



# Idaho State Police

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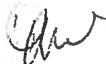


Colonel R. Dan Charboneau  
Director

James E. Risch  
Governor

## MEMORANDUM

TO: Ralph Powell, Major

FROM: Don Wyckoff, Laboratory Manager 

DATE: August 24, 2006

SUBJECT: Toxicology Program Trends

### Overview

Continuing with last year's format, the toxicology workload trend is tracked since the mid-80s. Figure 1 depicts the rise in workload over more than twenty years and, suggests that the laboratory can expect this trend to continue into the near future. This rise is probably fueled mostly by Idaho's increasing population, but it may also be partially attributed to the level of education and training that has been invested in the law enforcement community over that same period. The three-year spike in samples submitted (1997-99) reflects the advent of the DRE program and a time when Idaho's probation and parole division was submitting numerous samples to our laboratories. Normalizing this data based on the weighted average was used in predicting the continual upward trend into the near future. Readily depicted is the 400% increase in sample submissions since 1985.

Laboratories receive mostly blood and urine samples but vitreous humor and tissue samples are sometimes submitted (mostly confined to accident victims and suspected homicides). For the present, tissue samples are out-sourced for analysis, but their numbers are few.

The number of samples out-sourced for quantitative analysis rose considerably (70%) during the last year. This is consistent with attorney requests for the verification of impairment levels to assist in adjudication of many crime types. In the current environment, toxicologists spend considerable time in court addressing impairment and synergic or antagonistic effects of drugs/compounds found, whereas past testimony dealt only with qualitative results.

Table 1 breaks down the sample types submitted during FY2006. This was more than a 6% increase in sample numbers from FY2005 and both urine and blood sample submissions were up for the year (2% and 4%, respectively).

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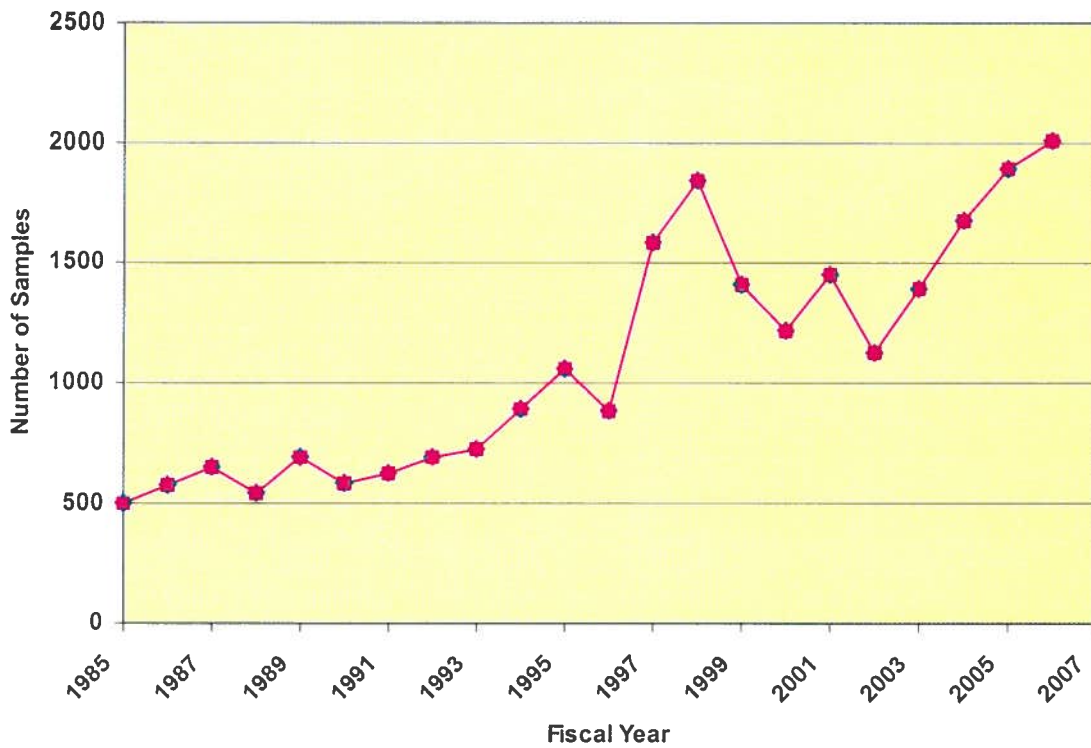


Figure 1: Trend in toxicology sample submissions since 1985.

