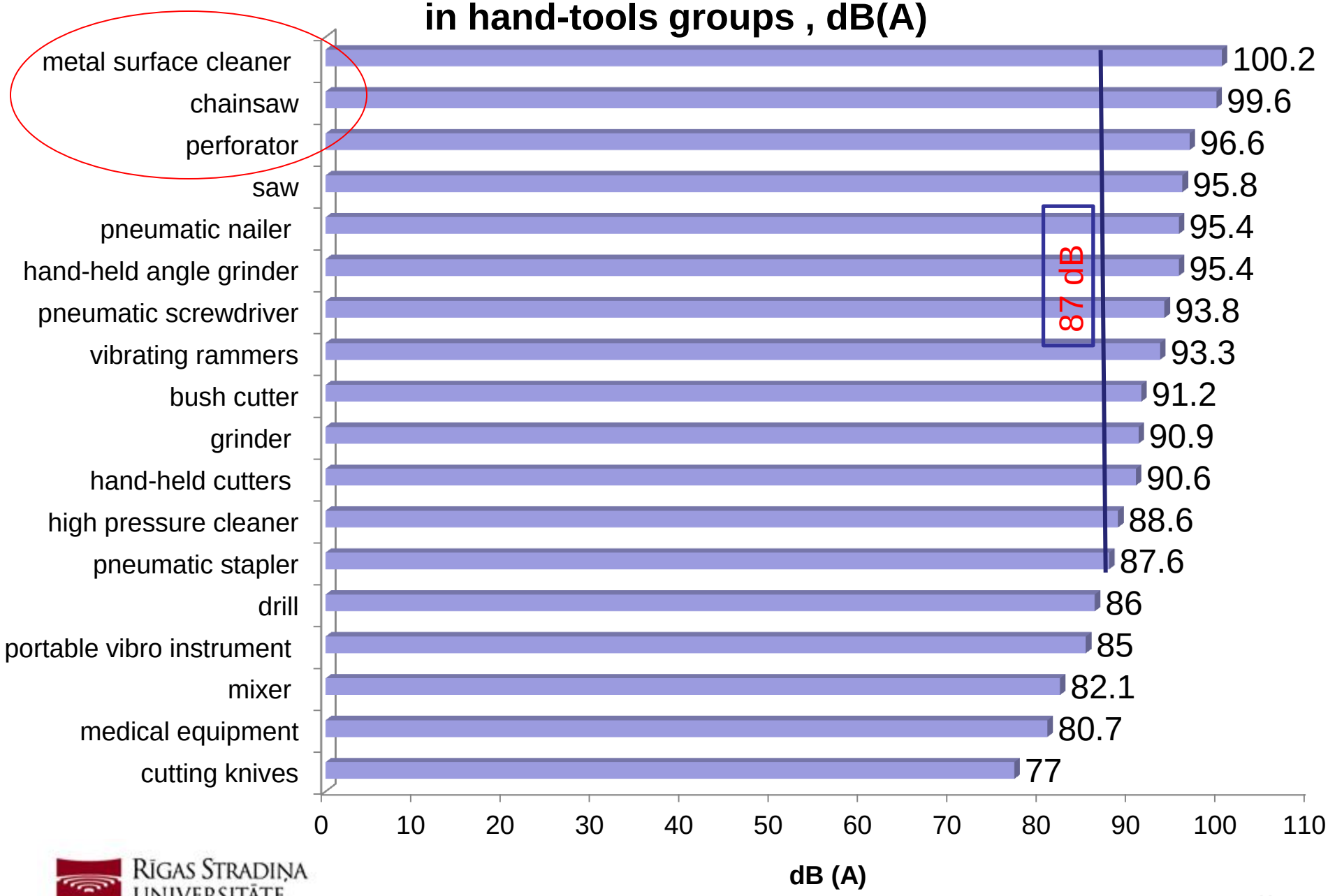
Are You exposed to so loud noise, that You have to raise Your voice when talking to people?



