

Microgram

Bulletin

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- JULY 2006 -

- INTELLIGENCE ALERT -

PLASTIC LUGGAGE (CONTAINING COCAINE) SEIZED IN THE COMALAPA INTERNATIONAL AIRPORT IN SAN SALVADOR

The DEA Special Testing and Research Laboratory (Dulles, Virginia) recently received a collection of shards of hard, black plastic, suspected to contain cocaine (see Photo 1). The exhibits were pieces of the hard shell of a suitcase, and were seized by the El Salvador Civil National Police at the Comalapa International Airport in San Salvador. The material (total net mass 24.8 grams) would not dissolve in water. Analysis of methanol and chloroform extracts by GC/FID and GC/MS confirmed 7.3 percent cocaine (calculated as the hydrochloride). The Special Testing and Research Laboratory has previously received similar items composed of plastic matrices containing cocaine.



Photo 1

- INTELLIGENCE ALERT -

AZTEC (?) STATUE CONTAINING COCAINE AT LOGAN INTERNATIONAL AIRPORT (BOSTON, MASSACHUSETTS)

The DEA Northeast Laboratory (New York, New York) recently received a black, plastic statue, possibly of an Aztec idol, that contained four bricks of white powder, suspected cocaine (see Photos 2 and 3; note that the statue was about 17 inches high by 6 x 6 inches square at its base). The exhibit was seized by Immigration and Customs Enforcement personnel from a passenger arriving at Logan International Airport (Boston, Massachusetts). The passenger's starting point was not provided. Analysis of the powder (total net mass 3.895 kilograms) by GC/FID, GC/MS and FTIR/ATR confirmed 79 percent cocaine hydrochloride and diltiazem (not quantitated). The Northeast Laboratory routinely receives cocaine concealed in a wide variety of items, including statues, but this was the first submission of this particular type of statue.



Photo 2



Photo 3

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- INTELLIGENCE ALERT -

UNUSUALLY SIZED AND PACKAGED COCAINE BRICKS IN ROLLA, MISSOURI

The DEA North Central Laboratory (Chicago, Illinois) recently received 34 packages of two distinctly different sizes, all containing compressed, off-white powders, suspected cocaine (see Photo 4, next page). The exhibits were seized in Rolla, Missouri, pursuant to a traffic stop by the Phelps County Sheriff's Department. The 7 smaller packages appeared to be typical kilo-sized

bricks; analysis by color tests, FTIR, GC/MS, and GC/FID confirmed 86 percent cocaine hydrochloride (total net mass of 7 bricks 6.77 kilograms). The 27 larger packages each contained 7 “mini-bricks,” each of which was wrapped in black tape that was marked with a galloping white mustang logo (see Photo 5). The “mini-bricks” in these sub-packages also had an impression of a rearing mustang (photo contrast insufficient for display). Analysis by color tests, FTIR, GC/MS, and GC/FID confirmed 82 percent cocaine hydrochloride and diltiazem (not quantitated). The total net mass in the 189 “mini-bricks” was 27.31 kilograms (combined net mass of all 34 packages 34.08 kilograms). This was the first submission of this unusual type of packaging to the North Central Laboratory.