<u>Sample Type</u>	<u>Blood samples</u>	<u>Urine samples</u>	<u>Total</u>	<u>Percent</u>
DRE				
Adult	13	131	144	7.2
Juvenile	0	6	6	0.3
NJDT	0	8	8	0.4
DUI				
Adult	510	229	739	36.7
Juvenile	179	43	222	11.0
DUID				
Adult	94	220	314	15.6
Juvenile	13	82	95	4.7
Probation & Parole				
Adult	0	148	148	7.3
Juvenile	1	47	48	2.3
Other criminal	24	210	234	11.6
Non-criminal	0	0	0	0.0
Accident Victims	38	14	52	2.6
Death (non-homicide)	0	0	0	0.0
<b>Total</b>	<b>859</b>	<b>1151</b>	<b>2010</b>	<b>100.0</b>

Table 1: Breakdown of Toxicology Samples Received by ISP-FS in FY2006.

Toxicology submissions made up nearly 27 percent of ISP-FS workload with alcohol, marijuana, amphetamine/methamphetamine, cocaine, and pharmaceuticals being the most prevalent.<sup>1</sup> Juveniles represent 17.9% of all toxicology samples and DUI/DUID cases representing the largest percentage (47.5 %) of the overall toxicology workload.

Nationally, as in years past, approximately eight in ten toxicology submissions during the year were characterized by seven categories: alcohol-in-combination, cocaine, methamphetamine, heroin, benzodiazepines, antidepressants, and analgesics. Alcohol-in-combination with a drug and marijuana again comprised over half of all toxicology submissions. At the same time that drug seizures and usage remains flat, there continues to be general upward trend in emergency department admissions at US hospitals.<sup>2</sup>

To some extent the drug/controlled substance casework analyzed by our laboratories should mirror toxicology submission results. Therefore, some facts on that workload, as well as national trends are integrated into this report. Approximately 70% of the 7504 cases submitted to Forensic Services during FY2006 were related to drug/controlled substance analysis.<sup>3</sup> The largest quantities of drugs/controlled substances analyzed encompass the drug categories of: marijuana, stimulants (amphetamine and methamphetamine), cocaine, hallucinogens (MDMA, MDEA, mushrooms, etc.), and narcotic analgesics.<sup>4</sup> Adults represent slightly more than 85% of our drug/controlled substance casework.

Nationally, trends for most drugs of abuse increased slightly during the last year. Cocaine abuse is up significantly, while oxycodone/oxycotone, benzodiazepines, and club drug hallucinogens (GHB, MDEA and MDA), all show a slight rise in abuse. Anabolic steroid use increased, but remains an insignificant percentage of the national forensic laboratory workload.<sup>5</sup> After a two-year decline in marijuana usage, nationally, abuse increased through 2005 and this year again is the most abused controlled substance.<sup>6</sup>

In the western US, methamphetamine is still the drug in greatest demand, with cannabis and cocaine following in relative order. However, our ISP-FS laboratories analyzed more marijuana than methamphetamine samples during the last fiscal year.

### **NJDT Samples**

During FY2006 the Forensic Services received eight NJDT samples, representing no change in workload from the previous fiscal year. Agencies submitting samples were: Buhl PD (2), Bonner CSO (1), Meridian PD (1), Twin Falls PS (1), Ada CSO (1), ISP-P1 (1), and ISP-P3 (1), with all samples arising from individuals between the ages of 12 and 17. Five males and three females were subjects of NJDT sampling. NJDT samples

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<sup>1</sup> ISP-FS 2006 annual workload information

<sup>2</sup> Drug Abuse Warning Network: 2001-2005

<sup>3</sup> ibid

<sup>4</sup> 2005 Crime in Idaho Report

<sup>5</sup> NFLIS 2005 Report

<sup>6</sup> DEA National Factsheet for 2006

represent less than one percent of all samples submitted and no school districts were direct submitters of samples during the year.

