Type of Incident: Contamination in Toxicology Samples

☐ METHOD  ☐ INSTRUMENT  ☐ ANALYST  ☐ CLERICAL  ☐ OTHER

Describe the incident(s) (be specific regarding events leading to or causing the problem; “N/A” for strictly preventative actions). Incident date(s): 24 January 2008

The toxicology section encountered a possible contamination issue in the following toxicology samples:

Blood — L07-2488, L07-2502, L08-0014, L08-0019, L08-0021, L08-0022, L08-0023

Urine — L08-0004, L08-0012, L08-0017, L08-0020, L08-0039. In each of these samples, the presence of methamphetamine and cocaine was noted. A high concentration of cocaine was noted in each of the blood samples. A section-wide search was initiated to identify the source of contamination. The search revealed that two reagents were the likely sources of contamination: a phosphate buffer used to buffer biological samples at a pH of 6 and a sodium phosphate reagent used to lower high pH samples. In both instances, beakers obtained in the controlled substances section were used for final mixing of the reagents. It is highly probable that the beakers contained residual methamphetamine and cocaine.

Describe the corrective action taken (how the situation is being addressed; “N/A” for strictly preventative actions):

All suspected contaminated reagents were discarded and a control blank was run on the replacements. Final determination for the above cases does not include the presence of cocaine or methamphetamine. L08-0014 (blood) and L08-0039 (urine) were reanalyzed. The results were the same minus the cocaine and methamphetamine.

Describe the preventative action taken (what is being done to prevent re-occurrence of the problem or to improve the quality system):

The following steps will be taken to eliminate future contamination in toxicology samples:

1. The section will secure glassware to be used only in toxicology.
2. Disposable products will be substituted for glassware whenever possible.
3. Dedicated reagents and chemicals will be secured for use only in toxicology.
4. A control blank will be run on all freshly prepared reagents.

Date of Resolution: March 4, 2008

Results/Further action: All investigation data is attached. The control blank was run and shows no contamination with either cocaine or methamphetamine. A copy of the completed corrective action form will be placed in the case jacket of each affected case other than L08-0014 and L08-0039.

Routing (check necessary boxes and obtain signatures):

☐ Senior Analyst/Technical Leader: __________________________ Date: ______________

Derek Sanders

☐ Forensic Chemist: __________________________ Date: ______________

Sebastian Frommhold

☐ QA Manager: __________________________ Date: ______________

Claudia Busby

☐ Laboratory Director: __________________________ Date: ______________

Pamela J. McInnis

Effective date: October 1, 2004
The toxicology section has encountered a contamination issue in recent toxicology samples. The cases in question are as follows:

Blood samples
- L07-2488
- L07-2502
- L08-0014
- L08-0019
- L08-0021
- L08-0022
- L08-0023

Urine specimens
- L08-0004
- L08-0012
- L08-0017
- L08-0020
- L08-0039

Controls
- Clinical Control Whole Blood
- Drug standard

In each of these samples, the presence of methamphetamine and cocaine was noted. A high concentration of cocaine was noted in each of the blood samples. The presence of these contaminants was also an issue in several earlier cases analyzed by Toxicologist Sebastian Fromhold to a much lesser degree. A section-wide search was initiated to identify the source of contamination. The search revealed that two reagents were the likely culprits of contamination: a phosphate buffer used to buffer biological samples at a pH of 6 and a sodium phosphate reagent used to lower high pH samples. The phosphate buffer was prepared in September and the sodium phosphate reagent in January. In both instances, beakers obtained in the Controlled Substance section were used for final mixing of the reagents. It is highly probable that the beakers contained residual methamphetamine and cocaine. Blood samples normally present with a higher pH than urine specimens; therefore, the presence of the higher concentration of cocaine in the blood samples is directly traceable to the sodium phosphate reagent used almost exclusively in the blood samples and not the urine specimens. To perform a comprehensive drug screen per toxicology protocol, the pH of the samples should be approximately 6. The pH of the samples are as follows:

