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SUBJECT: Toxicology Program Trends

Overview

This report will deal with the number of toxicology cases submitted during the 2008 fiscal year for all three laboratories in comparison with previous fiscal years, and trends that have developed with those submissions. Toxicology cases consist of blood, urine, or vitreous humor that are analyzed qualitatively and/or quantitatively on site.

Blood alcohol results for adults are broken down into three categories: negative, less than .08 g/100cc of blood, and finally .08 g/100cc of blood and above. Blood alcohol results for juvenile samples will also be divided into three categories, but at a different level than in previous years. Since the legal limit for juveniles is at .02 or above, the categories will be negative, less than .02 and .02 and above to more accurately report what is occurring among this population. The urine results are also broken down into three categories as well: negative, those where a single drug is present, and those where drug combinations are present. Please note that a negative result in one category only reflects testing in that particular category, the case may have had a positive results elsewhere. For example, a case may have had a negative result in blood alcohol but a positive result when analyzed in blood toxicology.

Overall, a total of 7,472 cases were submitted for all three laboratories during the 2008 fiscal year. This is down slightly (109 cases) from the previous fiscal year's total of 7,581. Despite this, we saw a dramatic increase in the amount of toxicology cases submitted, with a total of 2,604 cases or, approximately 35% of the total cases received. This is an increase of 450 cases from the 2007 fiscal year when the total was 2,154 cases and ~28% of the total submitted for that year. Broken down further, the biggest increase is clearly seen in blood alcohol, generating 54% of the toxicology caseload compared to last year's 47%. Blood toxicology also increased slightly at 16% this year, and urine toxicology decreased to 30% from 39% last year.

The rise in toxicology cases this year continues the trend begun in 2002; however, this year does mark the largest increase we have seen. Reference Figure 1 for the trend in toxicology submissions, and Table 1 for the number of cases in each crime category. The largest increase is in blood alcohol cases; most likely due to recent Court of Appeals

rulings (see State v. Diaz and State v. DeWitt) that have upheld “forcible” blood draw laws in Idaho. While these draws have always been an option for Idaho law enforcement, it was not until these cases were upheld in court that we began to see an increase in the agencies use of them. This may also account for the decrease in urine toxicology submissions, as officers are enforcing the blood draw rather than collecting a urine sample.

The discipline with the next highest number of submissions is urine toxicology. This discipline actually dropped slightly from last year (by 50 cases) and is the only one out of the three disciplines (blood toxicology, blood alcohol and urine toxicology) to do so. Probation and parole was the category with the most dramatic decrease, where only 43 cases were turned in compared to last years total of 89. It is not known at this time what caused the decrease in probation and parole submissions, but it is evident that the bulk of the decrease in overall urine sample submissions can be found in this area. The other categories all showed either insignificant change in their total cases submitted, or a small drop in number, compared to fiscal year 2007; again the cause of which may be due to the forced blood draws.

	Blood Toxicology	Blood Alcohol	Urine Toxicology	Total	Percent
DRE					
Adult	3	1	138	142	5.4%
Juvenile	1	0	16	17	1.3%
NJDT	0	0	8	8	0.3%
DUI					
Adult	267	1054	332	1653	63%
Juvenile	24	59	68	151	5.7%
Probation & Parole					
Adult	1	5	16	22	0.8%
Juvenile	0	0	27	27	1.0%
Other Criminal	47	92	127	266	10%
Accident Victims	29	84	18	131	5.0%
Death (non-homicide)	53	99	34	186	7.1%
Total:	425	1394	784	2603	100%

Table 1: Breakdown of Toxicology and Alcohol Samples, FY 2008

NJDT Samples

A total of 8 NJDT samples were submitted during the 2008 fiscal year. While this was a decrease of 3 cases from the 2007 fiscal year, it is the same as the 2006 fiscal year. Therefore in looking at overall trends covering several years, the number has stayed relatively stable. As with the previous two years, none of these NJDT cases were submitted to the laboratory directly from an Idaho school district. Ada County Sheriff’s Office submitted half of the cases (four total), Idaho State Police Patrol Region 1 sent in

two cases, and Meridian Police Department and Sandpoint Police Department submitted one case each. Ages on these cases ranged from 14 to 17 years old.

