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IN THE HIGH COURT OF NEW ZEALAND
CHRISTCHURCH REGISTRY

M.32/84

884

BETWEEN TURNBULL

Appellant

A N D MINISTRY OF TRANSPORT

Respondent

Hearing: 8 June 1984

Counsel: C.B. Atkinson for Appellant
B.M. Stanaway for Respondent

Judgment: 17 JUL 1984

JUDGMENT OF ROPER J.

This is an appeal against conviction only on a charge of driving with excess blood alcohol. The only ground of appeal is that it had not been established that the method of analysis of the Appellant's blood sample, which was by a process called head space gas chromatography, had given an accurate result.

The District Court evidence on this one issue runs to 67 pages most of which is cross-examination, and largely incomprehensible. However, Counsel were agreed that the learned District Court Judge has correctly described the procedure in his judgment and I gratefully adopt his description.

Thirteen specimens for analysis are done at the one time on the gas-chromatograph machine, each specimen being divided into two parts. With them in the machine are four samples of aqueous ethanol of a known concentration - in the present case 99.03 milligrammes of alcohol per 100

millilitres. There are therefore 30 samples in the carousel on the machine, 26 of unknown alcohol concentration and four of known. To each of the 30 samples is added a dilution of aqueous propanol. The numbers which have been assigned to each sample to be tested are then entered in the computer linked to the chromatograph with the operator's name and the number of the chromatograph machine. The next part of the procedure is best described in the trial Judge's own words:-

> "Mr Lewin gave evidence of the ethyl alcohol and the propanol evaporating in the head-space of the column which is able to be differentiated by the chromatograph in so far as it can differentiate the characteristics between the ethanol and the propanol. A minute electric current is conducted along the column which can be measured by means of a transfer into a voltage. The size of the changing electric current is an indication of the quantity of the substance and the time at which it appears at the end of the column and is indicative of which volatile substance it is at each particular time. The size of the voltage is sensed as an indication of the amount of the alcohols and the time at which the voltage peaks is what indicates what the volatile substance is. By means of the assessment of the area under the peak, it is possible to compare the area with that made by the standard which is, of course, a known strength. The accuracy of the analysis depends upon the accuracy of the standard and this information is transmitted to the computer which was programmed by Dr Williams and which prints out the result inter alia of the analysis."

It follows that proof of the accuracy of a particular reading requires evidence from a chemist as to the operation of the chromatograph and from a computer expert.

In Holt v. Auckland City Council [1980] 2 N.Z.L.R. 124 (C.A.) where a similar problem arose the only evidence called was that of a chemist and the Court of Appeal held that her evidence of blood alcohol levels was critically dependent on the functioning and accuracy of the computer which was outside the field of her proven competence. The appeal was allowed as

there was a gap in the chain of proof. In the unreported case of Clark v. Ministry of Transport (Christchurch Registry M.18/81; Judgment 6 November 1981) both a chemist and computer expert were called.

In the result Hardie Boys J. allowed the appeal on the ground that the chemist had not checked the accuracy of the standard ethanol as was done by the chemist in Holt. Although it was unnecessary for the purposes of the appeal he went on to express his opinion on the evidence of the computer expert and concluded that it did not go far enough. He said:-

> " The second category into which Mr Catherwood's criticism falls is that of sufficiency. Once a witness qualifies himself to give expert evidence, then provided there is no breach of the hearsay rule, whether or not his evidence establishes the accuracy of the results produced by the apparatus will depend on what he in fact says. It will, I think be necessary for him to say more than the witness did in this case. In Holt's case, the Court referred with approval to the judgment of Zelling J. in Mehesz v Redman (1979) 21 S.A.S.R. 569. That case concerned equipment and procedures that appear to be similar to those employed in the present case. In view of the way the evidence had been presented in the lower Court, Zelling J. dealt with the evidential requirements in the context of admissibility. At p.573 he referred particularly to the various ways in which errors can arise in electronic data processing and pointed out that as part of the prosecution's need to demonstrate the trustworthiness of the equipment, each of the causes of or occasions for error should be discussed and negatived by the expert witness. He accepted an American writer's view that it was certainly desirable, if not necessary, to prove not only a history of overall system accuracy, but also 'that error checking and correction procedures have been continually carried out; and that audits made by independent agencies, if available, indicate that the records system is sound and has operated efficiently'.
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> The prosecution evidence in this case did not go beyond the fringes of that kind of evidence."

And again in the unreported decision of Ministry of Transport v. McMinn (District Court, Christchurch; Judgment 3 May 1982) D.B. Pain D.C.J. the prosecution failed on the ground that the accuracy of the standard solution had not been proven.

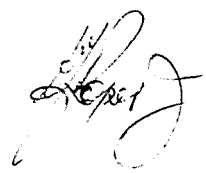
In the present case the prosecution called Mr J.F. Lewin a scientist with the D.S.I.R., who in his 13 years with the Department has analysed many thousands of blood samples; and Dr P.P. Williams who has worked with computers since 1960 and is responsible for ensuring that the Department's computers are running properly and to the best advantage. It was he who set up the system of blood alcohol testing by the use of a computer with a chromatograph, and prepared the programme.

The ethanol standard is made up in bulk with small quantities being drawn off for each test run, and Mr Atkinson's first submission was that there was no evidence that the standard solution had been checked to see that in fact it was 99.03 milligrammes per 100 millilitres. Mr Lewin was able to say from his experience with the machine and the way it functioned on the day of the test of the Appellant's sample that the standard solution was correct, but apart from that he had actually tested it by a method known as dichromate titration, which is inherently less accurate than test by chromatograph, but in the result gave a reading of 99.65 against the true figure of 99.03, which was quite acceptable to Mr Lewin. It was further submitted that evaporation while the standard is being broken down into smaller quantities may have affected it. Mr Lewin rejected that possibility because the bulk standard is stored at such a low temperature that evaporation "is very rare".

What I regarded as Mr Atkinson's main submission concerned a defect in the computer which manifested itself some five days after the test of the Appellant's sample, it being suggested that the same fault may have been present when the Appellant's sample was tested. The evidence established that

the fault five days later was immediately obvious.

I am satisfied, as was the Trial Judge, that in this case the accuracy and trustworthiness of the equipment was established almost beyond any doubt and the appeal is therefore dismissed with the period of disqualification to commence on and from the 27th July 1984.



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