Photo 4



Photo 5 - Note “Mustang” Logo on Black Wrapping

- INTELLIGENCE ALERT -

**VERY LARGE SEIZURE OF ECSTASY COMBINATION TABLETS
AT THE BLAINE, WASHINGTON POINT OF ENTRY**

The DEA Western Laboratory (San Francisco, California) recently received a very large submission of approximately 660,000 tablets of 9 different logo types, all suspected Ecstasy (see Photo 6). The exhibits were seized by Immigration and Customs Enforcement personnel from a tractor-trailer attempting to enter the United States from Canada at the Blaine, Washington Port of Entry. The logo/color combinations were separated by type, and included: (T)/red-orange (140,000); Thumbs-Up/yellow (220,000); Smiley Face/white (50,000); Dolphin/blue (70,000); Ferrari Horse/yellow (55,000); Triple X/pink (55,000); Skull and Crossbones/green (40,000); Thumbs Up/red (25,000); and (m)/pink (5,000). Analysis of the tablets (total gross weight 217 kilograms) by GC/FID, GC/MS, and FTIR/ATR confirmed MDMA (14 - 25 percent) and caffeine (not quantitated) in all tablets, and ketamine (2 - 4 percent), methamphetamine (2 - 4 percent), procaine (not quantitated), and/or dimethyl sulfone (not quantitated) in various combinations, varying by tablet type. Of note, dimethyl sulfone is being increasingly encountered in Ecstasy tablets submitted to the Western Laboratory (5 percent of all tablets in CY 2005, and 20 percent of all tablets in CY 2006 (to date)). This is the largest ever Ecstasy tablet submission to the Western Laboratory.



Photo 6

- INTELLIGENCE ALERT -

**“TURANABOL” (DEHYDROCHLORMETHYLTESTOSTERONE)
IN WINCHESTER, VIRGINIA**

The DEA Mid-Atlantic Laboratory (Largo, Maryland) recently received a multi-component submission of steroids and steroid-related exhibits that included 15 bottles labeled as “Turabol,” containing “Chlordehydromethyltestosterone,” as manufactured by “Golden Triangle Pharmaceuticals” of Hefei Anhui, China (see Photo 7). The exhibits were seized by agents from the DEA Winchester (Virginia) Post of Duty, pursuant to a consent search at a local residence. Unusually, despite identical appearances and lot numbers, the bottles contained either all orange or all yellow capsules, 100 per bottle. The capsules were 5/8's inch in length, and were otherwise nondescript. Six bottles contained orange tablets (total net mass of 600 capsules 109.4 grams); analysis by GC, GC/MS, and NMR indicated dehydrochlormethyltestosterone (4-chloro-17 β -hydroxy-17 α -methylandrosta-1,4-dien-3-one; not quantitated). Nine bottles contained yellow tablets (total net mass of 900 capsules 157.3 grams); analysis (same techniques) indicated dehydrochlormethyltestosterone with minor amounts of stanozolol and methandrostenolone (not quantitated). This was the first known submission of dehydrochlormethyltestosterone to the DEA laboratory system. Despite the apparently commercial packaging, this unusual steroid is not produced by any major pharmaceutical company, and appears to be available only on the black market. It is listed in The 2006 Prohibited List/World Anti-Doping Code. Hefei Anhui is a provincial capital in the People's Republic of China.

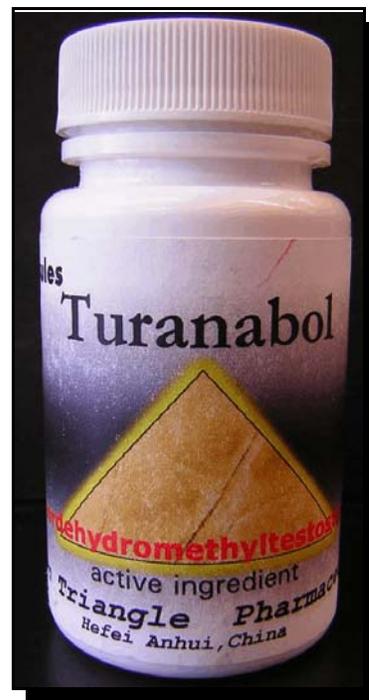


Photo 7

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- INTELLIGENCE ALERT -

LARGE POLYDRUG SEIZURE IN THESSALONIKA, GREECE

The General State Chemical Laboratory's 2nd Chemical Division Seized Materials Laboratory (Thessaloniki, Greece) recently received a polydrug submission from the Police Department of Polygyros (Halkidiki, Greece), seized from a residence in Thessalonika, including:

1. Forty-two dark brown bricks (total net mass 2.762 kilograms), one of them bearing the Porsche logo (See Photo 8, next page), suspected cannabis resin (confirmed).
2. Seven samples of dried plant material wrapped in plastic (total net mass 244.6 grams), suspected as marijuana (confirmed).
3. Five pieces of black paste (total net mass 31.1 grams), suspected cannabis resin (identified as opium).
4. Six samples of white powder wrapped in plastic (total net mass 27.4 grams), suspected cocaine (confirmed).

