

**REPORT OF THE  
MEDICAL BUREAU OF ROAD SAFETY  
FOR THE YEAR ENDED 31<sup>ST</sup> DECEMBER  
2000**



**MEDICAL BUREAU OF ROAD SAFETY  
DEPARTMENT OF FORENSIC MEDICINE  
ANNUAL REPORT  
2000**

**ESTABLISHMENT AND FUNCTIONS OF THE BUREAU**

The responsibility for chemical testing of intoxicants in driving in Ireland rests with the Medical Bureau of Road Safety, which is a corporate body established in November 1968 by the Minister for Local Government under Part V of the Road Traffic Act, 1968. (Minister's title altered to Minister for the Environment & Local Government 22<sup>nd</sup> July 1997.)

The functions of the Bureau are laid down in the Road Traffic Acts 1968 - 1994 and their regulations and they include:

- The receipt and analysis of specimens of blood and urine forwarded to the Bureau,
- The issue of certificates of analysis.
- The provision of equipment for the taking or provision of specimens of blood and urine.
- Approval, supply and testing of equipment or apparatus for indicating the presence of alcohol in the breath.
- Approval, supply and testing of equipment or apparatus for concentration of alcohol in the breath.
- Research on drinking and drugs in relation to driving, including the methods of determining the amount of alcohol or drugs in a person's body.

The Bureau derives its finances from an Annual Grant out of the Vote for the Department of the Environment and Local Government. The Board which comprises of five members (including the Director) are appointed by the Minister for the Environment and local Government. The current Board members are Professor Bernadette Herity (Chairman), Professor Denis A. Cusack (Director), Mr. Brendan Gogarty, Dr. Fenton Howell and Mr. John Kiernan.

The Medical Bureau of Road Safety utilises the premises and staff provided under an agreement with University College Dublin, Department of Forensic Medicine, Earlsfort Terrace, Dublin 2. The staff currently employs one Chief Analyst five Analysts, one Senior Technician, one Laboratory Attendant, one Administrative Officer and three Administrative staff on a permanent basis. A further three Analysts and one part-time Administrative assistant are employed on contracts. The Analysts have primary degrees and most have post graduate qualifications. The Director is responsible for the day to day management of the Medical Bureau of Road Safety.

## ACTIVITIES OF THE MEDICAL BUREAU OF ROAD SAFETY

In 2000 a total of 10,134 blood, urine and breath specimens were analysed for alcohol concentration. This represents an overall increase of 19.6% on the total number of specimens analysed during 1999, 78 were analysed for the presence of drugs and this represents an increase of 56% on 1999.

The activities of the Medical Bureau of Road Safety for this report have been classified into the following three main programmes:

1. Blood and Urine Alcohol Analysis
2. Breath Alcohol Analysis
3. Blood and Urine Drug Analysis

The breakdown is as follows:

### **1. Blood and Urine Alcohol Analysis**

A total of 6,567 blood and urine specimens were received for analysis during 2000. Analyses were carried out and certificates were issued in 6,511 of these cases. In 56 cases certificates were not issued either because of some defect in the specimen or in the documentation accompanying it. The number of blood and urine specimens received for 2000 shows a decrease of 1,909 on the number received for 1999, this is due to the implementation and extension of the Evidential Breath Testing programme. This represents a decrease of 22.5% on 1999 and 24.4% decrease on 1998. (Chart 1 shows the breakdown of all specimens analysed during 2000).

### ***1.1 Number of Specimens Provided in Hospitals***

There were 255 specimens provided in hospitals, 57% of these had alcohol concentrations in excess of 150mg/100ml blood or 200mg/100ml urine while 28% were in excess of 200 mg/100ml blood or 267mg/100 ml urine.