<table>
<thead>
<tr>
<th>Blood samples</th>
<th>Urine specimens</th>
</tr>
</thead>
<tbody>
<tr>
<td>L07-2488 – 8.5</td>
<td>L08-0004 – 6.0</td>
</tr>
<tr>
<td>L07-2502 – 9.0</td>
<td>L08-0012 – 6.0</td>
</tr>
<tr>
<td>L08-0014 – 10</td>
<td>L08-0017 – 5.0</td>
</tr>
<tr>
<td>L08-0019 – 9.0</td>
<td>L08-0020 – 7.5</td>
</tr>
<tr>
<td>L08-0021 – 8.0</td>
<td>L08-0039 – 6.5</td>
</tr>
<tr>
<td>L08-0022 – 7.5</td>
<td></td>
</tr>
<tr>
<td>L08-0023 – 7.5</td>
<td></td>
</tr>
<tr>
<td>Blood Drug Standard</td>
<td>7.5</td>
</tr>
</tbody>
</table>
A control sample of deionized water was analyzed using the same extraction procedure as the above mentioned samples. The analysis of this control sample also revealed the presence of cocaine and methamphetamine. The phosphate buffer was used in the control sample and is the likely source of contamination.

The following steps will be taken to eliminate future contamination in toxicology samples:

1. The section will secure glassware to be used only in this section.
2. Disposable products will be substituted for glassware whenever possible.
3. All suspected contaminated reagents will be replaced.
4. Dedicated reagents and chemicals will be secured for use only in the section.

After the above steps have been undertaken, another control sample consisting of deionized water will be run following section protocol. The resulting data will be appended to this correspondence.

Final determination for the above cases will not include the presence of cocaine and methamphetamine. All other drug identifications will stand.

Sincerely,

Derek Sanders
# PASADENA POLICE DEPARTMENT
## REGIONAL CRIME LABORATORY
### TOXICOLOGY EXAMINATION SHEET

<table>
<thead>
<tr>
<th>EVIDENCE SUBMITTED</th>
<th>DATE: 10 JAN 2002</th>
<th>ANALYST: DS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ctrl Black (DI H2O)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>VOLATILES</th>
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</tr>
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<tbody>
<tr>
<td>GC-HS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>INTERNAL STANDARD</td>
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<tr>
<td>DILUTION</td>
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<tr>
<td>ODOR</td>
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<table>
<thead>
<tr>
<th>IMMUNOASSAY</th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>TOXILAB A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOXILAB B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOXILAB BENZOYLECGONINE</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>GC-MS</th>
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</thead>
<tbody>
<tr>
<td>methamphetamine</td>
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<td></td>
</tr>
<tr>
<td>POS cocain</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DRUGS, ETC.</th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>GAS CHROMATOGRAPHY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TLC</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| DERIVITIZING REAGENT |               |               |
| RECONSTITUTING SOLVENT |             |               |
| OTHER         | suspect buffer soln + contaminants |               |

| VOLUME / WEIGHT |               |               |

<table>
<thead>
<tr>
<th>RESULTS / COMMENTS</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>methamphetamine</td>
<td>POS cocain</td>
<td></td>
</tr>
<tr>
<td>Cocaine</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Chromatogram Plot

Sample: Ctrl - acid
Scan Range: 1 - 1268 Time Range: 0.00 - 24.97 min.
Sample Notes: Blank Ctrl (SPE acid extract) - spgentox-MSD method

Ctrl acid extract - DI H2O
Chromatogram Plot

File: ...\derek\tox\jan2008/01/1008/ctrl - base 1-10-2008 5-27-25 pm.sms
Sample: Ctrl - base
Scan Range: 1 - 1268 Time Range: 0.00 - 24.98 min.
Sample Notes: Blank Ctrl (SPE base extract) - spgentox-MSD method

Operator: DS
Date: 1/10/2008 5:27 PM

Ionization Off 40.550
Methamphetamine - 600k counts - 450k counts
Cocaine - 400k counts - 250k count baseline
Analysis performed on January 10, 2008, at 5:27 PM.

