NATIONAL ARCHIVES

IRELAND

Reference Code:	2012/59/1661
Creation Date(s):	5 February [1982]
Extent and medium:	3 pages
Creator(s):	Department of Foreign Affairs
Access Conditions:	Open
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Acting on the instructions of Mr Christopher Price, MP, I have read copies of various papers relating to the trial of Patrick Joseph Conlon at the Central Criminal Court, London, on 18th February 1976. These papers are: transcript of evidence of H.J. Yallop; some, but not all, data taken from Mr Yallop's experimental book; and statements of certain prosecution witnesses.

The purpose of the experiments carried out by Mr Yallop was to determine which other compounds would give a positive response in tests normally used to detect the presence of nitroglycerine. These tests were: the Greiss reaction used as a spot test, and the Greiss reaction following separation of chemical constituents by the method of Thin Layer Chromatography.

It was found that a number of domestic substances including tobacco and its pyrolysis products gave positive reactions. This is to be expected because these substances contain chemical features which are the same as or could be converted to nitrite which is detected during the Greiss test. Whether or not these substances could be mistakenly identified as explosives or explosive residues would therefore depend on whether they can be separated from nitroglycerine using the technique of Thin Layer Chromatography.

The ability of the technique of thin layer chromatography to separate the chemical components of a mixture depends on the nature of the material used to make the thin layer plate, and the nature of the material used as a solvent which carries the substances through the material of the plate. It has been known for several years that the solvent toluene has be particularly good for the resolution of the components of explosive mixtures and it is widely used. On occasion solvents such as the alcoholic mixture, propanol-ethanol (50:50) have been used.

In describing the behaviour of substances subjecte to thin layer chromatography it is important to define a measurement known as R_f. This is the ratio of the movement along the plate of the substance in question to the distance travelled by the solvent, and is incorrectly defined by Mr Yallop in the transcript although he is aware of the true definition as can be seen from his laboratory notes. The R_f value of a compound depends on the "activity" of the thin layer plate material, which may vary, and on the purity of the solvents used. For reproducible R_f values considerable care must be exercised in controlling the purity of these components of the test. Variations in solvent and thin layer plate material activity will result in variation in R_f value for

The same compound analysed in the same way but on different plates. This is consistent with the R_f values recorded by Mr Yallop for nitroglycerine using toluene as a solvent, which ranged from 0.14 to 0.68. The range of values in itself is not detrimental to the identification providing that the ability of the system to resolve a mixture of explosives has been retained. There is no evidence in the papers I have read that Mr Yallop checked the resolving power of his system by applying a standard mixture of explosive materials (as a single spot) to each plate. It is normal practice to apply such a mixture to at least one and better three positions on each plate. This does not appear to have been done by Mr Yallop. Mr Yallop's work could also be questioned in that it appears he compared the R_f value of a compound on one plate with a standard run on another (page 31 (?) of his experimental notes).

Various results reported by Mr Yallop, for example, the very wide range of R_f values for nitroglycerine using the ethanol:propanol solvent system (0.21 - 0.72) and the results for the Winfield Air Freshner indicate that the absence of application of standardised mixtures is a very serious and significant omission.

A further serious drawback to Mr Yallop's data

example Mr Yallop stated (A25-G) that since the explosive, RDX, has an R_f value of 0.04 and the swab from a smoking experiment showed a compound with R_f value 0.06 then this latter could be mistakenly identified as RDX. This conclusion should not have been made since the compounds have not migrated sufficiently to demonstrate any similarities or differences. Where such small migrations are encountered the analyst must use an alternative system.

Mr Yallop is also incorrect in stating that since a smoking compound could be misidentified with RDX (which as stated above is in itself not a valid conclusion) then there probably exists a compound which could be misidentified with nitroglycerine (R_f 0.53 on the same plate. This is an unacceptable statement.

The experiments carried out by Mr Yallop on household products other than the tobacco analyses have not been conducted in a proper fashion namely by application to the hand and sampling by use of swabs.

I am of the opinion that there are defects in the experiments which Mr Yallop has carried out, and inaccuracies in some of the specific conclusions arrived at. While one would agree with Mr Yallop

it is necessary to take a balanced view together with experience in analysing substances by thin layer chromatography. Whenever a positive identification has been achieved for one system then a confirmatory test must always be carried out using either a different, previously verified thin layer system, or by a completely different technique.

Following examination of the documents in my possession I am of the opinion that the experimental work has failed to establish that there are any commonly occurring materials which would interfere with the properly executed thin layer chromatographic analysis for nitroglycerine.

Signed:

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Case Against Patrick Joseph Conlon:
Evidence Presented at Trial by Mr H.J. Yallop

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