Agricultural Science Teachers' Noise Exposure During Shop Classes – Preliminary Results of a Pilot Study

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Study Aims: Agricultural science (AS) teachers may be at risk of developing noise-induced hearing loss (NIHL) due to high noise levels produced by tools/equipment used in shop classes. However, the few existing studies in this area were conducted over 20 years ago; therefore, there is a need for current research. To begin addressing this need, the current pilot study aimed to investigate junior high and high school shop teachers' risk of NIHL by: 1) surveying shop teachers regarding their noise exposure, hearing problems, use of HPDs, and previous training on NIHL and hearing conservation, 2) measuring teachers' noise exposure in shop classes, and 3) measuring noise levels produced by individual tools/equipment used in shop classes.

Methods: Data has been analyzed for 4 shop teachers to date. Each teacher completed a questionnaire related to demographic information, noise exposure inside and outside of his/her shop classes, history of hearing problems, frequency of using hearing protection during and outside of his/her job as a shop teacher, and previous education related to noise exposure and hearing protection. Personal noise dosimetry measurements were taken for each teacher during each of his/her shop classes on at least two different dates. The researchers were present during each shop class to start and stop the dosimeter and make notes on characteristics of each class, (e.g., number of students, types of activities/projects taking place, types of tools/equipment used, etc.). A sound level meter was also used to measure noise levels produced by each individual power tool/piece of loud equipment used in each shop class.

Results: All teachers reported exposure to multiple types of loud noise in their shop classes and outside of their teaching jobs. Only 1 teacher reported ever wearing hearing protection during his shop classes, but all teachers and students wore safety glasses at all times. All teachers reported one or more hearing related problems, but only half had had their hearing tested since starting to teach shop classes. Most teachers (3 of 4) had never received any information about NIHL and hearing conservation during college or after college. Only 1 teacher's noise dosimetry results exceeded a dose of 100% across each test day using criteria from the National Institute of Occupational Safety and Health (NIOSH). However, time-weighted averages for individual shop classes exceeded 85 dBA for one or more classes for 3 of the 4 teachers. 61% of the power tools measured produced mean LASeq values of 85 dBA or greater. The top 5 loudest tools were the planer, circular saw, panel saw, table router, and hand grinder, with LASeq values ranging from 92.6 dBA to 104.4 dBA.

Conclusions: For at least some teachers, noise in shop classes is loud enough to damage their hearing, particularly given that hearing protection is rarely worn. Additional research is now needed to expand results of the current study to areas such as: conducting personal noise dosimetry for a larger sample of shop teachers across more test days, determining shop teachers' overall risk of NIHL by further investigating their exposure to noise outside of their teaching jobs, measuring shop teachers' hearing sensitivity to identify the prevalence of NIHL, and developing educational materials and programs to promote hearing conservation for current shop teachers, college students training to be shop teachers, and junior high and high school students in shop classes.