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Bulletin

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- FEBRUARY 2007 -

- INTELLIGENCE ALERT -

ECSTASY MIMIC TABLETS (CONTAINING KETAMINE AND METHAMPHETAMINE) IN UKIAH AND EUREKA, CALIFORNIA

The California Department of Justice Forensic Laboratory in Eureka (approximately 250 miles north of San Francisco) recently received two separate submissions of identical tablets, blue in color and having the yin-yang symbol logo on one face and half-scored on the obverse face, suspected Ecstasy (see Photo 1). The first submission (2 tablets) was seized in Ukiah (approximately 100 miles north of San Francisco) by the Ukiah Police, while the second submission (20 tablets) was seized in Eureka by the Eureka Police (circumstances not provided for either seizure). Analysis by GC/MS, however, indicated not MDMA but rather a mixture of ketamine and methamphetamine (not quantitated, but in approximately a 10:1 ratio based on the TIC). This is the first submission of ketamine in tablet form to the laboratory.



Photo 1

- INTELLIGENCE ALERT -

**ECSTASY MIMIC TABLETS (CONTAINING N-(2,4,6-TRIMETHYLPHENYL)-
PHTHALIMIDE) IN OSAKA, JAPAN**

The Forensic Science Laboratory of the Osaka Prefectural Police Headquarters (Japan) recently received 11 mottled, brownish-pink tablets with an “S” logo, suspected Ecstasy (see Photo 2). The exhibits were seized by the Osaka Prefectural Police from two users in Osaka city. The tablets were 6.2 millimeters in diameter, 4.5 millimeters thick, and averaged 130 milligrams each. Analysis by color testing, TLC, and GC/MS, however, indicated no controlled substances. Additional analyses by GC/CI-MS, LC/MS/MS and NMR analyses indicated N-(2,4,6-trimethylphenyl)phthalimide (approximately 15 milligrams/tablet) along with lesser amounts of one of its probable precursors, 2,4,6-trimethylaniline. Very little information is available concerning this compound; based on its structure, it may have a sedative effect (and the users so claimed). An internet search on N-phenyl phthalimides indicates derivatives with herbicidal, anticancer, and other, rather obscure pharmaceutical activities - but no derivatives with any known abuse potential. To our knowledge, this is the first report of N-(2,4,6-trimethylphenyl)phthalimide in any clandestine sample. Since this submission, more than 300 tablets of the same kind have reportedly been seized in Osaka, Tokyo, Iwate, Kagawa, and several other Prefectures in Japan.



Photo 2

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- INTELLIGENCE ALERT -

LARGE POLYDRUG SEIZURE NEAR SALEM, OREGON

The Oregon State Police Forensics Lab in Springfield recently received a multi-exhibit submission including 3 types of blotter papers (see Photos 3 and 4, next page), 6 bags of powder (2 of which were labelled with printed stickers: “2-(4-Ethyl-2,5-dimethoxyphenyl)ethylamine” (2C-E)), a bottle of colorless liquid, 7 small vials of red liquid with an odor of strawberries (1 broken), 52 clear gelatin capsules containing a white powder, 16 pharmaceutical tablets (apparent oxycodone, several different formulations), and 44 Ecstasy-type tablets (17 different logos, see next page) sorted and bagged by logo type. The exhibits were seized by the Oregon State Police - Salem Area Patrol Office pursuant to a traffic stop, and (unusually) were found in a safe in the trunk of the vehicle. Marijuana and mushrooms were reportedly also seized, but were not submitted for analysis.