5. One sample of white powder wrapped in plastic (total net mass 1.1 grams), suspected cocaine (identified as a mixture of amphetamine and cocaine in approximately a 29 : 1 ratio based on their TICs).
6. One sample of a brownish, dried, powdered material wrapped in plastic (total net mass 1.0 grams), suspected unknown drug substance (tentatively identified mescaline (possible peyote)).
7. Six Hipnosedon® tablets (commercial flunitrazepam 1 milligram tablets (confirmed)).
8. One green tablet (7 x 3 millimeters, 160 milligrams, with a "\$" logo), suspected MDMA (confirmed 8.4 percent MDMA (see Photo 9)).
9. Four grey tablets (7 x 4 millimeters, 194 milligrams each, with a "fish" logo), suspected MDMA (confirmed 52.5 percent MDMA (see Photo 10)).
10. One beige triangular tablet (397 milligrams, with a faint "X" logo), suspected MDMA (confirmed 20.9 percent MDMA (see Photo 11, next page)).
11. Seven light green, biconvex tablets (10 x 2 millimeters, 320 milligrams each, with a highly detailed Versace relief logo on both sides), suspected MDMA (confirmed 28.7 percent MDMA (see Photo 12, next page)).
12. One beige tablet (8.5 x 4 millimeters, 330 milligrams, with a "heart" logo), suspected MDMA (confirmed 26.2 percent MDMA (no photo)).
13. Two grey tablets (6.5 x 3 millimeters, 165 milligrams each, with a "horse" logo), suspected MDMA (confirmed 60.5 percent MDMA (see Photo 13, next page)).
14. Fifty-three paper squares imprinted with various patterns, and 113 microdots (3 star-shaped and 110 cylinder-shaped (no photos)), all suspected LSD (all confirmed).
15. One piece of bread (net mass 0.5 grams), suspected to contain LSD (confirmed).



Photo 8



Photo 9



Photo 10



Photo 11



Photo 12

Analyses were conducted by color testing (Duquenois, Marquis, Ehrlich, or Scott, as appropriate), GC/FID, GC/MS, and (for LSD only) TLC. This is the first time the laboratory has received this many and diverse samples from one seizure, the first time it has received a cannabis resin brick with a logo of any kind, the first time it has received a peyote sample, and the first time it has received star-shaped LSD microdots.



Photo 13

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SELECTED REFERENCES

[Selected references are a compilation of recent publications of presumed interest to forensic chemists. Unless otherwise stated, all listed citations are published in English. Listed mailing address information exactly duplicates that provided by the abstracting service. Patents and Proceedings are reported only by their *Chemical Abstracts* citation number.]

1. Apollonio LG, Pianca DJ, Whittall IR, Maher WA, Kyd JM. **A demonstration of the use of ultra-performance liquid chromatography - mass spectrometry (UPLC/MS) in the determination of amphetamine-type substances and ketamine and toxicological analysis.** *Journal of Chromatography, B. Analytical Technologies in the Biomedical and Life Sciences* 2006;836(1-2):111. [Editor's Notes: The title technique was successfully demonstrated on a reference mixture of amphetamine, methamphetamine, ephedrine, pseudoephedrine, phentermine, MDA, MDMA, MDEA, and ketamine in less than 3 minutes. The focus of the article is toxicological. Contact: National Centre for Forensic Studies. University of Canberra, Bruce ACT 2601, Australia.]
2. Biera S, Ilias Y, Bicchi C, Veuthey J-L, Christen P. **Focused microwave-assisted extraction combined with solid-phase microextraction and gas chromatography - mass spectrometry for the selective analysis of cocaine from coca leaves.** *Journal of Chromatography A* 2006;1112:127. [Editor's Notes: Presents the title study. The results agreed with previous investigations, and was much faster than conventional GC (6 versus 35 minutes per analysis). Contact: Laboratory of Pharmaceutical Analytical Chemistry, School of Pharmaceutical Sciences EPGL, University of Geneva, 20 Bd d'Yvoy, 1211 Geneva Geneva 4, Switzerland.]