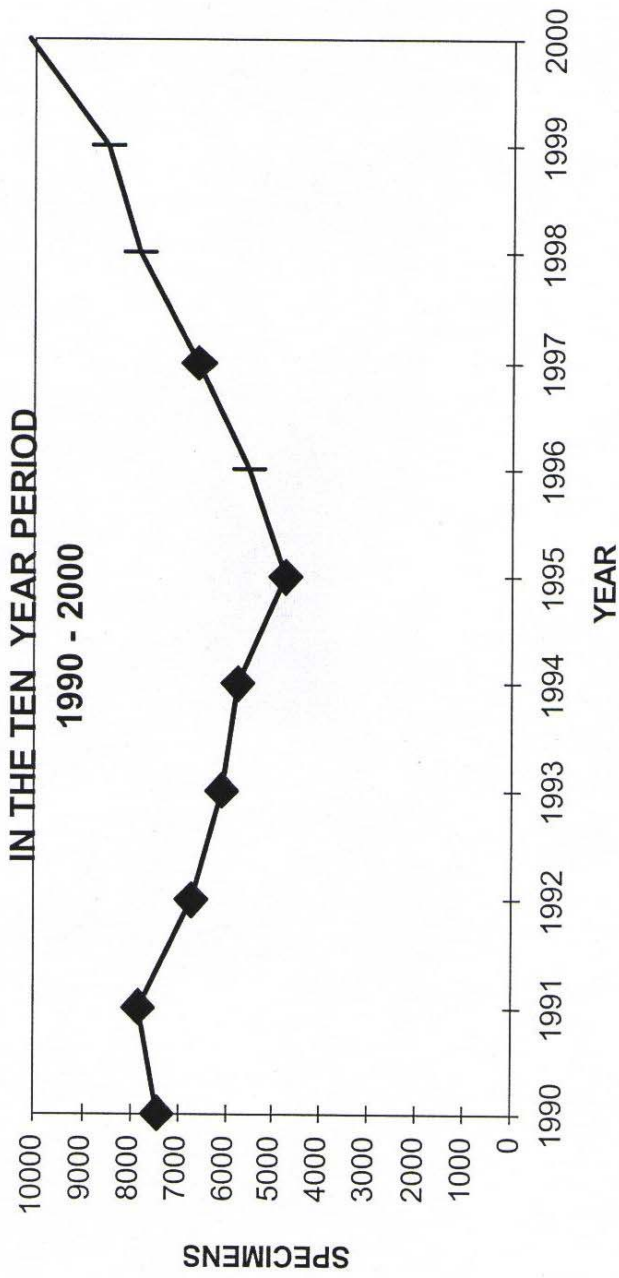
### ***1.2 Analysis of Time***

Of the total number of blood and urine specimens received 83% were provided between the hours of 9.00 p.m. and 6.00 a.m., 11% between 4.00 p.m. and 9.00 p.m., and the remaining 6% between 6.00 a.m. and 4.00 p.m. This follows the same pattern as 1999 and 1998.

### ***1.3 Alcohol Levels in Blood & Urine Specimens***

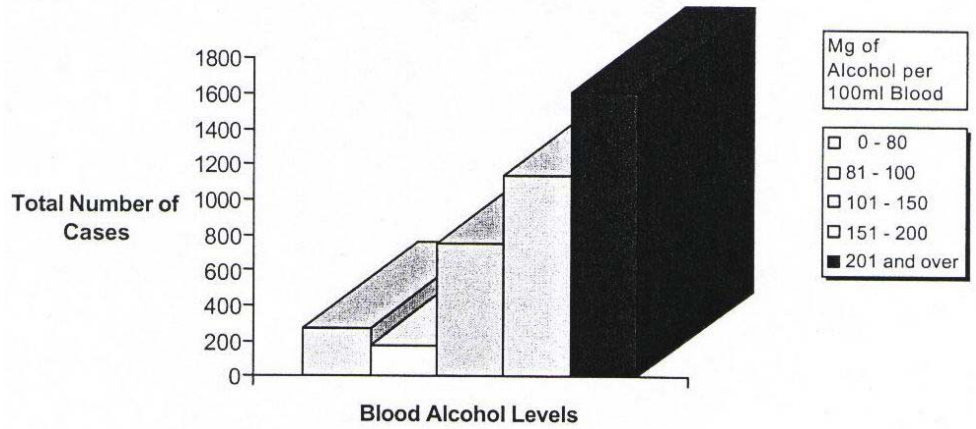
Table I and II to this report give a breakdown of alcohol levels encountered in blood and urine specimens received during 2000. Tables III and IV compare the levels of blood and urine with previous years. Charts 2 and 3 correspond to Tables I and II and charts 4 and 5 correspond to Tables III and IV respectively.