The six samples positive for a single drug, all had THC present. By and large this is what the Forensic Services encounters with juvenile drug submissions by law enforcement. Figure 2 depicts the results of NJDT testing during the fiscal year.

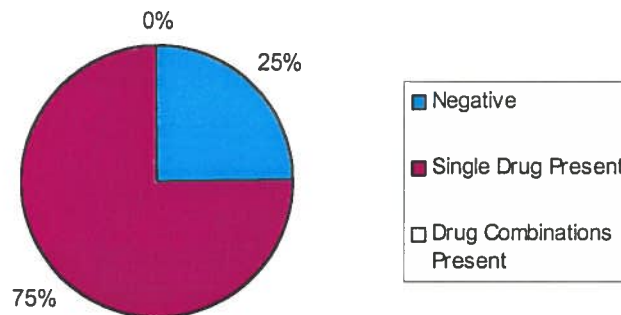


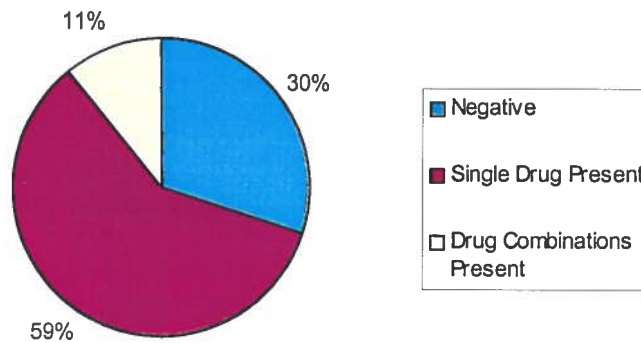
Figure 2: Results of NJDT toxicology samples for FY2006.

The latest Department of Health and Human Services (DHHS) data projects that nearly ten percent of Idaho's school age children, above the age of 12, used an illicit substance during the last one-month period, while six percent feel that they have a drug dependence problem.<sup>7</sup> Our numbers represent less than 0.01 percent of the school age population and are not of sufficient size to either corroborate or disprove the DHHS assertion. However, if true, the adult population is either unable to detect or unwilling to address the problem.

### **Juvenile Samples**

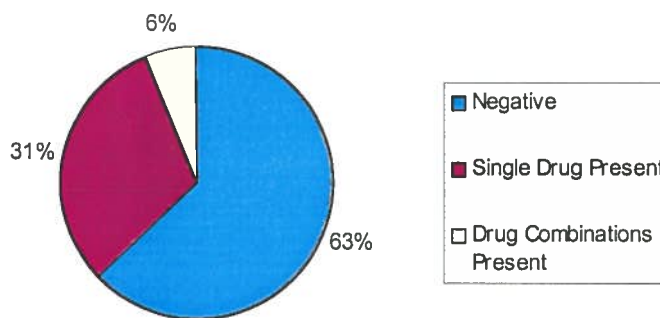
Approximately 0.28 million of Idaho's population is juvenile and 0.13% of the population is represented in the tests analyzed by ISP-FS. Figures 3 and 4 summarize the results of urine and blood juvenile samples, respectively (including NJDT), during FY2006. Overall the number of samples submitted to the laboratory during FY2006 rose significantly (12%) from the previous year. In urine samples, marijuana alone represents the highest percentage of all samples (41%) with the marijuana/CNS-S combination representing the largest percentage of multi-drug abuse when combinations of drugs are found.

<sup>7</sup> Substance Abuse and Mental Health Statistics for 2005



**Figure 3: Juvenile urine toxicology results for FY2006.**

This year represents a third consecutive year where the percentage of marijuana-positive samples increased and suggests increased usage by the juvenile population. Drug combinations represent only 12% of all samples this fiscal year, which is a decline of 5% from FY 2005 numbers. With a declining trend for the three years, this may mean that multi-drug use is on a decline within this population.