3. Blok A, Cox M, Ward C. **4-Chlorodiphenylmethane, a precursor specific methylamphetamine manufacturing by-product.** Journal of the Clandestine Laboratory Investigating Chemists Association 2006;16(2):14. [Editor's Notes: The title product results from use of pseudoephedrine pharmaceuticals containing cetirizine for the production of methamphetamine via the iodine/hypophosphorous acid route. Note that *JCLICA* is a law enforcement restricted journal. Contact: Flinders Univ. of South Australia, Bedford Park, South Australia, Australia.]
4. Cohen WS. **Ephedra used as a precursor in methamphetamine manufacturing.** Journal of the Clandestine Laboratory Investigating Chemists Association 2006;16(2):21. [Editor's Notes: Abstract details withheld in accordance with *Microgram* policy. Note that *JCLICA* is a law enforcement restricted journal. Contact: Contra Costa County-Coroner's Office, 1960 Muir Road, Martinez, CA 94593.]
5. Cone EJ. **Ephemeral profiles of prescription drug and formulation tampering: Evolving pseudoscience on the Internet.** Drug and Alcohol Dependence 2006;83S:S31. [Editor's Notes: An overview and discussion of prescription drug abuse, focusing on different aspects of misuse, and the role of Internet testimonials and instructions. Contact: ConeChem Research, LLC, 441 Fairtree Drive, Severna Park, MD 21146.]
6. DeFrancesco JV, Witkowski MR, Ciolino LA. **GHB Free Acid: I. Solution formation studies and spectroscopic characterization by 1HNMR and FT-IR.** Journal of Forensic Sciences 2006;51(2):321. [Editor's Notes: Presents the title study. The technique is especially suited for analysis of forensic samples containing the free acid, its corresponding salt, and GBL. Contact: U.S. Drug Enforcement Administration, North Central Laboratory, Chicago, IL 60606.]
7. Fourcroy J. **Designer steroids: Past, present, and future.** Current Opinion in Endocrinology & Diabetes 2006;13(3):306. [Editor's Notes: A historical overview and minor review of the title subject. Contact: Department of Surgery/Urology, Uniformed Services University Health Sciences, Bethesda, MD (zip code not provided).]
8. Grove AA, Rohwer ER, Laurens JB, Vorster BC. **The analysis of illicit methaqualone containing preparations by gas chromatography - mass spectrometry for forensic purposes.** Journal of Forensic Sciences 2006;51(2):376. [Editor's Notes: Presents the title study. The technique is suitable for quantitative analysis. Contact: Forensic Chemistry Laboratory, Department of Health, Private Bag X282, Pretoria 0001, South Africa.]
9. Guan F, Soma LR, Luo Y, Uboh CE, Peterman S. **Collision-induced dissociation pathways of anabolic steroids by electrospray ionization tandem mass spectrometry.** Journal of the American Society for Mass Spectrometry 2006;17(4):477. [Editor's Notes: Fragmentation pathways were elucidated for boldenone, methandrostenolone, tetrahydrogestrinone, trenbolone, normethandrolone, and mibolerone. Contact: Department of Clinical Studies, School of Veterinary Medicine, University of Pennsylvania, Kennett Square, PA (zip code not provided).]
10. Maroge W, Bordelon JA, Katz JM, Zhivago VR. **Large fentanyl and MDA laboratory in Los Angeles, California.** Journal of the Clandestine Laboratory Investigating Chemists Association 2006;16(2):12. [Editor's Notes: A brief overview of the subject laboratory. Note that *JCLICA* is a law enforcement restricted journal. Contact: DEA Southwest Laboratory, 2815 Scott St., Vista, CA 92081.]
11. Miller B, McKibben T. **Povidone-iodine.** Journal of the Clandestine Laboratory Investigating Chemists Association 2006;16(2):18. [Editor's Notes: An overview of methods for

identification of the title formulation. Note that *JCLICA* is a law enforcement restricted journal. Contact: Colorado Bureau of Investigation, Forensic Laboratory, Pueblo, CO (zip code not provided).]