Chart 1  
TOTAL SPECIMENS ANALYSED BY M.B.R.S.  
IN THE TEN YEAR PERIOD  
1990 - 2000



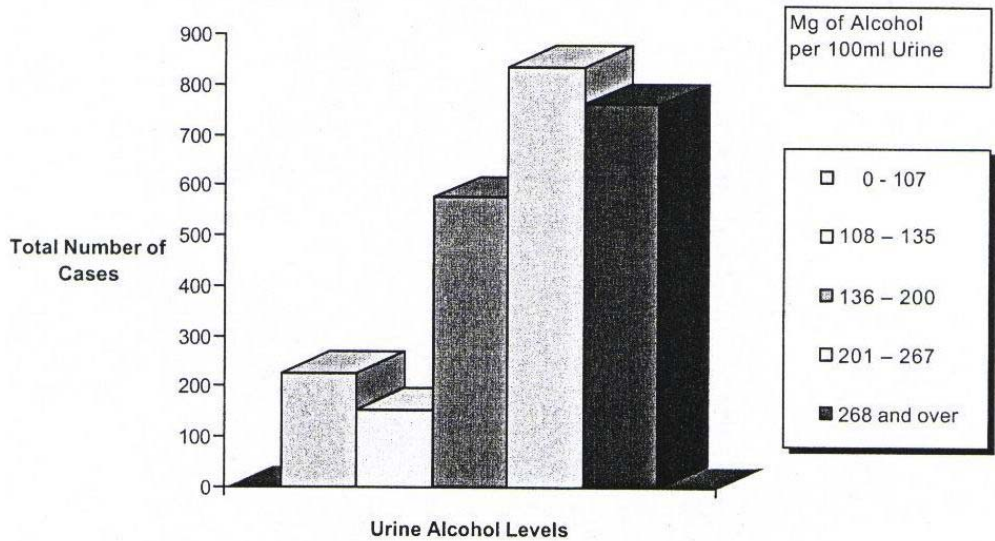
**CERTIFIED ALCOHOL CONTENT OF BLOOD SPECIMENS  
RECEIVED IN 2000**

Chart 2



**CERTIFIED ALCOHOL CONTENT OF URINE SPECIMENS  
RECEIVED IN 2000**

Chart 3



**TABLE I**

**CERTIFIED ALCOHOL CONTENT OF BLOOD SPECIMENS RECEIVED IN 2000**

Mg. of alcohol per 100ml of blood	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	TOTAL
0 - 80	93	68	64	44	269
<b>LEGAL LIMIT</b>					
81 - 100	51	54	41	27	173
101 - 150	218	212	393	134	757
151 - 200	319	300	310	214	1,143
201 & Over	466 1,147	482 1,116	358 966	304 723	1,610 3,952

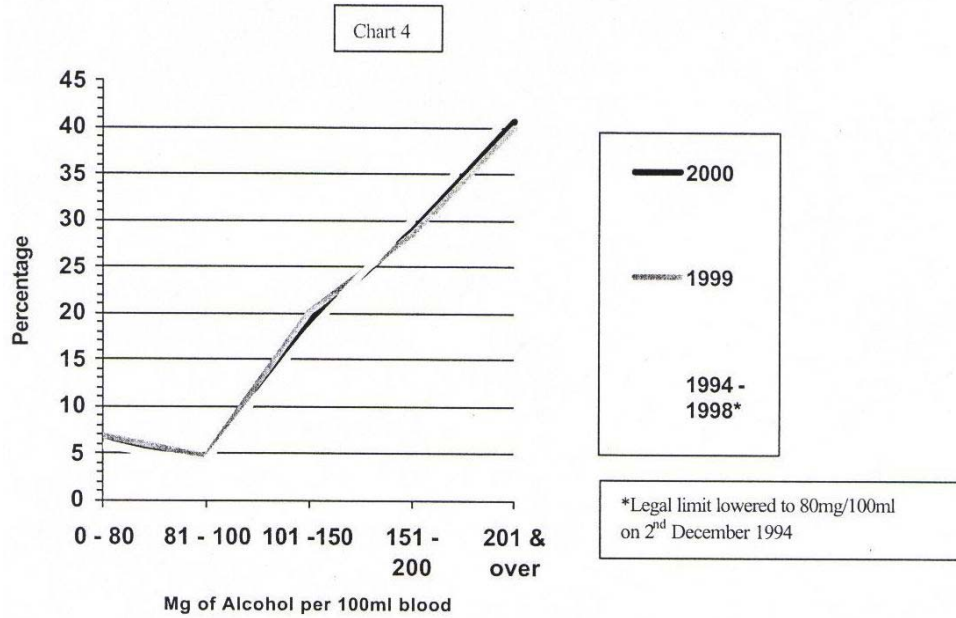
**TABLE II**

**CERTIFIED ALCOHOL CONTENT OF URINE SPECIMENS RECEIVED IN 2000**

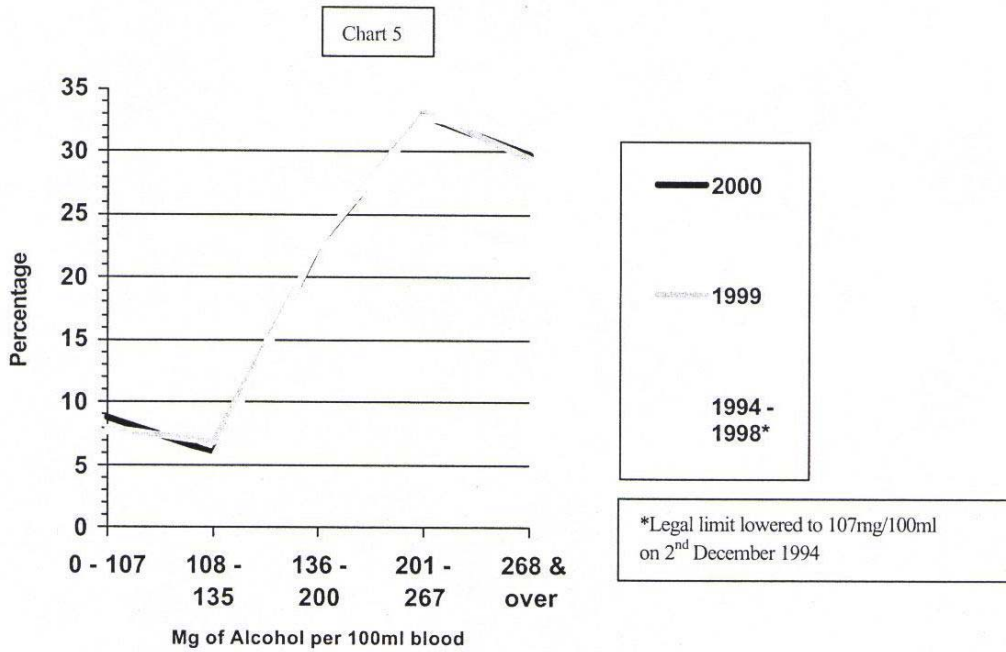
Mg. of alcohol per 100ml of urine	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	TOTAL
0 - 107	70	46	62	48	226
<b>LEGAL LIMIT</b>					
108 - 135	55	37	34	28	154
136 - 200	189	171	139	79	578
201 - 267	243	215	217	163	838
268 & Over	245	207	163	148	763
	802	676	615	466	2,559