Sample: Ctrl - base
Sample Notes: Blank Ctrl (SPE base extract) - spgentox-MSD method

Ionization Off

Spectrum 1A
BIP 58 (73/170=100%), ctrl - base 1-10-2008 5:27-25 pm.sns

Methamphetamine

Identified peaks:
- M/z 58
- M/z 65
- M/z 91
- M/z 150

Retention time: 3.941 minutes
Scan range: 220-405 amu
Ion: 48 vs. RIC: 1.386e+6
Sample: Ctrl - base
Scan Range: 1 - 1268 Time Range: 0.00 - 24.98 min.
Sample Notes: Blank Ctrl (SPE base extract) - spgentox-MSD method

Ionization Off
**PASADENA POLICE DEPARTMENT**  
**REGIONAL CRIME LABORATORY**  
**TOXICOLOGY EXAMINATION SHEET**

<table>
<thead>
<tr>
<th>EVIDENCE SUBMITTED</th>
<th>DATE: 6 FEB 2008</th>
<th>ANALYST: DS</th>
</tr>
</thead>
<tbody>
<tr>
<td>214</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**EVIDENCE SUBMITTED**

- **DTU Do Ctrl**  
  (Tox sample)

**VOLATILES**

- GC-HS
- INTERNAL STANDARD
- DILUTION
- ODOR

**IMMUNOASSAY**

- neg for all

**TOXILAB A**

**TOXILAB B**

**TOXILAB BENZOYLECGONINE**

**GC-MS**

- 2 neg DD/CS

**DRUGS, ETC.**

- GAS CHROMATOGRAPHY
- TLC
- DERIVITIZING REAGENT
- RECONSTITUTING SOLVENT
- OTHER

- Dedicated reagents & glassware used
- DI H2O, phosphate buffer, sodium phosphate monobasic run as a general tox screen.

**RESULTS / COMMENTS**

- neg for DD/CS
Ctrl H2O
6 Feb 2002

neg for all
Chromatogram Plot

File: ...ab data/derek/feb2008/fox020708/crl b 2-7-2008 9-16-23 pm.sms
Sample: Default Sample
Scan Range: 1 - 1217 Time Range: 0.00 - 23.97 min.
Sample Notes: DIH2O ctrl (SPE basic extract) - gen-MSD method

Operator: DS
Date: 2/7/2008 9:16 PM

Neg for DD/CS
Chromatogram Plot

File: data\derek\feb2008\tox\020708\blankctrl  2-7-2008  2-01-20 PM.sms
Sample: blankCtrl
Scan Range: 1 - 1269  Time Range: 0.00 - 24.98 min.
Sample Notes: blank for CtrlS (SPE acid + base extract) - spgentox-MSD method

Operator: DS
Date: 2/7/2008 2:01 PM

MCounts

Ionization Off  40.550

Neg for DD/CS
Chromatogram Plot

File: ab data/derek/feb2008/iox020708/ctrl b 2-7-2008 2-59-31 pm.sms
Sample: Ctrl B
Scan Range: 1 - 1268 Time Range: 0.00 - 24.97 min.
Sample Notes: D2H2O ctrl (SPE basic extract) - spgentox-MSD method

Operator: DS
Date: 2/7/2008 2:59 PM

Neg for DD/CS
Chromatogram Plot

File: ...ab data/derek/fb2008/tx/tox020708/ctrl b 2-7-2008 2:59-31 pm.sms
Sample: Ctrl B
Scan Range: 1 - 1268 Time Range: 0.00 - 24.97 min.
Sample Notes: DIH2O ctrl (SPE basic extract) - spgentox-MSD method

Counts

Neg for DD/CS

Operator: DS
Date: 2/7/2008 2:59 PM
Chromatogram Plot

File: ab data/derek/feb2008/tox020708/ctrl b 2-7-2008 2-59-31 pm.sms
Sample: Ctrl B
Scan Range: 1 - 1268 Time Range: 0.00 - 24.97 min.
Sample Notes: DIH2O ctrl (SPE basic extract) - spgentox-MSD method

Operator: DS
Date: 2/7/2008 2:59 PM

Neg for DD/CS