The chart in Figure 2 shows the results reported for the NJDT samples. Twenty five percent were negative, 62% showed a single drug present and 13% showed more than one drug present. Those in the single drug category all tested positive for marijuana, and those with a drug combination showed marijuana coupled with another drug. The 2007 fiscal year showed no drug combinations present for the NJDT category, and more cases tested negative than with a single drug present. Also compared to last year, in the single drug category, all but one case tested positive for marijuana.

DRE Samples

DRE samples submitted to the laboratory increased this year by 23 cases, with the largest surge occurring in the urine toxicology discipline, and most of those being adult samples. Blood toxicology remained the same, but with the emphasis this year in adult samples rather than in juvenile samples as was the case last year. Blood alcohol decreased, but only by a mere three cases. The only case submitted in this discipline for this crime category was an adult sample and it was negative.

There were no negative samples in the blood toxicology discipline for this crime category. As shown in Figure 3, 75% of these cases were positive for a single drug and 25% showed positive for drug combinations, the same percentages found as last year. Three of the four samples submitted were positive for a single drug, and the remaining one case was positive for a drug combination. The single drug detected was most frequently carboxy-THC, followed by CNS-depressants and CNS-stimulants. The drug combination was carboxy-THC found in conjunction with a CNS-depressant and a narcotic analgesic.

Again, the most samples received in this crime category were in the urine toxicology discipline. Figure 4 charts these results. Eleven percent of the cases were negative, compared to 9% last year. Those with a single drug present decreased slightly from last year, from 57% to 49%. Results from highest to lowest were carboxy-THC, followed by CNS-depressants, narcotic analgesics, and finally CNS-stimulants. Finally, cases that tested positive for a combination of drugs increased from 34% to 40%. The largest drug combination pairings were CNS-depressant and narcotic analgesic most often, followed by carboxy-THC and CNS-stimulant and finally carboxy-THC and narcotic analgesic. There were several other drug pairings also evident, but with only one or two cases per pairing.

Juvenile Samples

Submissions for juvenile probation and parole cases were down this year, with only 27 cases turned in as opposed to last year's total of 42. As discussed above, it is unknown at this time why probation and parole samples have decreased. For DRE submissions, the

juvenile cases held steady, with only a single case decrease between this year and last. In the DUI category for juvenile cases there was an increase of 50 cases.

Results for urine toxicology are found in Figure 5. Sixty five percent were positive for a single drug, most commonly carboxy-THC at 85 cases. The next most common single drug found was CNS-stimulants at only 8 cases, which shows just how large carboxy-THC figures into this category – 83% of the single drugs category is itself carboxy-THC. The second highest category, those with negative results, was at 22%. The remaining 13% were those with a combination of drugs; the most common being carboxy-THC and CNS-stimulants, followed by carboxy-THC and a narcotic analgesic. This is fairly comparable to last year's results of 66%, 28% and 6% respectively. One interesting note, the laboratory received one case this year, in the juvenile category, that tested positive for a carboxy-THC and hallucinogen combination.

Juvenile blood toxicology results can be found in Figure 6. Negative results were 49%, again an increase from last year's 43%. A large increase occurred in the single drug category, 51% this year compared to 36% last year. The most common single drug was again carboxy-THC, with only one case each in CNS-depressant and CNS-stimulant categories. Another major difference between this year and last is there are currently no drug combinations found at all in this category, compared to the 21% found last year.

Blood alcohol results for juvenile can be found in Figure 7. Thirty two percent were negative, 1% was less than .02, and 32% was .02 and above. These results are rather difficult to compare to previous years' results, as the cutoff value has been adjusted to properly reflect the actual legal limit for juvenile samples. However, the negative results can be compared, this year at 32% versus last year at 29%, and were shown to hold fairly stable.

Adult Samples

Urine samples submitted for DUI adult comprised the largest crime category for urine sample submissions, continuing the trend seen in the previous years. Also as in the past, the single drug category comprises the majority of samples submitted (47%), with the most often found drug being carboxy-THC. Drug combinations make up the second largest portion (35%) with the most common drug pairing being CNS-depressant and a narcotic analgesic. Finally, negative results comprise the remaining 18% of the sample set. All of these results are plotted in Figure 8. Of note, the adult category also saw one sample testing positive for mescaline.