**Figure 4: Juvenile blood toxicology results for FY2006.**

In juvenile blood samples, marijuana is the drug most often detected. The presence of a CNS-S, CNS-D, represents all remaining positive-testing samples with a single drug present. Samples positive for multiple drugs are higher this year for this sampling medium, but even with this, multi-drug abuse appears to be on the decline with juveniles. Samples where at least two drugs were detected, all have a CNS-S and CNS-D on-board.

Figure 5 depicts the BAC results for all juveniles. Although 32% of the samples were negative, alcohol use was detected in considerably more of the samples this year than last (100% rise in the less than 0.08 and 10% rise in the greater than 0.08).

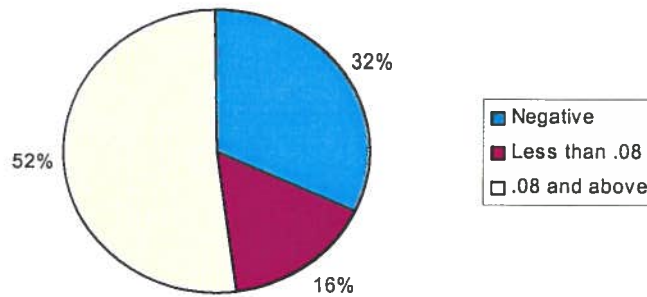


Figure 5: Juvenile BAC results for FY2006.

### DRE Samples

The total DRE samples analyzed during FY2006 represent a 22% increase from FY2005, reflecting somewhat the increase of DRE-qualified officers into the workforce. Approximately 0.02% of Idaho's population, 16 years and older, are represented by these samples. Figures 6 and 7 reflect results of urine and blood samples, respectively, that were analyzed for the DRE program during FY2006.

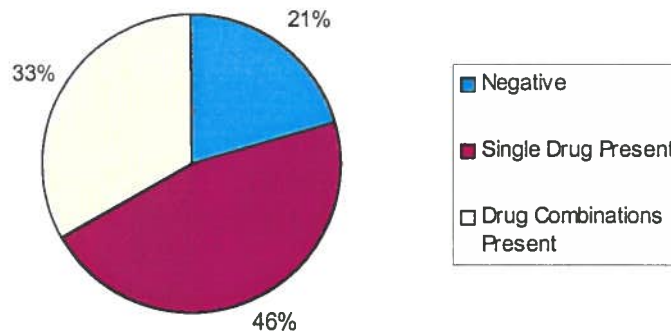


Figure 6: DRE urine toxicology results for FY2006.

Twenty-four percent of all DRE subjects had marijuana (THC) on-board. Central nervous system depressants (CNS-D), CNS-stimulants (CNS-S), and narcotic analgesics (NA) comprise most of the remaining samples having a single drug present. Drug combinations are mostly either THC/CNS-D or CNS-S/NA. Negative results comprise a larger percentage of the sample population during FY2006 than FY2005.

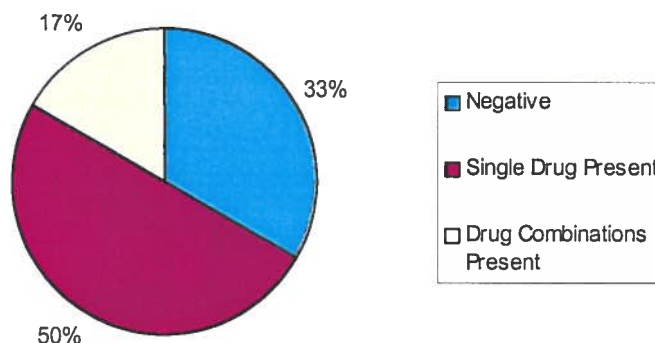


Figure 7: DRE blood toxicology results for FY2006.

