How Accurate Are Smartphone Noise Measurement Apps?

In addition to fun apps, smartphones offer apps that can actually be useful in the workplace. For example, there are various sound measurement apps you can use to determine whether workers are exposed to excessive noise, essentially turning your phone into a dosimeter or sound level meter. But are these apps accurate'

The NIOSH Science Blog recently reported on a study designed to answer that question.

NIOSH noise researchers conducted a pilot study to select and characterize the functionality and accuracy of these apps as an initial step in a broader effort to determine whether these apps can be relied on to conduct participatory noise monitoring studies in the workplace. The resulting paper, Evaluation of smartphone sound measurement application, was published in the *Journal of the Acoustical Society of America*.

The researchers selected 10 iOS smartphone apps based on their ability to measure occupationally relevant sound level values. They tested the apps in an acoustics testing laboratory. (Android apps didn't meet the minimal criteria and so weren't tested.)

They found that for A-weighted sound level measurements, three apps had mean differences within ñ 2dBA of the reference measurements. And for un-weighted sound level measurements, three apps had mean differences within the ñ 2 dB of the reference measurement.

Because occupational guidelines generally require type 2 sound measurement instruments to have an accuracy of ñ 2dBA, these above-mentioned apps could potentially be used in the occupational setting.

The researchers note that there are still challenges with using smartphones to collect and document noise exposure data in the workplace, including:

- Privacy and collection of personal data
- Bad or corrupted data
- Mechanisms for storing and accessing such data.

Bottom line: Safety professionals can use smartphone sound measurement apps to make quick spot measurements to determine if there's excessive noise levels in the workplace. But they shouldn't rely on such apps exclusively to comply with noise control requirements in the OHS laws or to manage a hearing conservation program.