Analyses were done via color testing, GC/MS, and FTIR, as appropriate. None of the samples were quantitated. Analysis of the blotter papers confirmed LSD in one sample (72 units) and indicated 4-iodo-2,5-dimethoxyphenethylamine (2C-I) in the other two sample types (totalling 79 units). Of interest, one of the latter two blotter papers also contained trace amounts of MDMA and methamphetamine (both confirmed) and MDA and caffeine (neither confirmed). Two of the powders (total net mass 1.2 grams) were identified as MDMA, 2 (total net mass 4.93

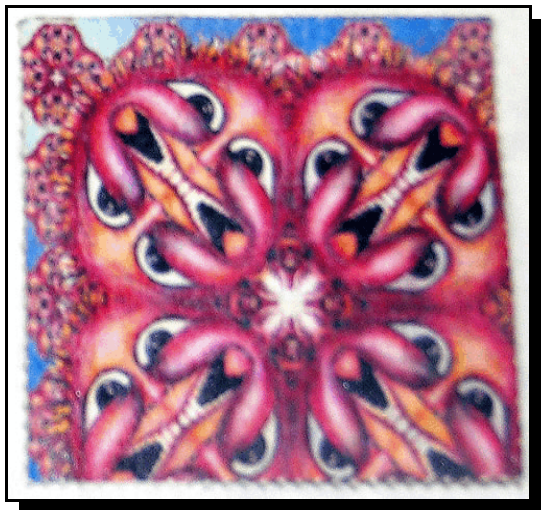


Photo 3



Photo 4

grams) were consistent with 2C-I, and 2 were residues consistent with a mixture of 2C-I and 2C-E (these were the labelled bags). The colorless liquid (total net volume 100 milliliters) was identified as 1,4-butanediol. The red liquids in the small vials (approximate total net volume in the 6 intact vials 6 milliliters) and the powder in the gelatin tablets (gross mass 3.35 g) were all consistent with 2C-I. The logos and presumptive testing of the pharmaceutical tablets gave results that were consistent with oxycodone. Of the 17 different types of Ecstasy-type tablets, 4 were analyzed; all 4 contained MDMA and 1 also contained ketamine.

Blotter Papers

- 1: Fractal Face (72 Units); Analysis: LSD (see Photo 3)
- 2: Yellow Elephants (2-Sided Blotter Paper, 75 Units); Analysis: 2C-I (see Photo 4)
- 3: Multicolor (4 Units); Analysis: 2C-I and multiple trace compounds (photo not shown)

Ecstasy Logos

- 1: "RB," 8; Analysis: MDMA
- 2: Hammer, 3; Analysis: MDMA
- 3: "K&K," 3; Analysis: MDMA/Ketamine
- 4: "Fu," 4; Analysis: MDMA
- 5: Cobras, 2
- 6: Reclining Woman, 2
- 7: Pac-man, 2
- 8: Smiley, 2
- 9: Mitsubishi, 2
- 10: Adidas, 2
- 11: Puma, 2
- 12: Dolphin, 2
- 13: X-Box, 3
- 14: Omega (Greek letter), 1
- 15: Musical Note, 2
- 16: (Illegible)
- 17: (Illegible)

(Continued on Next Page)

This is believed to be the first submission of 1,4-butanediol to this laboratory, and the largest and also the most varied submission of 2C-I. The exhibits “consistent with” 2C-I and 2C-E were not confirmed due to lack of authenticated standards. LSD blotter paper submissions to the laboratory are uncommon. This laboratory has seen a distinct rise in the number of submissions of designer phenethylamines and tryptamines (both controlled and non-controlled) over the past two years.

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- INTELLIGENCE ALERT -

HEROIN SOLUTIONS IN JUICE BOXES AT JFK AIRPORT

The DEA Northeast Laboratory (New York, New York) recently received 14 juice boxes suspected of containing heroin solutions (see Photo 5). The exhibits were seized by Immigration and Customs Enforcement from a passenger arriving at JFK International Airport (details sensitive). Analysis of the liquid (total net volume 3169 milliliters) by GC/FID, NMR, GC/MS, and FT-IR/ATR confirmed 52 percent heroin hydrochloride. The Northeast Laboratory routinely receives exhibits containing cocaine solutions, but rarely receives exhibits containing heroin solutions.