### Adult Samples

The adult population in Idaho comprises approximately 1.05 million individuals and 0.15% of the population is represented by the samples analyzed during FY2006. Figures 8 and 9 depict the results of adult toxicology samples during FY2006. The sample numbers within this category rose 6% from a year ago, but the relative percentages within given categories remained essentially unchanged.

In urine samples, marijuana, followed by CNS-S were the two most found drugs in samples with a single drug present, while those two in combination made up more than half of the samples where combinations of drugs were detected.

In the blood samples analyzed, CNS-S, CNS-D, THC, and NA constitute almost equal percentages of the sample population consisting of only a single drug present. In cases where drug combinations were found, the combination of CNS-D and narcotic analgesic was exactly half of all samples analyzed. As in years past, we continue to see an increase in the abuse of narcotic analgesics within the adult population.

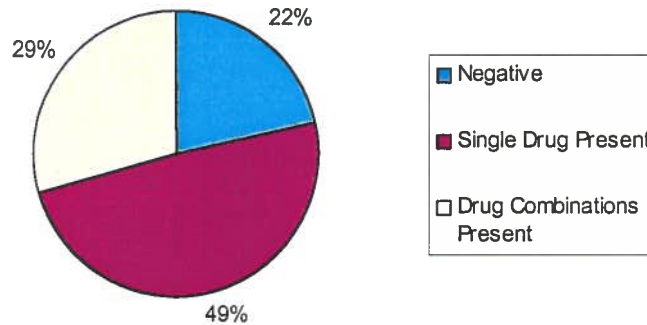


Figure 8: Adult urine toxicology results for FY2006.

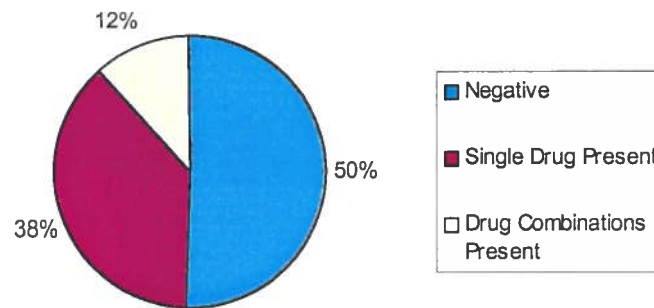
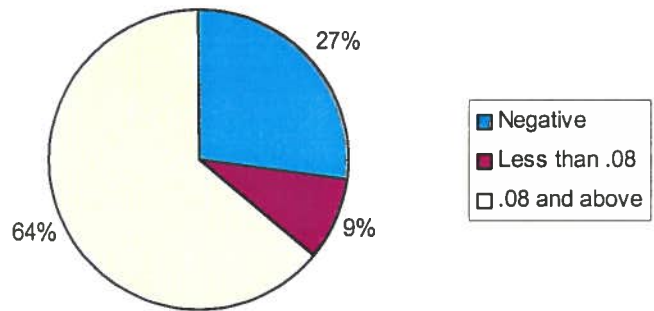


Figure 9: Adult blood toxicology results for FY2006.

The number of negatives is relatively high within this population, mainly due to the fact that our laboratories do not routinely analyzed for drugs when the BAC is greater than 0.12 percent. During the year, many samples were submitted for gamma-hydroxybutyrate (GHB) analysis. No biological samples were found to be positive for this substance; however, in at least three cases, other non-biological evidence associated with the case, was found to have this compound present. LE officers often suspect and request analysis for GHB in sexual assault cases; however, the prevalence of the drug within Idaho's population appears to be very small.





**Figure 10: Adult BAC results for FY2006.**

The results of adult blood alcohol testing are depicted in Figure 10. The total number of samples was up by 33% from FY2005 and nearly three-quarters of all samples had alcohol present. Sixty-four percent were at a level greater than the legal limit (0.08%) for operation of a vehicle.

**Accident Victim Samples**

Fifty-three accident victim samples were submitted during FY2006, which is down by 73% from a year ago. Adult and juvenile sample results for urine and blood are depicted in Figures 11 through 13. There are always a high percentage of negatives within this population due to the fact that not all fatalities are a consequence of DUI/DUID and often passengers and other victims may not have alcohol or drugs on-board at the time of the accident.