12. Nguyen XT, Dang VD, Hoang TT. **Impurity profiling analysis of illicit methamphetamine by capillary gas chromatography. Part I - Study on and optimum analysis methods.** Tap Chi Hoa Hoc 2005;43(6):707. [Editor's Notes: Presents the title study. This article is written in Vietnamese. Contact: Criminal Sci. Dept., Bureau of Public Security, Vietnam.]
13. Poortman-Van der Meer A, Lock E. **Identification of 4-tert-butylamphetamine in clandestine amphetamine samples.** Journal of the Clandestine Laboratory Investigating Chemists Association 2006;16(2):23. [Editor's Notes: The title compound results from the presence of 4-tert-butylphenylacetone as an impurity in phenylacetone possibly produced in eastern Europe. Note that *JCLICA* is a law enforcement restricted journal. Contact: Netherlands Forensic Institute, Postbus 24044, 2490AA The Hague, The Netherlands.]
14. Toske SG, Cooper SD, Morello DR, Hays PA, Casale JF, Casale E. **Neutral heroin impurities from tetrahydrobenzylisoquinoline alkaloids.** Journal of Forensic Sciences 2006;51(2):308. [Editor's Notes: Four of the title compounds (laudanoline, reticuline, codamine, and laudanine), all naturally occurring in opium, form 18 detectable neutral impurities under typical heroin processing conditions. These latter impurities were found to be useful for sourcing illicit heroin. Contact: U.S. Drug Enforcement Administration, Special Testing and Research Laboratory, 22624 Dulles Summit Court, Dulles, VA 20166.]
15. Witkowski MR, Ciolino LA, DeFrancesco JV. **GHB Free Acid: II. Isolation and spectroscopic characterization for forensic analysis.** Journal of Forensic Sciences 2006;51(2):330. [Editor's Notes: Presents the title study. Includes preparation. Contact: U.S. Food and Drug Administration Forensic Chemistry, Cincinnati, OH 45237.]

Additional References of Possible Interest:

1. Barthelson RA, Sundareshan P, Galbraith DW, Woosley RI. **Development of a comprehensive detection method for medicinal and toxic plant species.** American Journal of Botany 2006;93(4):566. [Editor's Notes: Uses multiplexed ligation-dependent probe amplification (MLPA) on isolated genomic DNA to determine the presence of medicinal and/or toxic plant species (not specified in the abstract). Contact: Department of Plant Sciences, University of Arizona, Tucson, AZ 85721.]
2. Fudala PJ, Johnson RE. **Development of opioid formulations with limited diversion and abuse potential.** Drug and Alcohol Dependence 2006;83S:S40. [Editor's Notes: An overview. Contact: Behavioral Health Service, VA Medical Center and the Department of Psychiatry, University of Pennsylvania, School of Medicine, Philadelphia, PA 19104.]
3. Kojima M, Seki H, Yoshida S, Muranaka T. **DNA polymorphism in the tetrahydrocannabinolic acid (THCA) synthase gene in "drug-type" and "fiber-type" Cannabis sativa L.** Forensic Science International 2006;159(2-3):132. [Editor's Notes: Presents the title study. Of note, a specific PCR marker for the "drug-type" strains was identified, that was not present in the "fiber-type" strains. Contact: JYUGEI Institute, University Forests, Graduate School of Agriculture and Life Sciences, The University of Tokyo, 457 Kano, Minamizu, Shizuoka 451-0304, Japan.]

