

Noise Exposure Assessment of Three Adolescents Living on Farms in Northwest Ohio

Sheryl A. Milz, PhD, CIH; J.R. Wilkins, III, BCE, DrPH; Melisa K. Witherspoon, MSOH;
April L. Ames, MSOH

Health hazards related to farming have been recognized as far back as 1555. Unfortunately, federal regulations that have reduced exposure to hazards in many industrial environments have not had the same effect in the agricultural setting. One reason for this difference is that agricultural operations are not covered by federal regulations. Even if regulations cover the agricultural operation, 97% of US farms employ less than 11 people and therefore do not have to comply with the regulations.

When it comes to noise, an estimated 323,000 American agricultural workers are exposed to elevated levels of noise, above 85 dBA (decibels on the "A-weighted" scale, which gives greater weight to the audio frequencies to which the human ear is especially sensitive). Additionally, hearing protection is used by less than 25% of men and less than 15% of women on the farm. There are many noise sources on farms including tractors (both with and without cabs), harvesters, welding equipment, chain saws, pumps, animals, and maintenance tools. Children and adolescents are often exposed to the same noise levels as adults on farms.

Noise sources on farms have the potential to generate levels harmful to both adults and children. This study was designed to measure the exposure of families living and working on farms in Northwest Ohio. Three families were enrolled, including three adolescents. Teen 1 was a 16-year old male who was a full-time high-school student. Teen 2 was a 14-year old female who was home-schooled. Teen 3 was an 11-year old male who was home-schooled.

The three adolescents wore noise dosimeters to measure the noise levels they were exposed to from the time they got up in the morning until they went to bed at night. They wore the dosimeters for three separate weeks during the year – one week during planting season, one week during growing season, and one week during harvesting season.

During these three weeks, Teen 1 worked on the farm 8 hours 15 minutes, Teen 2 worked on the farm 6 hours 46 minutes, and Teen 3 worked on the farm 4 hours 52 minutes. None of the exposures measured during these three weeks exceeded any federal regulations. However, one exposure for Teen 1 did exceed a lower federal guideline. The exceedance of the lower federal guideline for Teen 1 suggests that noise exposures for adolescents living and working on farms could cause hearing loss.