

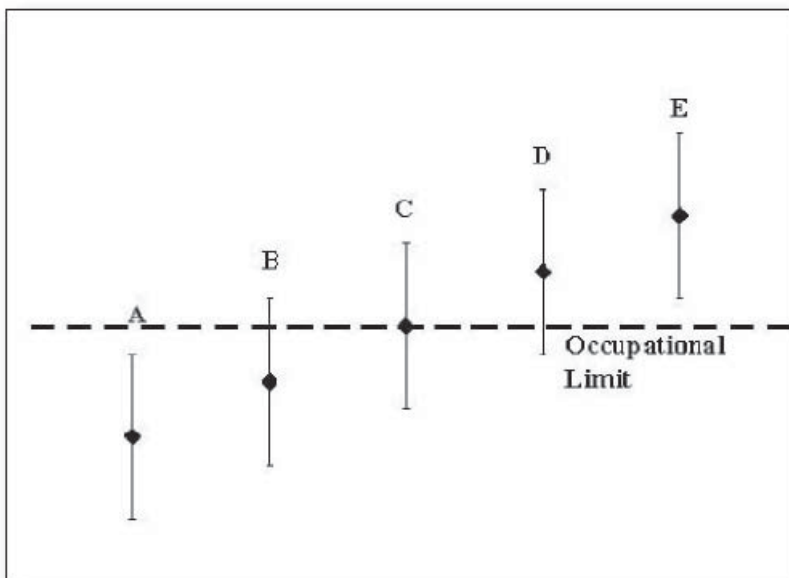


Uncertain About Uncertainties!

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Increasingly, many aspects of our lives are being measured. Our sporting achievements are timed, our car speed is camera-detected, our breath and sometimes our blood samples are taken to measure alcoholic content. Usually these measurements are not recognised to have any variability or uncertainty. However, all measurements have uncertainty whether it is recognised or not. The estimation and the reporting of such uncertainties allow more informed decisions to be made on the measurements. Whenever decisions are based on analytical results, it is important to have some indication of the quality of the results, that is, the extent to which they can be relied on for the purpose at hand. Two analytical results cannot be compared without measurement uncertainty. Whether the results are obtained from repeat measurements or from measurements by different laboratories, equivalence can only be determined with measurement uncertainty.

An issue for OHS regulatory bodies to consider is the comparison of a test result to a statutory limit. Does a test result comply or not comply for instance to an occupational limit when measurement uncertainty is taken into consideration? Of the five scenarios shown in the figure below (A to E), only in situation A can it be definitely said that the test



result complies with the occupational limit.

In scenarios B, C and D the measurement uncertainties show that there is some doubt as to whether the measurement complies to the occupational limit or not. Only in scenario E can it clearly be said that the measurement is above the limit. Only smaller uncertainties established by more precise

measurements or an increase in sample size can help resolve this issue.

As measurements have pervaded our lives so has measurement uncertainty. This additional knowledge should be welcomed and embraced as a more complete picture, adding clarity to test results.