SCIENTIFIC MEETINGS

1. Title: 16th Annual CLIC Technical Training Seminar

(Third Posting)

Sponsoring Organization: Clandestine Laboratory Investigating Chemists Association

Inclusive Dates: September 6 - 9, 2006

Location: Hong Omni Mont-Royal Hotel (Montreal, Quebec, Canada)

Contact Information: See O.C. Anderson (620 / 792-4353 or carl.anderson -at- kbi.state.ks.us)

Website: None Provided

2. Title: 32nd Annual NEAFS Meeting

(Second Bimonthly Posting)

Sponsoring Organization: Northeastern Association of Forensic Sciences

Inclusive Dates: November 1 - 4, 2006

Location: Tarrytown DoubleTree Hotel (Westchester County, New York)

Contact Information: E. Schwartz (914 / 231-1810 or ess6 -at- westchestergov.com)

Website: None Provided

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THE JOURNAL/TEXTBOOK COLLECTION EXCHANGE

The Journal/Textbook Collection Exchange is a service intended to facilitate the transfer of unwanted journals and textbooks to forensic libraries or other subscribers. At present, this service is offered once a quarter (in January, April, July, and October). The most current items are listed below. The offers are First Come/First Serve (except libraries have preference). There are no charges to the requestor. Provide full mailing address in request. **Important!:** Do not provide an address that irradiates mail!

- * Engineering Drawing and Geometry, Hoelscher & Springer, 1963, 2nd
- * Steam, Its Generation and Use, Babcock & Wilcox Co., 1963, 37th
- * Engineering Mechanics - Dynamics (Volume II), Shames, 1966 2nd
- * University Physics (Part 1), Sears - Zemansky, 1963, 3rd
- * Elements of Physics (Volume 2), Shortley - Williams, 1965, 4th
- * Aerodynamics for Engineering Students, Houghton - Brock, 1960
- * Elementary Differential Equations and Boundary Value Problems, Boyce - DiPrima, 1965
- * Business Law and Principles and Cases - Universal Code Edition, Lusk, 1966, U.C.C.
- * The Dynamics and Thermodynamics of Compressible Fluid Flow (Parts I & II from Volume I), Shapiro, 1958
- * Mechanical Vibrations, Tse - Morse - Hinkle, 1966
- * Heat Transfer, Holman, 1963
- * Automatic Controls, Harrison - Bollinger, 1966
- * Calculus and Analytic Geometry - Part II, Thomas, 1964, 3rd
- * Aircraft Structures, Peery, 1950
- * Fluid Mechanics, Pao, 1967

- * Elements of Physical Metallurgy, Guy, 1967, 2nd
- * Engineering Mechanics - Statics, Shames, 1958
- * Calculus and Analytic Geometry - Part I, Thomas, 1961, 3rd
- * Mechanics and Dynamics of Machinery, Mabie, 1957, 2nd
- * Combustion Engine Process, Lichty, 1967
- * Engineering Mechanics of Deformable Bodies, Byars - Snyder, 1964, 2nd
- * Engineering Mechanics - Dynamics, Shames, 1965
- * Mechanical Engineering Design, Shigley, 1963
- * Principles of Electrical Engineering, Del Toro, 1965

All subscribers are encouraged to donate surplus or unwanted items/collections. Reference texts and long runs of forensic/analytical journals are of particular interest; however, even single issues are worthwhile. If interested, please consult the *Microgram* website or contact the *Microgram* Editor for further instructions.

The next offering of journals and textbooks will be in the October 2006 issue of *Microgram Bulletin*.