Figure 9 shows results for the adult blood toxicology samples that are very close to last year's results. Last year showed 40% negative, 42% with a single drug present and 18% with a drug combination compared to this year's 42%, 41% and 17% respectively. However, in contrast to last year, this year the most common single drug reported was CNS depressant, rather than carboxy-THC. CNS-depressant found with a narcotic analgesic was the drug pairing most often found. One hundred and eight samples were not analyzed for drugs in blood, even though the test was requested, because their results

were greater than 0.12g/100cc of blood. Idaho State Police Forensic Services Toxicology Discipline policy states that blood alcohol samples with a result over 0.12 will not be tested for drugs unless there are extenuating circumstances, such as death investigations.

The adult blood alcohol results are shown in Figure 10. Those with .08 blood alcohol levels or above were the most common, with 76% of the entire category with this result. Samples that were less than .08 were only 6% of the sample set, and negative samples comprised the rest at 18%. Considering the increased number of samples submitted this year, these numbers are actually fairly consistent with last year's results.

Accident Victim Samples

Urine toxicology results for adult auto accident fatality are charted in Figure 11. As with last year, negative results comprised the majority of adult samples submitted in this crime category (47%). However, in contrast to last year when no drug combinations were found, this year showed 13%. The most common drug combination was CNS-depressant and narcotic analgesic. The single drug result represents the remainder of the sample set, with carboxy-THC being the drug found most often. Juvenile urine samples (all three) were all negative.

Blood toxicology results, as in urine results, showed negative samples composed the majority of the results (74%); please see Figure 12. Narcotic analgesics were the most commonly found single drug, which was different then last year which was CNS-stimulants. The most common drug pairing found in the multiple drug category was CNS-depressant and narcotic analgesic. Juvenile blood toxicology results were all negative as in the urine set, with one additional case with a positive result of carboxy-THC.

Juvenile blood alcohol results are shown in Figure 13. As stated previously, since the cutoff value in this report changed this year, it will be difficult to compare with past results. However, the negative result group did increase from 33% last year to 40% this year. Those reporting out at .02 and above were at 60%, and there were no samples with results less than .02. Adult subjects are shown in Figure 14, and this set shows an increase in negative results as well (from 55% to 66%). Those at less than .08 showed no change, and those reported at .08 and above are also down slightly from 41% to 30%.

Summary

Last year, the most common drug of abuse found in all crime categories for urine toxicology was carboxy-THC, except for accident victim samples. This year, however, even that crime category showed carboxy-THC as the most reported result. Interestingly, carboxy-THC was also found amongst the most common drug combinations in all but the accident victim and adult DUI sample sets. This is a continuing trend that each year more carboxy-THC is seen in the urine toxicology submissions.

Blood toxicology showed various results depending on the crime category, as did last year's results. For instance while the juvenile set again saw carboxy-THC as the most reported drug, all adult crime categories had drugs other than carboxy-THC as most reported. This category (adult) has often fluctuated between carboxy-THC and other drugs taking the lead, it remains to be seen with future years and increase in blood toxicology submissions if this trend will level out.

Blood alcohol increased dramatically this year, most likely due to the Court of Appeals rulings on the matter. Due to this increase in the number of cases submitted, each blood alcohol category appears to have large increases in the number of cases with a result above their respective legal limit. However, once the number of cases submitted is taken into account, it becomes clear that the results for blood alcohol are continuing steadily along the same trend. That trend is that the majority of juvenile, adult, and accident victim samples are at or above the legal limit.

According to the 2007 Crime in Idaho report, there was a 2.4% increase in DUI arrests (counting both adult and juvenile) from 2006. This same report shows that the population of Idaho has also increased in the past year. As these arrests continue to rise, as the population continues to rise, and as officers enforce more blood draws, we can expect our workload to rise as well. So far, this expectation has continued to be met year after year, as overall the number of toxicology cases submitted to the laboratory system has consistently risen.