* “Work conditions and risks in Latvia” (2010)

Average of measured noise levels (Leq) in hand-tools groups , dB(A)



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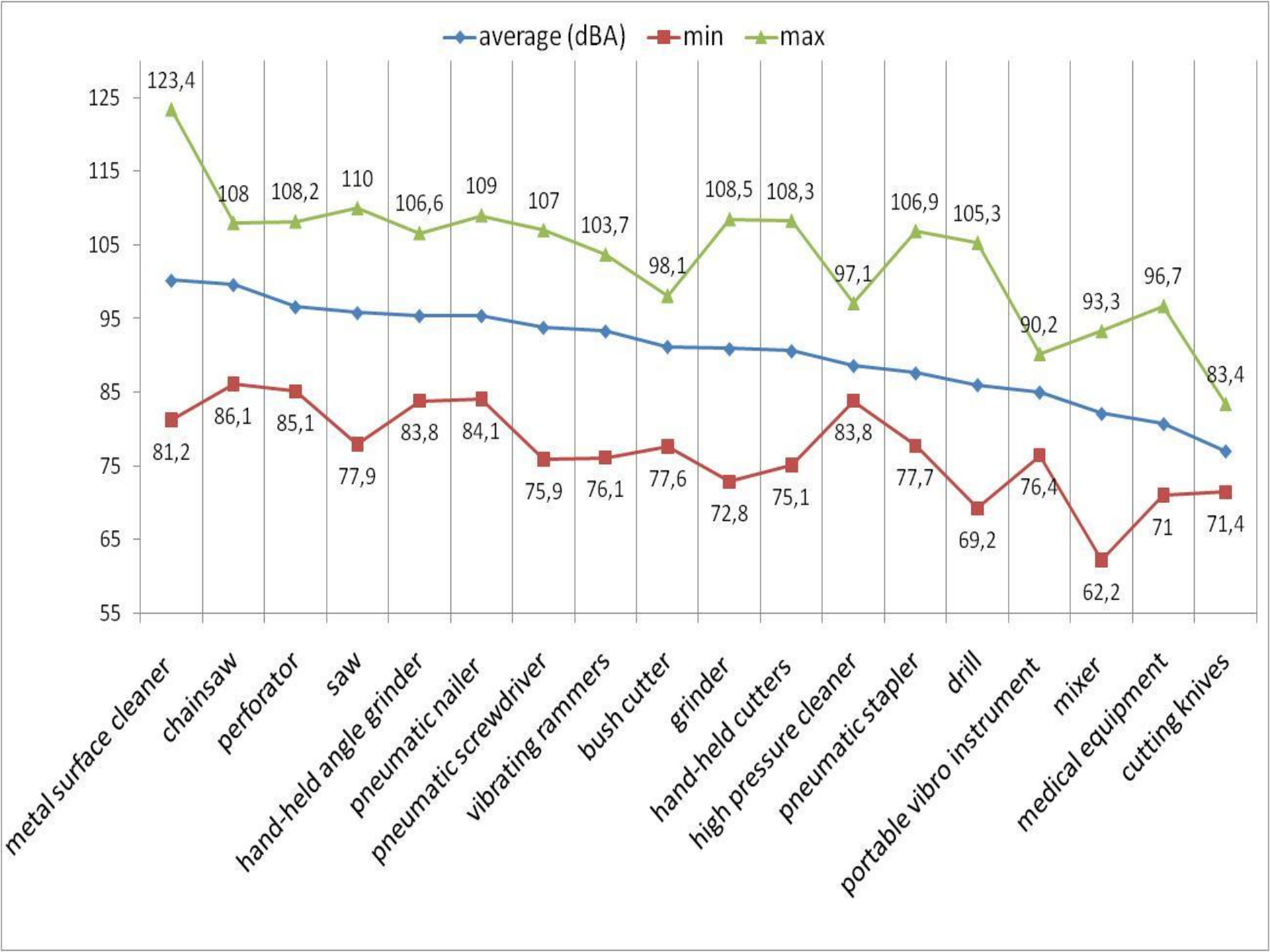
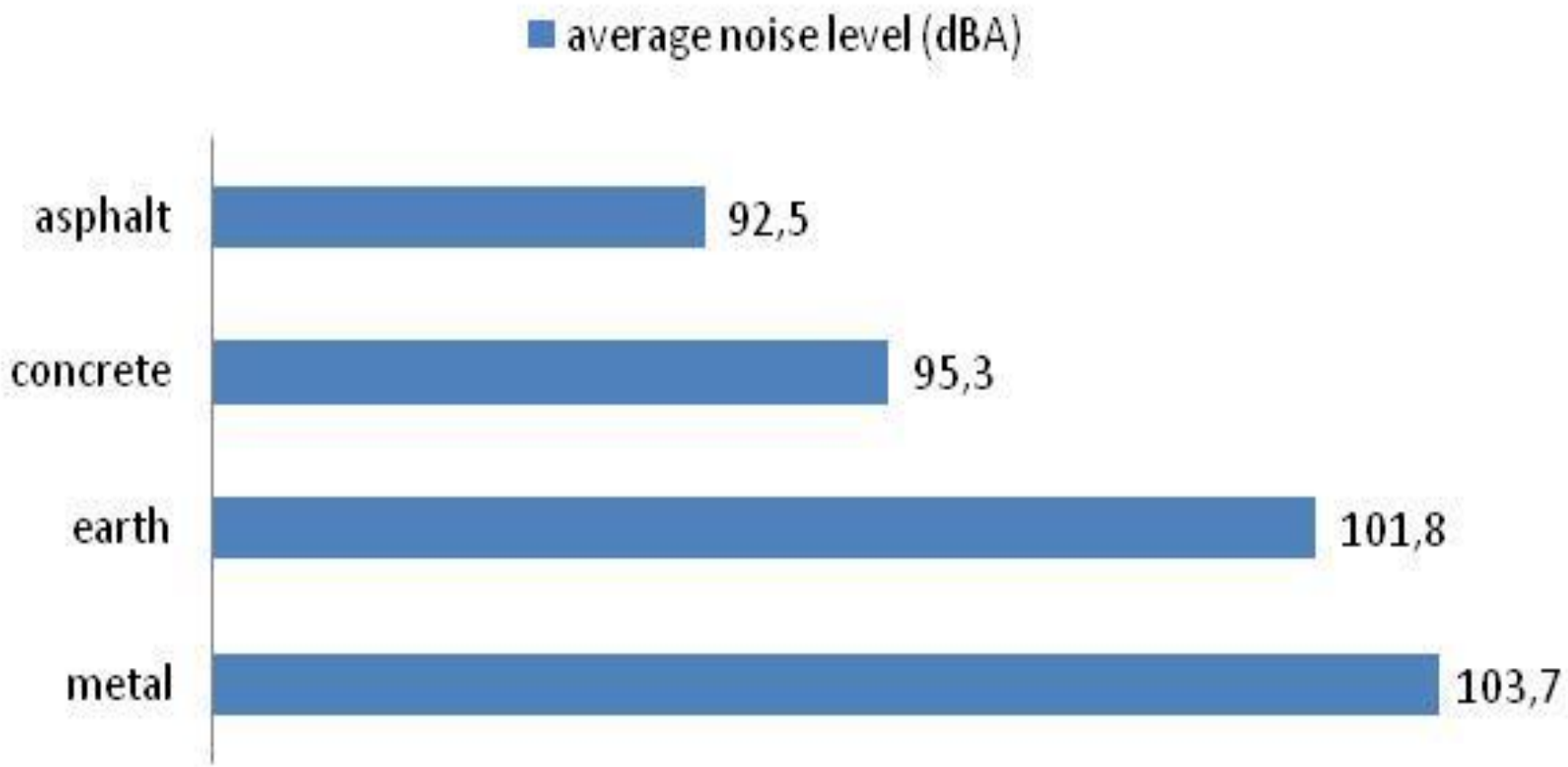

