

Book Review

THE MEASUREMENT OF BREATH ALCOHOL By V. J. Emerson, R. Holleyhead, M. D. J. Isaacs, N. A. Fuller and D. J. Hunt. Forensic Science Society and Scottish Academic Press, 1980, Pp. 70, £10.00.

This is a hard backed book and is an account of experimental work that was done to evaluate breath alcohol testing instruments following the Blennerhasset report on Drinking and Driving in 1976.

The instruments are designed to analyse a sample of breath for its alcohol concentration and present the results as an equivalent blood alcohol concentration. This is based on a statement made in 1972 by U.S. specialists in alcohol research that a physiological relationship exists between the alcohol concentration in 2100 millilitres of expired alveolar air and in 1 millilitre of blood. A temperature of 34°C is taken since this is the one at which breath leaves the mouth. The use of rigid temperature control is important as the results may vary by as much as 6 per cent. with 1°C temperature variation.

Three different types of instruments were used in 13 different locations for periods of 2 months each and the results carefully examined and recorded together with the (printable) comments of the operators who had all received a minimum of training.

On broad lines the results were in good agreement with blood alcohol test results, adjusted for the time elapsing between tests during which metabolism occurred. A second breath test taken a few minutes after the first one confirmed the results. It is essential to have 2 litres of alveolar air for each test hence the subject will need time to recuperate after the first test. Likewise asthmatic sufferers may require special exemption for the test as could people subject to spontaneous pneumothorax.

At present haemophiliacs are known to be at risk with blood alcohol tests but it is essential to make the point plain to the "man on the beat". Mouth alcohol is likely to vitiate the breath test hence the need to wait for its disappearance—as at present and also "burps" from people consuming alcohol when on low calorie diet may affect it. The low calorie diet may also produce volatile compounds which behave similarly to alcohol in the breath but the effect is small, although even the small effect mentioned in the book could be critical in the "80" mg region.

The book is basically just an account of the work done on these instruments and as such is free from criticism except that in my own opinion 991 valid tests may be insufficient on which to base such an important step as to alter the method of test which may condemn many people unfairly.

No mention is made of the number of tests done in places like Northern Ireland, Canada, Australia, New Zealand and much of the U.S.A. I understand in this country that about 120,000-130,000 samples are taken under the Road

Traffic Act each year and about 10 per cent. of these are sent for private "check ups".

In Northern Ireland and New South Wales (Australia) where the new type breath tests have already been in operation for some time I understand that about 10 per cent. of the persons stopped, exercised their option to have blood or urine samples taken to confirm the results obtained from breath tests. If this be so, then it is likely that there will be an increase in the number of tests in the areas of greatest risk, i.e. "80", "150" and possibly 200 mg of alcohol per 100 millilitres of blood.

The book reviewed was singularly free from typographical errors—only one small one could be found and the text is excellent and well written. The tables and figures of results are impressive. The price of the book is high except for specialists to whom it can be thoroughly recommended. It is well bound and legible.

Possibly any developments should be investigated on a wider basis than the one on which this experiment was based and thoughts go back to original experiments during the 1950s when Public Analysts, the then Royal Institute of Chemistry and the then Society for Analytical Chemistry were also involved.

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