### BLOOD ALCOHOL LEVELS WITH PREVIOUS YEARS



### URINE ALCOHOL LEVELS WITH PREVIOUS YEARS



**TABLE III****BLOOD ALCOHOL LEVEL - COMPARISON WITH PREVIOUS YEARS**

Mg. of alcohol per 100ml of blood	2000		1999		5 Year Period 1994-1998*	
	No	%	No	%	No	%
0 - 80	269	6.8	351	6.8	1,090	5.9
<b>LEGAL LIMIT</b>						
81 - 100	173	4.4	240	4.7	769	4.2
101 - 150	757	19.2	1,041	20.1	3,366	18.3
151 - 200	1,143	28.9	1,476	28.5	5,456	29.7
201 & Over	1,610	40.7	2,066	39.9	7,687	41.9

\* Legal limit lowered to 80mg/100ml on 2<sup>nd</sup> December 1994

**TABLE IV****URINE ALCOHOL LEVEL - COMPARISON WITH PREVIOUS YEARS**

Mg. of alcohol per 100ml of urine	2000		1999		5 Year Period 1994-1998*	
	No.	%	No.	%	No.	%
0- 107	226	8.8	255	7.9	937	7.9
<b>LEGAL LIMIT</b>						
108-135	154	6.0	222	6.8	666	5.6
136-200	578	22.6	733	22.6	2,614	22.1
201 -267	838	32.8	1,076	33.2	3,833	32.4
268 & Over	763	29.8	956	29.5	3,779	32.0

\*Legal limit lowered to 107mg/100ml on 2<sup>nd</sup> December 1994

## **2. Breath Alcohol Analysis**

In 2000 a total of 3,567 breath specimens were taken in Garda Stations, of which 3,075 were certified; 82% were over the legal limit while 33% were over twice the legal limit. Of the total number of breath tests registered, 492 tests did not result in a statement under Section 17 of the Road Traffic Act being provided.

### ***2.1 Installation of Instruments***

In 2000, the Medical Bureau of Road Safety in consultation and with the co-operation of the Garda Authorities has continued to participate in the Government's Strategy for Road Safety and successfully installed the next stage of the implementation of its Evidential Breath Testing programme. Following public procurement procedure the Bureau purchased a total of twenty-three lion intoxilyzer 6000IRL.

The instruments were installed in the following stages:

**STAGE 1:** In March 2000, ten instruments were commissioned. Five instruments were installed for training in me Garda In-Service Training Centre and five instruments were placed in stations throughout the country.