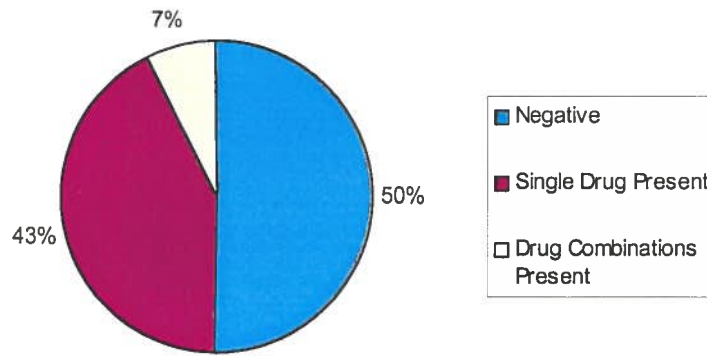


Figure 11: Adult accident victim urine toxicology results for FY2006.

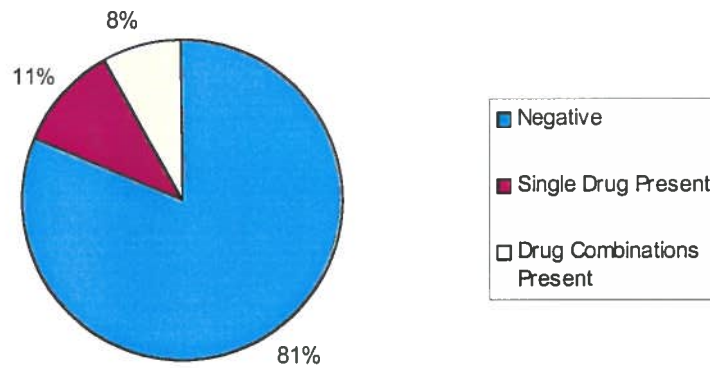


Figure 12: Adult accident victim blood toxicology results for FY 2006.

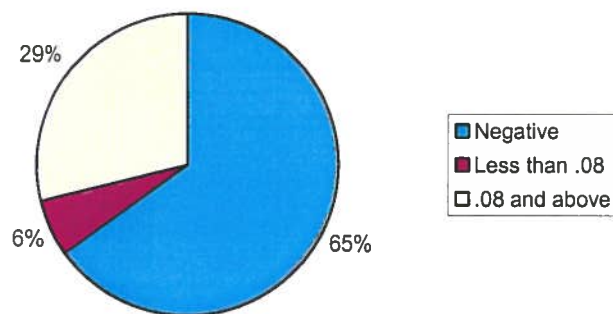


Figure 13: Adult accident victim blood alcohol results for FY 2006.

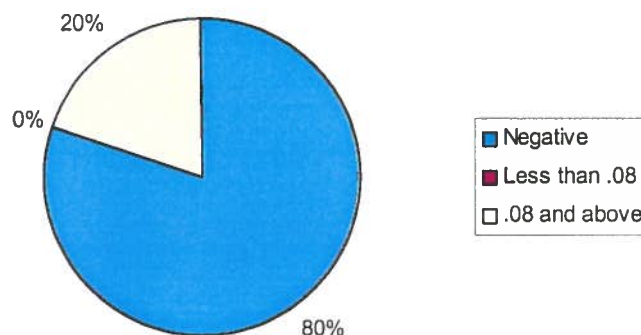


Figure 14: Juvenile accident victim blood alcohol results for FY 2006.

All of the positive juvenile accident victim urine samples had THC present. No other drugs were found in these samples. Meanwhile, all of the blood samples from the juvenile accident victims had only a CNS-D present. No multi-drug samples were found in either of the juvenile sample groups, which is also different from years past.