Photo 5

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- INTELLIGENCE ALERT -

**CAFFEINE/LIDOCAINE MIXTURES (CONTAINING TRACE HEROIN)
IN FONTANA, CALIFORNIA**

The DEA Southwest Laboratory (Vista, California) recently received two exhibits, one a tan powder (total net mass 3,111 grams) and the other a tan paste (total net mass 1,039 grams), both having a distinct vinegar odor, that field-tested positive for cocaine (see Photo 6). The exhibits were seized by DEA personnel pursuant to the execution of a state search warrant at a residence in Fontana, California (approximately 10 miles west of San



Photo 6

Bernardino). Preliminary analysis by FTIR/ATR, GC, and GC/MS, however, indicated not cocaine but rather a mixture of caffeine and lidocaine, possibly containing trace heroin. Dissolution of a small portion of each exhibit in 2.8 N HCl solution, followed by extraction with chloroform, with secondary analysis of the extract with GC and GC/MS confirmed heroin (approximately 0.08 percent in the powder and 0.15 percent in the paste). It is unknown whether the exhibits were intended for use as cutting agents, or were designed as sham narcotics, or for some other purpose.

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- INTELLIGENCE BRIEF -

**VERY LARGE SEIZURE OF "ICE" METHAMPHETAMINE
IN GAINESVILLE, GEORGIA**

The DEA Southeast Laboratory (Miami, Florida) recently received 14 boxes of cellophane-wrapped bales of tape-wrapped Tupperware® containers of crystalline material, suspected "Ice" methamphetamine (see Photos 7 - 9). There were two different sizes of containers, 8 x 5 x inches and 5 x 5 x 2 inches. The exhibits were seized by Bureau of Alcohol, Tobacco, and Firearms personnel pursuant to the execution of a search warrant in Gainesville, Georgia (no further details).



Photo 7

Analysis of the material (total net mass 125.9 kilograms) by GC/FID, NMR, Raman, GC/MS, and FTIR confirmed 85 percent methamphetamine hydrochloride, cut with dimethyl sulfone (DMS, not quantitated). This is the first submission of "Ice" methamphetamine in this type of packaging, and is also one of the largest ever submissions of "Ice" methamphetamine, to the Southeast Laboratory.



Photo 8



Photo 9

- INTELLIGENCE BRIEF -

**LARGE QUANTITIES OF VERY HIGH PURITY “ICE” METHAMPHETAMINE
BEING ENCOUNTERED ALONG THE MEXICO/TEXAS BORDER**

The DEA South Central Laboratory (Dallas, Texas) has recently received several submissions of large quantities of unusually pure d-methamphetamine HCl (“Ice”). The submissions are from seizures made along the Mexico/Texas border by personnel from Immigration and Customs Enforcement, Border Patrol, and/or the DEA. Three recent such seizures included: A) Pharr - 11.04 kilograms, 99.6+ percent; B) Eagle Pass - 7.56 kilograms, 99.0 percent; and C) Sarita - 27.08 kilograms, 99.8 percent. Analyses were conducted with a combination of GC/MS, FTIR, NMR, and HPLC. While these are not the first submissions of this type to the laboratory, it is very unusual for this laboratory to have multiple submissions of 99 percent plus purity “Ice” methamphetamine in such large quantities.

[Editor’s Comment: Restrictions on the domestic sales of ephedrine- and pseudoephedrine-containing products have had a significant impact on small-scale, domestic production of methamphetamine. As a result, Mexican-based Drug Trafficking Organizations have moved quickly to fill the void with increased production of “Ice” methamphetamine.]

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- FOLLOWUP / CLARIFICATION -

**BLOTTER ACID MIMICS (CONTAINING
4-BROMO-2,5-DIMETHOXYAMPHETAMINE
(DOB)) IN CONCORD, CALIFORNIA**

Sir: The “ornate wheel-burst pattern surrounding a heart” logo pictured in the above referenced Intelligence Alert (Microgram Bulletin 2006;39(11):136; see Photo 10) is a variation of the logo of a large techno event in Germany, the Loveparade; see: <http://www.loveparade.net>



Photo 10

F. Padjen (Germany)

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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. Abbreviated mailing address information duplicates that provided by the abstracting service. Patents and Proceedings are reported only by their *Chemical Abstracts* citation number.]