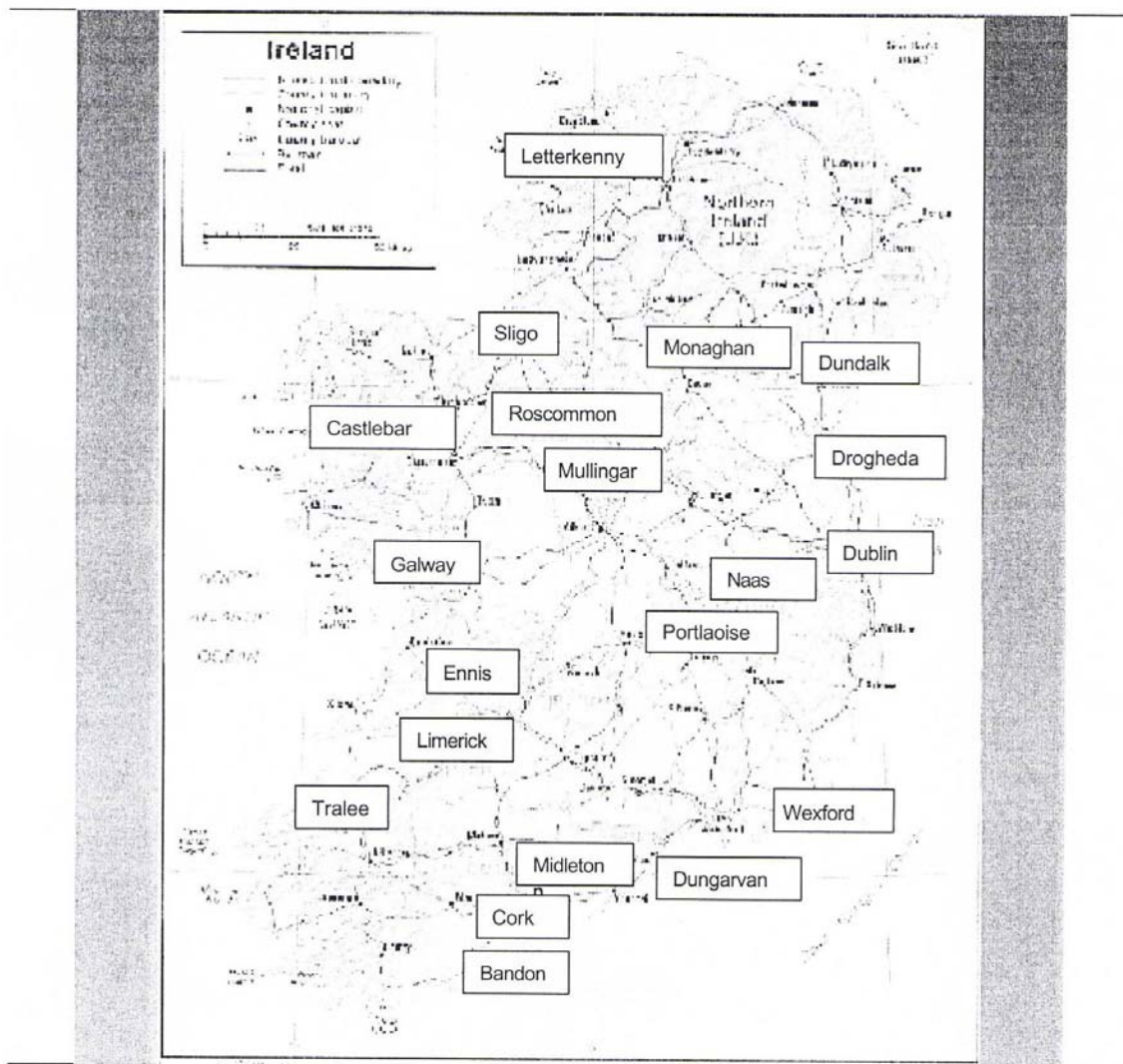
**STAGE 2:** In August a further eight instruments were commissioned.

**STAGE 3:** In October 2000 the remaining five instruments were commissioned in stations.

**STAGE 4:** Three instruments were taken from training centre and were commissioned in stations by me Christmas period.

See Figure 1 for location of the instruments.

Figure 1  
Location of Evidential Breath Testing Instruments



This gave a total of twenty-five instruments in stations by Christmas 2000. This figure comprises of twenty-three lion intoxilyzer 6000IRL's and two INTOXIMETER EC/IR instruments (two intoxilyzer 6000IRL's and two INTOXIMETER EC/IR instruments were installed in stations by Christmas 1999).

The Garda Authorities selected the station and before the installation a Bureau scientist visited the selected station in order to inspect the room and make recommendations if necessary. The intoxilyzer instruments were installed by Lion engineer or by a QSL engineer, which is Lion's Irish Agent. The QSL engineers were trained at Lion in Cardiff, U.K. A Bureau scientist tested each instrument in the station before it was deemed fit for use.

## ***2.2 Testing & Visits to Garda Stations***

Instruments installed at the end of 1999 were tested weekly for one month and then monthly for six months. For the instruments installed in 2000, it was decided that a Bureau scientist should visit and test the instruments one month after installation, in order to check that the instrument and operators were functioning satisfactorily. Whilst no problems have been encountered on this monthly visit, the Bureau feels that this procedure provides both the Bureau and the Gardai with confidence in the instruments. The instruments are scheduled for testing bi-annually by Bureau scientists and one service visit by a service engineer annually.

Since the introduction of Evidential Breath Testing an allocation of funding has been committed to this essential area. There have been in excess of one hundred and fifteen visits by Bureau Scientists to Evidential Breath Testing instrument locations throughout





Bureau Forensic Scientist involved in Garda training programme.

Ireland during 2000. These visits covered - room inspection, installation, testing, demonstrations and training by Bureau scientists.

### ***2.3 Evidential Breath Testing Training***

Following discussions with Garda Authorities, it was decided that the Medical Bureau of Road Safety and the Gardai would jointly provide suitable training for Garda operators. A two-day course has been devised, taking into account manufacturers recommendations and advice of experienced EBT programme Managers from other countries. The course outlined the theory and practice of evidential breath alcohol testing.