average (dBA)
min
max
125
115
105
95
85
75
65
55
123,4
108
108,2
110
106,6
109
107
103,7
98,1
108,5
108,3
97,1
106,9
105,3
90,2
93,3
96,7
83,4
81,2
86,1
85,1
77,9
83,8
84,1
75,9
76,1
77,6
72,8
75,1
83,8
77,7
69,2
76,4
62,2
71
71,4
metal surface cleaner
chainsaw
perforator
saw
hand-held angle grinder
pneumatic nailer
pneumatic screwdriver
vibrating rammers
bush cutter
grinder
hand-held cutters
high pressure cleaner
pneumatic stapler
drill
portable vibro instrument
mixer
medical equipment
cutting knives

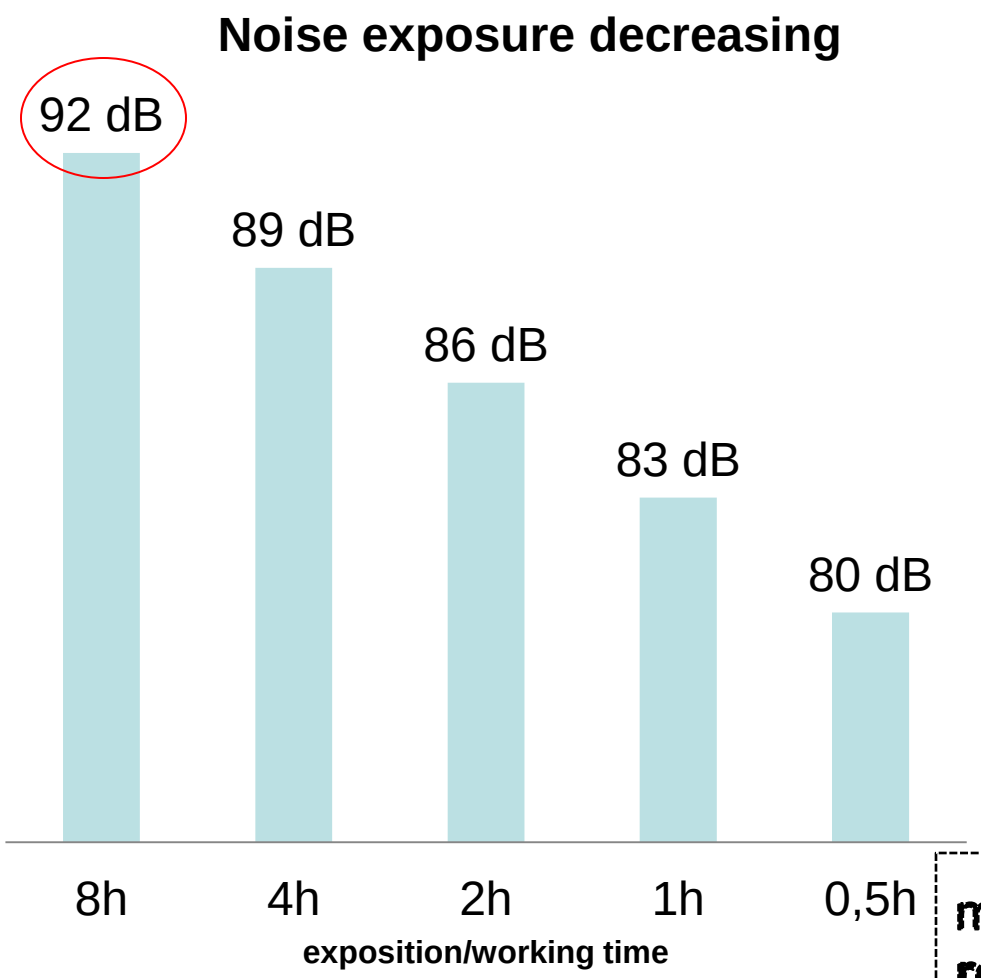
Noise levels of hand tools mostly depends on...

- Tool constructed design
- Tool technical condition
- Processed material
- Worker behaviour
- Working methods
- Space where it is used (inside/outside)

Perforator noise level depending on processed material



If we suppose that...



measured noise x exposition time= **real "noise dose"**

Thank you for you attention ;o)

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