1. Amundsen LK, Siren H. **Partial filling micellar electrokinetic chromatography analysis of androgens and testosterone derivatives using two sequential pseudostationary phases.** Journal of Chromatography A 2006;1131(1-2):267. [Editor’s Notes: Presents the title study;

- the technique separated androstenedione, testosterone, epitestosterone, fluoxymesterone, and methyltestosterone. Contact: VTT, POB 1000, FIN-02044 Espoo, Finland.]
2. Castiglioni S, Zuccato E, Crisci E, Chiabrando C, Fanelli R, Bagnati R. **Identification and measurement of illicit drugs and their metabolites in urban wastewater by liquid chromatography - tandem mass spectrometry.** *Analytical Chemistry* 2006;78(24):8421. [Editor's Notes: A followup study to the original communication (for cocaine). This study analyzed for cocaine, amphetamines, morphine, cannabinoids, methadone, and some of their metabolites, in municipal wastewater from two treatment plants (one each in Italy and Switzerland). Contact: Mario Negri Inst Pharmacol Res, Dept Environm Hlth Sci, Via Eritrea 62, I-20157 Milan, Italy.]
 3. Davis J, Reagan R. **Method for collecting, extracting and quantifying drugs from saliva samples and surfaces.** (Patent) *Chemical Abstracts* 2006;26:1253644.
 4. Dong YM, Chen YL, Chen XG, Hu ZD. **Method for derivatization of ephedrine and pseudoephedrine in nonaqueous media and determination by nonaqueous capillary electrophoresis with laser induced fluorescence detection.** *Biomedical Chromatography* 2006;20(11):1150. [Editor's Notes: The derivatizing reagent was 4-chloro-7-nitrobenzo-2-oxa-1,3-diazol. Contact: Lanzhou Univ, Dept Chem, Lanzhou 730000, Peoples R China.]
 5. ElGindy A, Emará S, Mesbah MK, Hadad GM. **New validated methods for the simultaneous determination of two multicomponent mixtures containing guaifenesin in syrup by HPLC and chemometrics-assisted UV-spectroscopy.** *Analytical Letters* 2006;39(14):2699. [Editor's Notes: Two mixtures were analyzed, both containing guaifenesin and dextromethorphan, and either: (1) phenylephrine, chlorpheniramine and butylparaben; or (2) ephedrine and diphenhydramine. Contact: Suez Canal Univ, Pharmaceut Analyt Chem Dept, Fac Pharm, Ismailia 41522, Egypt.]
 6. Ghanem A. **True and false reversal of the elution order of barbiturates on a bonded cellulose-based chiral stationary phase.** *Journal of Chromatography A* 2006;1132(1-2):329. [Editor's Notes: Presents the title study on "a set of racemic N-alkylated barbiturates" (not specified in the abstract). Contact: King Faisal Specialist Hosp & Res Ctr, Dept Biol & Med Res, Biomed Chem Unit, MBC-03-95, POB 3354, Riyadh 11211, Saudi Arabia.]
 7. Lee H-S, Park S-R, Lee B-Y, Ko S-K, Chung C. **Study on detection technique of illicit materials using pulsed fast white neutron analysis.** *Nuclear Instruments & Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors, and Associated Equipment* 2006;562(2):1076. [Editor's Notes: A feasibility study. One of the substrates was PMMA. Contact: POSTECH, Pohang Accelerator Laboratory, Pohang, 790-784, S. Korea.]
 8. Lee W-S, Chan M-F, Tam W-M, Hung M-Y. **The application of capillary electrophoresis for enantiomeric separation of N,N-dimethylamphetamine and its related analogs. Intelligence study on N,N-dimethylamphetamine samples in crystalline and tablet forms.** *Forensic Science International* 2006;165(1):71. [Editor's Notes: Presents a CZE method for the resolution of the enantiomers of N,N-dimethylamphetamine, methamphetamine, ephedrine, pseudoephedrine, and N-methylephedrine. Contact: Forensic Science Division, Government Laboratory, Homantin Government Offices, Hong Kong, Peop. Rep. China.]
 9. Lu F, Hong J-y, He R, Li L-s. **Study of Papaver somniferum cultivars identification by TD-RAPD technique.** *Fayixue Zazhi* 2006;22(5):367. [Editor's Notes: Presents the title study.]