A Bureau scientist and a Garda Sergeant from in-service training conducted the courses. The Gardai choose their candidates and courses were held for two weeks each month for approximately seven months. There were fifteen operators/course with five instrument's available for practical experience. A total of 460 operators have been trained in 2000.

### ***2.4 Analysis of Breath Specimens***

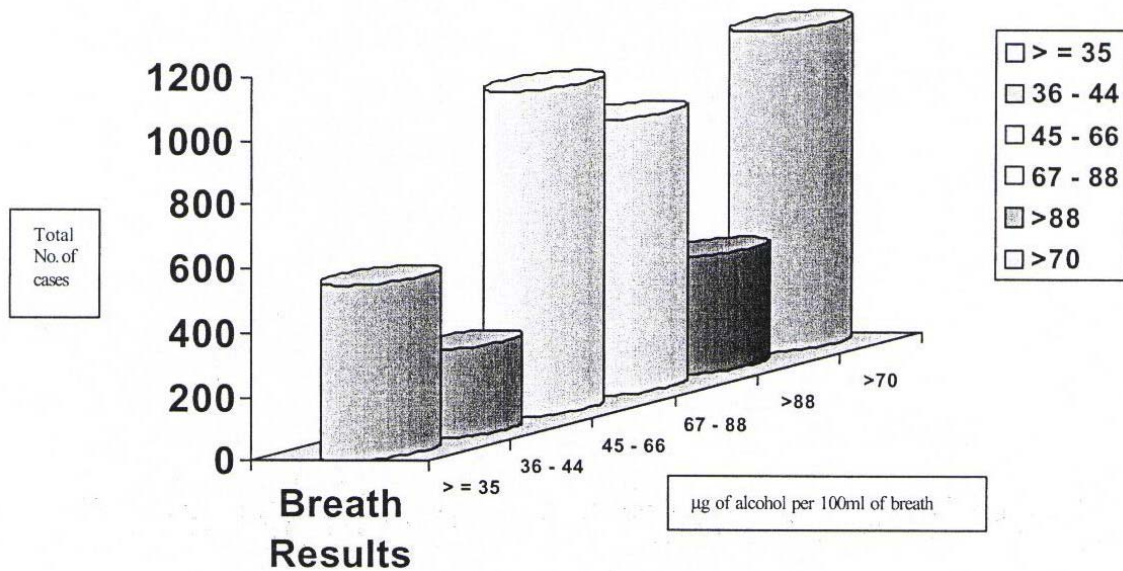
Chart 6, tables V and VI provides a breakdown of alcohol levels encountered in breath during 2000.

**TABLE V**

**CERTIFIED ALCOHOL CONTENT OF BREATH SPECIMENS RECEIVED IN 2000**

u.g of alcohol per 100ml of breath	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	TOTAL
0 - 35	32	76	187	253	548
<b>LEGAL LIMIT</b>					
36 - 44	20	40	97	122	278
45 - 66	84	148	354	436	1,022
67 - 88	73	141	261	386	861
88 & Over	33	58	121	154	366
	242	463	1,020	1,351	3,075

**Chart 6**  
**Certified Alcohol Content of Breath Specimens during 2000**





**TABLE VI**  
**SUMMARY OF ALCOHOL IN BREATH LEVELS FOR 2000**

ug of alcohol per 100ml of breath	2000	PERCENTAGE
0 - 35	548	17.8
36 - 44	278	9.1
45 - 66	1,022	33.2
67 - 88	861	28.0
>88	366	11.9
<b>Total Certified</b>	3,075	
Failures/ Refusals	492	13.8
<b>Overall Total</b>	3,567	

**TABLE VII**  
**ALCOHOL LEVELS BLOOD, URINE & BREATH SPECIMENS**  
**COMPARISON WITH PREVIOUS YEARS**

Alcohol Content			**2000		1999		5 year period 1994 - 1998*	
<b>BLOOD</b> mg/100ml	<b>URINE</b> mg/100ml	<b>BREATH</b> µg/100ml	<b>No</b>	<b>%</b>	<b>No</b>	<b>%</b>	<b>No</b>	<b>%</b>
0 - 80	0 - 107	0 - 35	1,043	10.9	606	7.2	2,027	6.7
<b>LEGAL LIMIT</b>								
81 - 100	108 - 135	36 - 44	605	6.3	462	5.5	1,435	4.7
101 - 150	136 - 200	45 - 66	2,357	24.6	1,774	21.1	5,980	19.8
151 - 200	201 - 267	67 - 88	2,842	29.6	2,552	30.3	9,289	30.8
201 and upwards	268 and upwards	88 and upwards	2,739	28.6	3,022	35.9	11,466	38.0

\*Legal limit lowered to 80mg/100ml blood and 107mg/100ml urine on 2nd December 1994

**\*\* The year 2000 was the first operational year for Evidential Breath Testing, since its introduction in the last quarter of 1999.**

Table VII shows the comparison between 1999 and 2000 for blood, urine and breath specimens received for analysis, 2000 is the first year to include the number of breath specimens.