### Summary

Figure 15 depicts the results of all urine and blood toxicology samples submitted to the laboratories. With the exception of accident fatalities most toxicology samples submitted arise out of investigations associated with criminal activity. It is significant that more than three-quarters of all these samples are positive for the present of alcohol or drugs

and more than half of these samples have more than one drug or a drug and alcohol present.

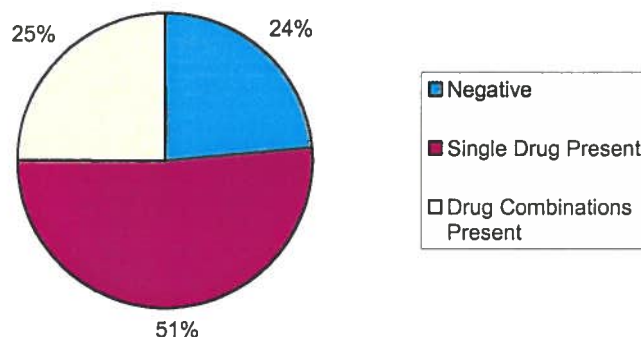


Figure 15: Results for all toxicology samples during FY2006.

Approximately 9,074 Idahoans were arrested for DUI during 2005. This represents approximately 0.64% of the population, of which ISP-FS analyzed about 10.5% of all such samples. The remaining 89.5% of the samples were analyzed using on-site breath testing devices. Of the adult population arrested for DUI, the FS laboratories analyzed 8% of those cases, whereas the laboratories analyzed 71% of all juvenile DUI arrests.

Quantitative analysis for drugs of abuse in blood and certain drugs of abuse in urine will be starting up in the next month. This probably will not result in significant increase in workload in the very-near ter, but it is highly likely that within the next year, coroners and others will be requesting the work and submitting samples in greater numbers.

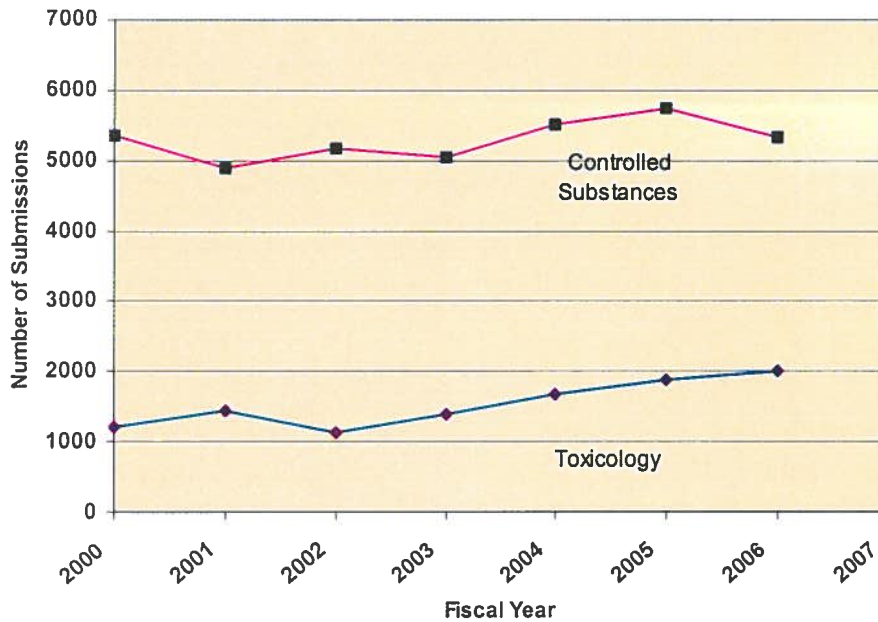


Figure 2: Controlled Substance and Toxicology Submissions by year.

Figure 16 depicts the relative change of our laboratories' toxicology workload as compared to the general drug workload. Although the toxicology workload is only 37% of the drug workload, current analytical testing requires considerable more time to complete a single toxicology sample as compared to a single drug sample. Recent workload survey data suggest the same phenomena on a national level.<sup>8</sup>

If you have any questions, feel free to contact me.

<sup>8</sup> 2006 ASCLD/LAB Workload Survey