The results allow for origin determination. This article is written in Chinese. Contact: Yunnan Criminal Science and Technology Institute, Kunming 650021, Peop. Rep. China.]

10. Tomlinson JJ, Elliott-Smith W, Radosta T. **Laboratory information management system chain of custody: Reliability and security.** Journal of Automated Methods & Management in Chemistry 2006;1:21. [Editor's Notes: Discusses chain-of-custody issues associated with LIMS. Contact: ChemWare, Inc., Raleigh, NC 27609 (street address not provided).]
11. Xu YZ, Chen CP. **Synthesis of deuterium labeled phenethylamine derivatives.** Journal of Labelled Compounds & Radiopharmaceuticals 2006;49(13):1187. [Editor's Notes: For use as internal standards in GC/MS. Compounds included 2C-B, 2C-C, 2C-I, 2C-T-2, and 2C-T-7. Contact: Natl Dong Hwa Univ, Dept Chem, Soufeng 974, Hualien, Taiwan.]
12. Zapuskalov VG, Maslov AI, Klyuev ZV, Artem'ev BV, Volchkov YE. **Device for detecting people presence under ruins and searching for explosives and narcotic drugs.** (Patent) Chemical Abstracts 2006;26:1234291.

Additional References of Possible Interest:

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2. Grootveld M, Algeo D, Silwood CJL, Blackburn JC, Clark AD. **Determination of the illicit drug gamma-hydroxybutyrate (GHB) in human saliva and beverages by ¹H NMR analysis.** BioFactors 2006;27(1-4):121. [Editor's Notes: Presents the title study. Contact: Department of Applied Science, London South Bank University, London, UK SE1 0AA.]
3. Maurer HH. **Hyphenated mass spectrometric techniques - Indispensable tools in clinical and forensic toxicology and in doping control.** Journal of Mass Spectrometry 2006;41(11):1399. [Editor's Notes: An overview. Contact: Univ Saarland, Dept Expt & Clin Toxicol, Inst Expt & Clin Pharmacol & Toxicol, D-66421 Homburg, Germany.]

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EMPLOYMENT OPPORTUNITIES

Position: **Forensic Chemist** (Third and Final Posting)
Location: Indian River Crime Laboratory; Fort Pierce, Florida
Salary: \$55,000 – \$65,000 depending on experience
Application Deadline: Open until filled

Duties: Responsibilities include the analysis of controlled substances; interpretation of laboratory analyses and results; preparation of written reports; and the ability to testify as an expert witness.

General Requirements: The applicant must be skilled in using gas chromatography, mass spectroscopy, ultraviolet and infrared spectrophotometry, and other drug analysis equipment and methodologies. A familiarity with the technical and safety requirements of ASCLD/LAB, and demonstrated proficiency

testing in controlled substance analysis are required. A Master's degree in chemistry or forensic science (with chemistry undergraduate degree) and two years of forensic laboratory experience are preferred. Experience in head-space BAC analysis is desirable. An extensive background investigation is required, and laboratory personnel are subject to random drug testing. EEO.

Application Procedure: Applications may be obtained on-line at stluciesheriff.com or by contacting:

Saint Lucie County Sheriff's Office
Human Resources Department
4700 W. Midway Road
Fort Pierce, FL 34981-4825
Phone: (772) 462-3206
Fax: (772) 462-3218

For additional information about the position, contact:

Daniel C. Nippes, Director (or) Babu Thomas, Senior Criminalist
Indian River Crime Laboratory
2502 S. 35th Street
Fort Pierce, FL 34981
dnippes-at-ircc.edu (or) bthomas-at-ircc.edu
Phone: (772) 462-3600