### **3. Blood and Urine Drug Analysis**

There were seventy-eight requests by Gardai for drug analysis in blood and urine specimens received in the Medical Bureau of Road Safety in 2000,

The Medical Bureau of Road Safety commenced analysis of specimens for the presence of seven different drugs or drug classes using an immunoassay technique (ELISA).

Seventy-one specimens tested positive and seven specimens were found to be negative for the presence of a drug or drugs. Nineteen were positive for one drug class and fifty-three were positive for more than one drug class.

#### ***3.1 Confirmation from the State Laboratory***

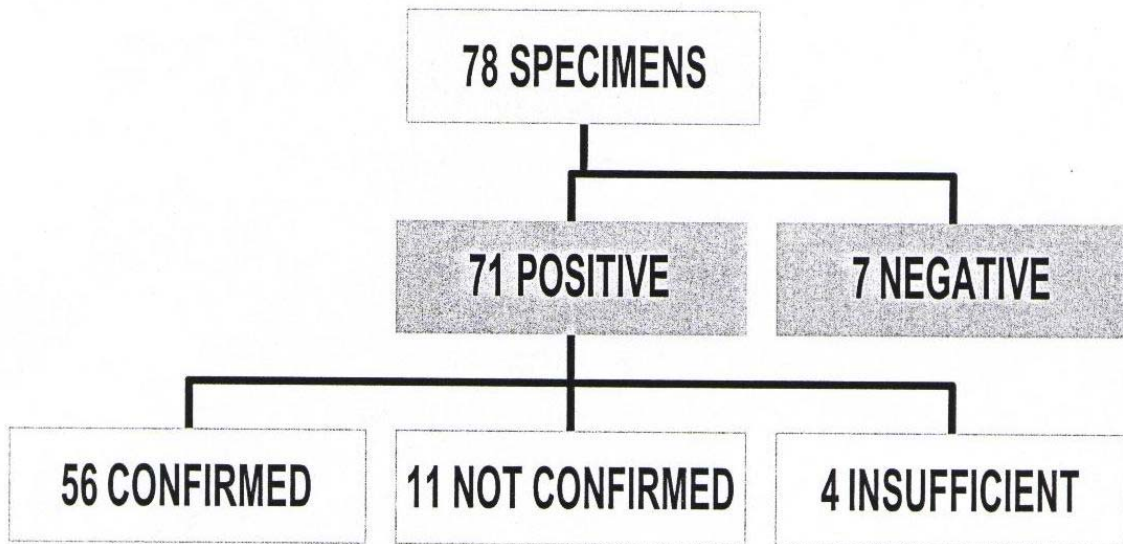
All specimens testing positive were forwarded to the State Laboratory for confirmatory analysis using Gas Chromatography /Mass Spectrometry or Liquid Chromatography / Mass Spectrometry.

Fifty-six were confirmed positive, eleven were not confirmed and four samples were insufficient for complete analysis.

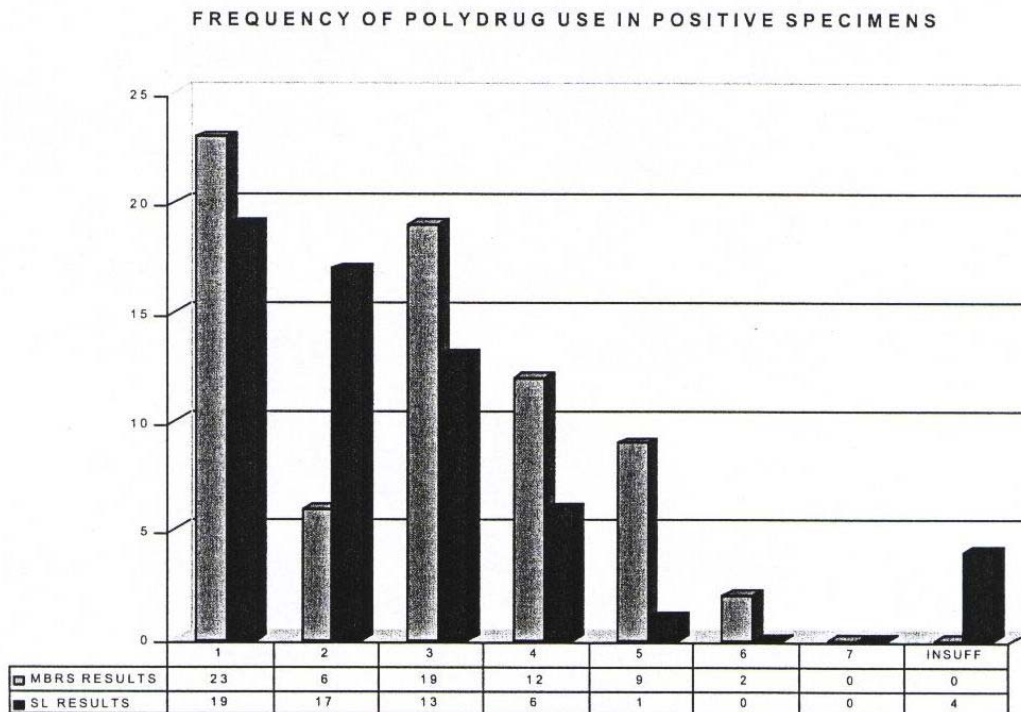
Chart 7 provides a breakdown of the analysis of drug specimens requested by Gardai.