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THE DEA FY - 2006 and FY - 2007 STATE AND LOCAL FORENSIC CHEMISTS SEMINAR SCHEDULE

The remaining FY - 2006 schedule for the DEA's State and Local Forensic Chemists Seminar is as follows:

September 11 - 15, 2006

The upcoming FY - 2007 schedule is as follows:

November 13 - 17, 2006
February 5 - 9, 2007
May 7 - 11, 2007
July 9 - 13, 2007
September 10 - 14, 2007

Note that the school is open only to forensic chemists working for law enforcement agencies, and is intended for chemists who have completed their agency's internal training program and have also been working on the bench for at least one year. There is no tuition charge for this course. The course is held at the AmeriSuites Hotel in Sterling, Virginia (near the Washington/Dulles International Airport). A copy of the application form is reproduced on the last page of the August 2004 issue of *Microgram Bulletin*. Completed applications should be mailed to the Special Testing and Research Laboratory (Attention: J. Kerlavage) at: 22624 Dulles Summit Court, Dulles, VA 20166. For additional information, call 703/668-3337.

In order for a Digital Evidence Laboratory to be American Society of Crime Laboratory Directors/Laboratory Accreditation Board-*International* (ASCLD/LAB-*International*) accredited, it must have a Quality Assurance Program (QAP) that is administered by a Quality Assurance Manager (QAM). The QAM's role is to ensure that the laboratory is producing quality work in accordance with ISO 17025 standards, the laboratory's own Standard Operating Procedures (SOP's), and the supplemental rules and regulations of ASCLD/LAB-*International*. DEA's Digital Evidence Laboratory (SFL9) has specifically designated an examiner to be the Quality Assurance Program Manager (QAPM), who assists the Laboratory Director with all quality assurance issues.

The SFL9 QAP includes a series of tests that are administered annually to all qualified examiners. The QAM and QAPM monitor the knowledge and analytical techniques of the examiners by administering peer reviews and both internal and external proficiency tests. The objective of the QAP is to assess each examiner's abilities and (where necessary) provide feedback in order to ensure high quality work.

Peer Reviews

A peer review is a unique quality control check that gives an examiner the opportunity to assess the quality of work produced by a fellow examiner, and potentially to learn new techniques or analytical processes. A peer review is a re-analysis of an already completed case, intended to confirm that all standard operating procedures and analytical protocols were properly followed. Check criteria include, e.g., that proper instrument calibration (Blank and Control) was done prior to the start of an examination, that a validated forensic image or copy of the media was used, and that the findings are supported by the methods that were used, and so on.

Discrepancies (if any) are brought to the attention of the QAPM, where they are reviewed and discussed with the reviewer. Any errors found during the review are then discussed with the examiner and corrected; if necessary, remedial training may be administered.

Proficiency Testing

There are two basic types of proficiency tests: Internal and external. Both are required by ASCLD/LAB-*International*. An internal proficiency test is created and administered within the laboratory, while an external proficiency test is created and administered by an outside source, either an approved ASCLD/LAB test provider or (in the absence of an approved test provider) another Digital Evidence laboratory. Both types of tests are intended to document an examiner's abilities in performing basic examination procedures, to show that the methods are forensically valid, and that the findings are accurate.

The QAPM has to administer an internal proficiency test to each examiner, annually. The test usually consists of a sample exhibit, on which the examiner must show that they have mastered basic computer forensic techniques, including recovery of e-mail, Internet history, registry

information, file date and time stamp information, deleted files, etc. The exhibit is treated as evidence, and may be assigned with or without the examiner's knowledge that it is a test.

The laboratory also has to take an external proficiency test (or tests). The external test usually consists of a sample exhibit that is assigned by the laboratory director. The scope of the examination, requirements, and the grading are determined by the test provider. Again, the exhibit is treated as evidence, and may be assigned with or without the examiner's knowledge that it is a test.

Summary

Quality Assurance is a collective effort, involving all laboratory personnel that are involved either in evidence analysis or in the review of analytical results and findings. It is the overall duty of the QAM to ensure that the laboratory is performing to high standards. The next article in this series will go into more detail concerning the other duties that the QAM must attend to, including re-analysis, validation, references, and more.

Questions or comments? E-mail: [Steven.L.Carter -at- usdoj.gov](mailto:Steven.L.Carter@usdoj.gov)

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