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Computer Corner

#214

Who is Qualified to Conduct Forensic Examinations of Digital Evidence? - Differing Points of View - Part II

by Clay Schilling
Group Supervisor
DEA Digital Evidence Laboratory

Part I of this column (Computer Corner #213) introduced the issue of who is best qualified to conduct computer forensic examinations and identified some possible misunderstandings or misconceptions on what digital evidence is and how (by whom) it should - and should not - be processed. Part II will further explore some of the inherent differences in the knowledge, skills, and abilities that are required to conduct criminal investigations, criminal prosecutions, criminal intelligence analyses, and digital evidence analyses.

In order to perform the varied and extensive tasks required of criminal investigations, criminal prosecutions, criminal intelligence analyses, and related sub-fields, extensive and highly focused training and practical experience are required. Similarly, in order to conduct digital forensic examinations, the analyst must have an in-depth understanding of computer technology, legal procedures, laws of evidence, information analysis, and investigative techniques, as required for this specialization. However, while there are some commonalities, the specific knowledge, skills, and abilities needed in each field are significantly different.

Criminal investigators have to be familiar with the procedures, techniques, legal concerns, and general problems associated with conducting criminal investigations. They receive training in areas such as law and court procedures, identification, collection, and handling of evidence, crime scene processing, interviewing techniques, investigative techniques for several different types of crimes, case documentation, report writing, file management, weapons, and use of force.

Similarly, criminal prosecutors are familiar with statutory and common laws that deal with crime and the legal punishment of criminal offenses. They receive training in areas such as criminal and civil law, evidence procedures, case documentation, legal writing, file management, legal research, negotiation, oral advocacy, and court procedures.

Finally, criminal intelligence analysts are familiar with collecting, processing, analyzing, and reporting criminal intelligence information. They receive training in areas such as collection techniques, priority target identification, information organization, processing and analysis methods, and intelligence reporting. They compile and analyze case related data, track criminal events or crime trends, perform timeline or event analyses, identify co-conspirators, link individuals and organizations, track funding sources, identify missing case elements, develop leads, differentiate relevancy, identify exculpatory information, or identify and properly react to indications of another crime such as child pornography.

Digital forensic examiners are familiar with the application of the scientific method to identify, preserve, examine, extract, and document digital evidence. Digital forensic examiners must possess a broad understanding of computer technology, legal procedures, rules of evidence, information analysis, and investigative techniques. Digital forensic examiners receive continuous training in areas such as computer hardware and software, various file systems (e.g., Windows, Linux, SCO Unix, and Macintosh), file system artifacts (e.g., file allocation tables, system registry files, date/time stamps, metadata, Internet files, temp files, and swap files), digital evidence identification and acquisition using various forensic tools and evidence preservation methods, evidence handling, legal procedures, and investigative and analytical techniques.

During the examinations, digital evidence examiners adhere to the rules of evidence and other legal processes ensuring evidence preservation and integrity. They also use analytical skills and practical experience to locate, compare, and separate relevant information. They maintain a neutral position extracting both probative and exculpatory information and provide factual reports documenting the information found. Following the examination, they use their knowledge of court procedures to testify as expert witnesses, expressing technical details in a manner that is easily understood by the court and jury, and are able to authenticate all discovered information.

Criminal investigators, criminal prosecutors, criminal intelligence analysts and digital evidence examiners can bring diverse expertise to an investigation and prosecution that involves digital evidence. The combined expertise of these varied disciplines assist the digital evidence examiner in differentiating relevancy, identifying exculpatory information, or identifying and properly reacting to indications of other crimes that may not be directly related to the initial investigation. The knowledge, skills, and abilities of each field must be maintained as technology and law changes. While the digital evidence examiner's role is vitally important in maintaining the integrity of digital evidence, it is important for each person to bring to their expertise to the investigation, as well as, an awareness of the roles of the others.

Questions or comments? E-mail: [Clayton.D.Schilling -at- usdoj.gov](mailto:Clayton.D.Schilling-usdoj.gov)

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