

# Measurement of Noise Exposure Levels during Grass-Trimmer Operation

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**Background-** Noise is a hazard that is commonly encountered in various industries, and exposure to excessive noise levels can cause noise-induced hearing loss (NIHL). Among multiple sources throughout different industries that can be responsible for producing noise hazards, hand-held power tools have been one of the major contributors to NIHL. The aim of this study was to evaluate noise produced by a grass-trimmer that is commonly used in the lawn care and grounds keeping professions.

**Methods-** Noise measurements were taken using noise dosimeters (CR: 110A, Cirrus Research plc., North Yorkshire, UK). The dosimeter was set to 80 dB(A) threshold level and 5 dB(A) exchange rate. Two researchers alternately simulated three types of grass trimmer operations, including cranking, idling, and cutting. The cranking operation was measured during the initial start-up and measurement time varied depending on the start of the engine (3-79 seconds). The idling and cutting operations were measured approximately for five minutes. The experiment was repeated three times and results in A-weighted equivalent continuous sound level ( $L_{Aeq}$ ) and average sound level ( $L_{avg}$ ) were averaged.

**Results-** The average  $L_{Aeq}$  measurements of Subject 1 for the cranking, idling, and cutting of the grass-trimmer were 81.2 dB(A), 75.7 dB(A), and 97.3 dB(A), respectively. The average  $L_{Aeq}$  measurements of Subject 2 for the cranking, idling, and cutting of the grass-trimmer were 78.1 dB(A), 76.3 dB(A), and 98.6 dB(A), respectively. The average  $L_{avg}$  measurements of Subject 1 for the cranking, idling, and cutting of the grass-trimmer were 52.0 dB(A), 47.5 dB(A), and 97.3 dB(A), respectively. The average  $L_{avg}$  measurements of Subject 2 for the cranking, idling, and cutting of the grass-trimmer were 19.6 dB(A), 30.1 dB(A), and 98.6 dB(A), respectively.

**Conclusions-** Overall, the average noise measurements for the cutting operation were higher than the other operations. The noise levels for both subjects during the cutting operation, 97.3

dB(A) and 98.6 dB(A) respectively, exceeded the OSHA Action Level, 85 dB(A), indicating that one would need to be included in the hearing conservation program (HCP) if the employee is exposed to the noise level for a full 8-hr shift. Hearing protection is recommended for lawn care and grounds keeping workers, especially for cutting operations.