Chart 7

**DRUG ANALYSIS 2000**  
**Road Traffic Act Specimens**



**Chart 8**



### **3.2 Drugs Screening Survey**

A drug screening survey was introduced in 2000, and one thousand and ninety seven samples were tested for the presence of drugs by the end of the year. The analysis of specimens will continue into 2001 and the data collection and report is scheduled for publication in 2002.

### **MEMBERSHIP OF COMMITTEES RELATING TO ROAD SAFETY**

The Bureau continued to be one of the active participating agencies in the workings of the High Level Group on Road Safety during 2000. The task of the group is to monitor the implementation of the Government's Strategy for Road Safety 1998 - 2002 and of recommending adjustments to it. The Director and Chief Analyst are both members of

the group and were in attendance at the four meetings of the 22<sup>nd</sup> February, 23<sup>rd</sup> May, 4<sup>th</sup> July and 19<sup>th</sup> October 2000.

### **CONFERENCES AND MEETINGS ATTENDED BY STAFF**

During 2000:

1. The Director attended the XVIIIth Congress of the International Academy of Legal Medicine in Santiago, Spain. The Congress was held from the 6<sup>th</sup> to the 9<sup>th</sup> of September 2000.
2. One Analyst attended a Manual Handling course on the 19<sup>th</sup> April 2000 in University College Dublin, Earlsfort Terrace, Dublin 2.
3. The Director, Chief Analyst, all Analysts and the Senior Technician attended at least a one half day session of the conference held in Dublin Castle from the 4<sup>th</sup> May to 6<sup>th</sup> May 2000, titled "From Crime Scene to Court Room".
4. One Analyst attended the UK NEQUAS meeting on 18<sup>th</sup> May 2000 in Birmingham, United Kingdom.
5. The Chief Analyst attended a conference titled "International Council on Alcohol Drugs and Traffic Safety" held in Stockholm, Sweden from the 21<sup>st</sup> to the 26<sup>th</sup> May 2000.
6. One Analyst attended an Uncertainty of Measurement course on the 8<sup>th</sup> June 2000 in the Green Isle Hotel, Dublin.
7. One Analyst attended an ISO 17025 course held on the 26<sup>th</sup> September 2000 in the Airport Hotel, Dublin.

8. Two Analysts attended the Lion Users Group meeting on the 19<sup>th</sup> October 2000 in Lion Laboratories, Cardiff, Wales.
9. Two Analysts attended a Turbochrom software course on the 24<sup>th</sup> October 2000 held in University College Dublin, Earlsfort Terrace, Dublin 2.

### **COURT ATTENDANCES**

The total number of occasions that different members of Bureau staff had to attend court cases during the year was twenty-six, of which twenty-five cases related to blood and urine alcohol analysis and one case was a legal challenge in relation to Evidential Breath Testing. Four cases were adjourned in court and another four cases were adjourned shortly before the court hearing date.

### **STAFF APPOINTMENTS IN 2000**

The Bureau appointed a Permanent Executive Assistant in January 2000 to fill a position which had become vacant. Two members of the scientific staff left to take up other positions and their appointments were filled at Analyst grade.

### **BUREAU MEMBERSHIP AND MEETINGS**

During 2000 the Medical Bureau of Road Safety held four meetings. These meetings were held on the 29<sup>th</sup> February, 28<sup>th</sup> June, 26<sup>th</sup> September, and 12<sup>th</sup> December 2000.

### PROMPT PAYMENT OF ACCOUNTS ACT, 1997

The Prompt Payment of Accounts Act came into operation on the 2<sup>nd</sup> January 1998, the Medical Bureau of Road Safety has come under the remit of the Act and since that time has complied with the terms of the Act. Under an agreement with University College Dublin, suppliers are paid in the first instance by the College which *is* then reimbursed by the Bureau. It is the policy of the Medical Bureau of Road Safety to ensure that all invoices are paid promptly. University College Dublin, as a public sector body, is required to comply with the requirements of the Act in relation to payments to suppliers for the supply of goods or services and therefore has very strict procedures in operation.

in the case of a small number of suppliers, when the Bureau receives an invoice it will issue a payment by cheque directly to the supplier. These controls in relation to processing of invoices and disputes can only provide reasonable and not absolute assurance against material non-compliance with the Act.

Bernadette Herity  
Chairman

Denis Cusack  
Director

31<sup>st</sup> October 2001  
Date: