U.S. Department of Justice
Drug Enforcement Administration

www.dea.gov

Microgram Bulletin

Published by:
The Drug Enforcement Administration
Office of Forensic Sciences
Washington, DC 20537

The U.S. Attorney General has determined that the publication of this periodical is necessary in the transaction of the public business required by the Department of Justice. Information, instructions, and disclaimers are published in the January issues.

VOL. XXXVI, NO. 4 APRIL 2003

- INTELLIGENCE ALERT -

ROLL OF PARTIALLY BURNED CURRENCY INCLUDED IN "ICE" METHAMPHETAMINE SEIZED IN NOGALES, ARIZONA

The DEA Southwest Laboratory (Vista, California) recently received an interesting submission consisting of two exhibits of "ICE" methamphetamine and a roll of partially burned U.S. currency (see Photo 1). The evidence was seized by the United States Custom Service in Nogales, Arizona, during a routine vehicle stop. The three packages varied in size, each was wrapped in gray duct tape and clear plastic, and none had any special markings. All three were initially suspected to contain methamphetamine. When opened for analysis, the two larger packages were in fact found to contain a combined net mass of 1,914 grams of an off-white,

Photo 1

crystal-like substance, which was confirmed to be 99 percent d-methamphetamine HCl (commonly referred to as "ICE"). The smallest package, however, a softball sized package that was about one third the size of the other two packages, was found to contain $4,980.00 in U.S. currency, most of which was partially burnt (see Photo 2). The currency included various denomination bills ($20, $50, and $100). U.S. currency is seldom encountered by the Southwest Laboratory, and partially burnt currency in a drug seizure is quite unusual.

Photo 2

* * * * *

- INTELLIGENCE ALERT -

HASHISH SMUGGLED INSIDE SPOOLS OF THREAD IN MEMPHIS, TENNESSEE

The DEA South Central Laboratory (Dallas, Texas) recently received a package containing four spools of white thread containing packages of suspected hashish. The package was seized by the United States Custom Service in Memphis, Tennessee, after X-ray analysis indicated an anomalous mass under the threading of each spool. [However, there was no apparent deformation of the threading on the spools.] The exhibits were submitted to the laboratory after a controlled delivery in Picayune, Mississippi. Disassembly of each spool revealed a rectangular strip, packaged in brown tape, which had been wrapped around the spool cannister, then covered with tightly wound thread (see Photos 3 and 4). Analysis by microscopic examination, Modified Duquenois-Levine, and GC/MS confirmed hashish, combined net mass 387.9 grams. The THC content was not quantitated. This is believed to be the first exhibit of this type ever submitted to the South Central Laboratory.

Photo 3

Photo 4

- INTELLIGENCE ALERT -

HEROIN IN SUITCASE WHEELS AT JFK AIRPORT, NEW YORK

The DEA Northeast Laboratory (New York, New York) recently received an exhibit consisting of twelve black suitcase wheels containing suspected heroin (see two of these wheels in Photo 5). The wheels were seized by the United States Custom Service at JFK Airport, New York, after being removed from a suitcase from a passenger arriving on a flight from Colombia. Each wheel contained a black plastic bag, which contained chunks of light brown powder, combined net mass 795.5 grams. Analysis by GC-FID, FT-IR, and GC-MSD confirmed 89 percent heroin HCl. Over the past few years, the Northeast Laboratory has received a wide variety of exhibits seized by Customs agents at JFK Airport, including luggage handles, shoes, suitcase liners, clothing, etc., in which heroin had been concealed.

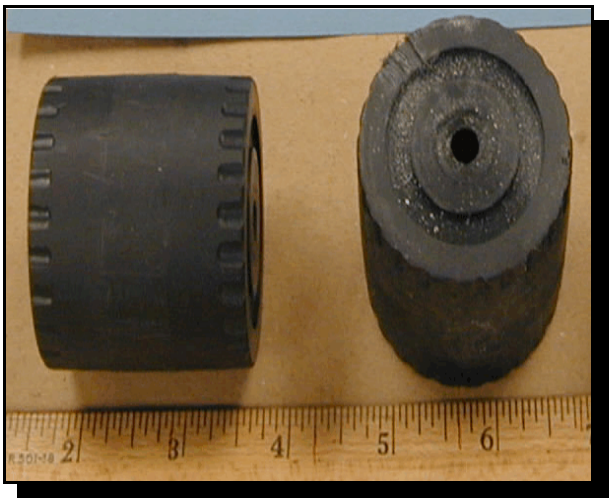

Photo 5

* * * * *

- INTELLIGENCE ALERT -

L/V LOGO TABLETS CONTAINING COCAINE AND METHORPHAN IN SPARTANBURG, SOUTH CAROLINA

The DEA Southeast Laboratory (Miami, Florida) recently received an exhibit consisting of 42 greenish blue tablets, 8 millimeters in diameter, with a logo apparently consisting of an L over a V (or a V over an L) (possibly a trademark for the designer Louis Vuitton), suspected Ecstasy (see Photo 6). The tablets, net mass 6.7 grams, were seized in Spartanburg, South Carolina by the DEA Greenville (South Carolina) Resident Office Enforcement Group. Analysis by GC/FID and GC/MS, however, indicated not MDMA but rather a mixture of cocaine (1.3 milligrams per tablet, salt form not determined) and methorphan (not quantitated, isomer and salt form not determined). This is the laboratory's first encounter with these type tablets.

Photo 6

* * * * *

- INTELLIGENCE ALERT -

LSD MICROTABLETS IN OWATONNA, MINNESOTA

The Minnesota Bureau of Criminal Apprehension Forensic Science Laboratory (St. Paul, Minnesota) received a submission of a brownie, Rice Krispie(r) bar, and two very small, brown, round biconvex tablets. All three exhibits were seized by the Owatonna Police Department; the brownie and Rice Krispie(r) bar were submitted as containing marijuana, and the tablets as containing LSD. Examination of the brownie and Rice Krispie(r) bar (photos not available) by microscope revealed no visual plant material. However, analysis by Duquenois-Levine and GC/MS confirmed the presence of *delta*-9 tetrahydrocannabinol (THC); quantitation not performed. The tablets (see Photo 7) were 2.5 millimeters in diameter by 1 millimeter thick, and had no markings. Analysis by color testing with *para*-dimethyl-aminobenzaldehyde (DMAB) / HCl and by GC/MS confirmed lysergic acid diethylamide (LSD); quantitation not performed. This was the laboratory's first encounter with LSD microtablets.

Photo 7

* * * * *

- INTELLIGENCE ALERT -

APPLE LOGO TABLETS CONTAINING PIPERONAL AND TRACE MDMA IN STRASBOURG, FRANCE

The French Customs laboratories in Strasbourg and Paris, France recently analyzed a submission of 1,685 tablets being smuggled from The Netherlands, suspected Ecstasy. The seizure was made by the French Customs Service on the eastern French border. The submission included tablets of two different types: Blue tablets with a "smiley face" logo and a single score on the opposite face (7.1 x 4.2 millimeters, approximately 200 milligrams each, see Photo 8); and white tablets with an "apple" logo, unscored (9.0 x 3.4 millimeters, approximately 300 milligrams each, see Photo 9). [The total number of blue versus white tablets was not determined.] Analysis by GC/FID, GC/MS, FTIR, and HPLC confirmed that the blue tablets contained 68 milligrams of MDMA/tablet. However, the white tablets contained primarily piperonal with less than one percent MDMA. The white tablets were also very heterogeneous: In four analyzed tablets, the piperonal content varied from 36 to 76 milligrams/tablet. The laboratory concludes that the white tablets likely resulted from an incorrect clandestine synthesis. Piperonal is a hazardous and irritant chemical. This was the laboratories' first encounter with "piperonal tablets".

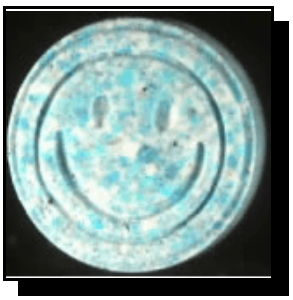

Photo 8

Photo 9

Selected Intelligence Brief

The "Dirty" and Dangerous Side Effects of Synthetic Drugs Production

Europol
Synthetic Drugs Unit
Raamweg 47
PO Box 90850
2509 LW The Hague
Netherlands

[Unclassified; Reprinted With Permission]

Part 1: "By-Products - Chemical Waste"

In recent years the production of synthetic drugs such as ecstasy, amphetamine and other amphetamine type stimulants has dramatically increased. Although the number of illicit laboratories discovered in the European Union has stabilised, the professionalism and production capacity of such sites has increased significantly, not only for the production of synthetic drugs but also in the production of precursors and reductors. A synthetic drug is the end product of a chemical process, as indicated by the word "synthesis" meaning: A reaction between two or more chemicals. Synthetic drugs are therefore chemical products dependent the required chemicals for their production or the availability of such chemicals.

Legitimate chemical processes are undertaken in specially created environments, such as chemical factories, using highly sophisticated equipment, pure chemicals and the necessary chemical knowledge where, even then, chemical waste will be an unavoidable by product. During the illicit production of synthetic drugs huge amounts of waste will result. According to expert estimations, the production of 1 kg amphetamine or ecstasy will, depending on the production method used, result in 5 to 20 litres of waste (i.e. the Leuckart synthesis produces more waste than reductive amination). Furthermore, during specific steps of the production process, certain amounts of solvents will vaporise and thereby pollute the atmosphere.

Chemical waste is a combination of the chemicals used, the by-products and the end products. As more than 200 different chemicals can be used in synthetic drug production, the resultant waste will vary significantly in terms of content and hazardous properties such as flammability, explosiveness, toxicity, corrosiveness, oxidation, carcinogens and others.

The "quality" of the waste will differ, depending on the following circumstances:

The production processes used.

The quality of the chemicals and equipment used.

The knowledge and relative efficiency of the (illicit) chemist and his methods.

The chemical mixture ratio; i.e. if excess chemical is added to a process, the surplus will be converted into chemical waste which must be removed.

The mixture of different waste products; i.e. individual production steps result in different waste which might be mixed and stored together.

In most cases analysed, the chemical waste content exists of one or more of the following chemicals: acetone, ether, methanol, iso-propanol, toluene formamide, caustic soda, ammonia, sulphuric acid, hydrochloric acid, residues of benzylmethylketone, piperonylmethyl-ketone, iso-safrol, etc.

Such 'illicit' chemical waste is often stored in old jerry cans, barrels and other means of storage without proper safety labels and warnings. The uncontrolled existence of such chemical 'cocktails' poses great danger to the environment, the public and law enforcement.

It is clear that, in the dismantling of synthetic drugs laboratories and the associated collection of evidence, including sampling, such hazards necessitate the adoption of extreme precautions and safety measures.

* * * * *

Part 2: "Methods of Dumping"

In the first article "The dirty and dangerous side effects of synthetic drugs production – part 1 by products - chemical waste" an overview is given on the amount and kind of waste which results from the production of synthetic drugs. If we focus on the consumer market demand, with millions of tablets consumed each week, it is clear that the scale of illicit production of synthetic drugs must be enormous. Such large-scale production not only results in millions of tablets but also in huge amounts of chemical waste.

The waste is a combination of the chemicals used, the by-products and the end products. Waste will vary significantly in terms of content and hazardous properties such as flammability, explosiveness, toxicity, corrosiveness, oxidation, carcinogens and others. If such waste is "produced" by legitimate companies, the disposal of the waste will be very expensive and is, in most countries, under tight national and

international legislative control. Permits are necessary for storage, transport and disposal. Such control measures have one significant objective: the safety of the environment and the public.

Producers of synthetic drugs do so for the sole purpose of making money. They do not want to spend their profit on the safe disposal of chemical waste. Another reason is the inherent risk of being caught by law enforcement. They are spending significant amounts of money on the purchase of precursors, chemicals and production equipment such as tabletting machines, reaction vessels etc. Producers do actually also use equipment that is normally used in connection with environmental protection but in these cases their reason is still for financial savings. E.g. the use of distillation machines (see below and Europol Drugs Intelligence Bulletin no.1).

Distillation machines are generally used in industry for cleaning used solvents, thereby decreasing the amount of chemical waste and the inevitable cost or waste disposal plus enabling the re-use of expensive chemicals. Producers of synthetic drugs are using these machines solely to facilitate the re-use of the cleaned expensive chemicals. The remaining resultant part of the cleaning process, the removed impurities, will be dumped illegally.

Another related example is the use of carbon filters that are normally used to clean the air of chemical gases such as those from solvents. If used by criminals in synthetic drug production the purpose will also be to purify the air but not for the safety of the environment and public but to prevent discovery of the site via the detection of chemical gasses. The Carbon filter will also be dumped after use.

There are several known methods of dumping chemical waste. Most of the below mentioned methods are carried out during the night in rural or abandoned areas. However, there are known cases in which the chemical waste was dumped in industrial areas and in one case in the middle of a large city near a school.

1. Dumping of Closed Drums and Jerry Cans with Misleading Labels / Warnings.

In almost all cases the criminals use the jerry cans and barrels which were originally used for the transport and storage of the necessary production chemicals. In some cases labels and warning were found on the jerry cans and barrels. However, in none of these cases did the content correspond to the labels. In such cases never rely on the labels / warnings or absence of them. Labels should however be collected as evidence.

*
*

* * * * *

2. Emptying drums and jerry cans directly onto the soil.

Criminals dump the jerry cans or drums in rural and abandoned areas, but in this scenario they will open the jerry cans or drums before dumping their contents. The result will be significant soil and air

pollution, depending on the contents of the jerry cans. There is also the risk of explosion. One of the reasons for the use of this method is that criminals want to prevent law enforcement officers and forensic experts from taking samples of the waste for analysis and/or profiling.

*
*
*
*

* * * * *

3. Emptying Drums and Jerry Cans into Rivers, Canals and Ditches.

Contents of jerry cans and drums are also poured into rivers, canals and ditches. In these cases the chemical waste will be mixed with the surface water and will be transported over a long distance, spreading the pollution.

*
*
*
*
*
*

* * * * *

4. Leaving Large Amounts of Filled Jerry Cans and Drums in Stolen Vehicles.

Stolen vans are used for the storage, transport and disposal of the chemical waste. In these cases vans are stolen during the night hours, mostly from industrial sites. The vehicle is loaded with jerry cans, drums and in some cases gas cylinders and then driven to another area and abandoned. If the stolen van is discovered, the chemical content must be removed by a specialist chemical company, costing the original owner a lot of money. In most cases the cost of removal of the chemicals will not be covered by their vehicle insurance.

* * * * *

5. Setting Fire to Stolen Vans Loaded with Chemical Waste / Gas Cylinders.

Large amounts of full jerry cans, drums and sometimes also hydrogen gas cylinders are loaded into stolen vans which are driven to abandoned areas and set on fire. This method is becoming more common. In the Netherlands, in 1999, the Unit for Synthetic Drugs (USD) recorded 16 stolen vans, which were set on fire, of which 14 exploded. A burning vehicle with the unknown element of such a 'chemical bomb' creates great dangers for law enforcement officers and investigating firemen.

* * * * *

6. Disposal of Chemical Waste from a Moving Van.

In this case, witnesses observed a van driving several times along the same road. Local residents detected the odour of acetone and alerted the police. After investigation, two drums were found, each containing 250 litres of chemical waste from synthetic drug production. With the use of a compressor, connected to the car cigarette lighter, chemical waste was disposed from the vehicle via a PVC pipe.

*
*

* * * * *

7. Burying Full Drums and Jerry Cans in the Soil.

There is also the method of burying jerry cans or drums. In some minor cases buried jerry cans were found, containing chemical waste from the production of synthetic drugs. In a wood, criminals removed the top layer of the soil, dumped the jerry cans into the hole and covered them with soil. This is not a frequently used method due to the fact other methods are easier and burying waste takes times, thereby increasing the chance of detection.

* * * * *

8. Pumping Chemical Waste into the (Local) Sewerage System.

Chemical waste is also drained into the sewerage system. One of the simplest ways is via the use of the lavatory or the bath. In some cases criminals have connected the production process to the sewerage system, with the use of PVC pipes. As long as they dispose of relatively small amounts of diluted chemical waste and the distance to the water purification plant is long enough, they are unlikely to be detected.

*
*
*
*

* * * * * * * * * * * * * * * * * * * * * * * * *

SELECTED REFERENCES

[Note: Selected references are a compilation of recent publications of presumed interest to forensic chemists. Unless otherwise stated, all listed citations are published in English. If available, the email address for the primary author is provided as the contact information. Listed mailing address information (which is sometimes cryptic or incomplete) exactly duplicates that listed by the abstracting services.]

1. Zakaria P, Macka M, Haddad PR. **Separation of opiate alkaloids by electrokinetic chromatography with sulfated cyclodextrin as a pseudo-stationary phase.** Journal of Chromatography A 2003;985(1-2):493. [Editor's Notes: Presents an EKC method for separation of morphine, thebaine, 10-hydroxythebaine, codeine, oripavine, and laudanine. Contact: Haddad PR, Univ Tasmania, Sch Chem, Australian Ctr Res Separat Sci, GPO Box 252-75, Hobart, Tas 7001, Australia.]

2. Chew SL, Meyers JA. **Identification and quantitation of gamma-hydroxybutyrate (NaGHB) by nuclear magnetic resonance spectroscopy.** Journal of Forensic Sciences 2003;48(2):292. [Editor's Notes: Presents an NMR technique for identification and quantitation of GHB. The identification of GBL by NMR is also presented. Contact: jmeyers150@aol.com]

3. Miller Coyle H, Shutler G, Abrams S, Hanniman J, Neylon S, Ladd C, Palmbach T, Lee HC. **A simple DNA extraction method for marijuana samples used in amplified fragment length polymorphism (AFLP) analysis.** Journal of Forensic Sciences 2002;48(2):343. [Editor's Notes: Presents an AFLP technique for creating a DNA profile for different plant varieties. Contact: c4ensic@yahoo.com]

4. Simonsen KW, Kaa E, Nielsen E, Rollman D. **Narcotics at street level in Denmark. A prospective investigation from 1995 to 2000.** Forensic Science International 2003;131(2-3):162. [Editor's Notes: Presents a survey of illicit drug seizures made in six selected police districts in Denmark during the referenced time frame. Contact: kirsten.wiese@forensic.ku.dk (KW Simonsen).]

5. Dujourdy L, Barbati G, Taroni F, Gueniat O, Esseiva P, Anglada F, Margot P. **Evaluation of links in heroin seizures.** Forensic Science International 2003;131(2-3):171. [Editor's Notes: Presents a mathematical means for comparing chromatograms for degree of similarity, without using decision thresholds. Contact: laurence.dujourdy@ipsc.unil.ch]

6. Stubbs DD, Lee S-H, Hunt WD. **Cocaine detection using surface acoustic wave immunoassay sensors.** Proceedings of the IEEE International Frequency Control Symposium & PDA Exhibition, New Orleans, LA, United States, May 29-31, 2002, 289-298. [Editor's Notes: Presents a study of real-time, vapor-phase detection of cocaine using a specialized SAW device. Contact: School of Chemistry and Biochemistry, Georgia Institute of Technology, Atlanta, GA (no zip code was provided).]

7. Halamek J, Makower A, Skladal P, Scheller FW. **Highly sensitive detection of cocaine using a piezoelectric immunosensor.** Biosensors & Bioelectronics 2002;17(11-12):1045. [Editor's Notes: Presents a rugged, highly sensitive competitive immunoassay-based piezoelectric sensor for cocaine. Contact: Institute of Molecular Physiology and Biochemistry, Department of Analytical Biochemistry, University of Potsdam, 14476 Golm, Germany.]

8. Carter JF, Titterton EL, Grant H, Sleeman R. **Isotopic changes during the synthesis of amphetamines.** Chemical Communications 2002;21:2590. [Editor's Notes: Presents a study of the variations in C-13 and N-15 during various syntheses of amphetamine. The authors claim that isotopic characterization can assist in identifying the synthetic origins of illicit MDMA and other amphetamines. Contact: Organic and Biological Section, School of Chemistry, University of Bristol, Bristol, UK BS8 1TS.]

9. Cole MD, Lea C, Oxley N. **4-Bromo-2,5-dimethoxyphenethylamine (2C-B): A review of the public domain literature.** Science & Justice 2002;42(4):223. [Editor's Notes: Presents an overview of the title compound, including a minor review of the available literature. Contact: Dept of Forensic Science and Chemistry, Anglia Polytechnic University, East Road, Cambridge CB1 1PT, United Kingdom.]

10. Chen HL, Chen XG, Pu QS, Hu ZD, Zhao ZF, Hooper M. **Separation and determination of ephedrine and pseudoephedrine by combination of flow injection with capillary electrophoresis.** Journal of Chromatographic Science 2003;41(1):1. [Editor's Notes: No abstract was provided. Contact: Chen XG, Lanzhou Univ, Dept Chem, Lanzhou 730000, Peoples R China.]

11. Laasonen M, Harmia-Pulkkinen T, Simard C, Rasanen M, Vuorela H. **Development and validation of a near-infrared method for the quantitation of caffeine in intact single tablets.** Analytical Chemistry 2003;75(4):754. [Editor's Notes: Presents a technique for analyzing pharmaceutical products containing primarily caffeine. The authors claim that the NIR technique is as accurate and faster than the reference HPLC method. Contact: heikki.vuorela@helsinki.fi]

12. Garcia A, Ruperez FJ, Marin A, delaMaza A, Barbas C. **Poly(ethyleneglycol) column for the determination of acetaminophen, phenylephrine and chlorpheniramine in pharmaceutical formulations.** Journal of Chromatography B - Analytical Technologies in the Biomedical and Life Sciences 2003;785(2):237. [Editor's Notes: Presents a rapid, isocratic HPLC method for determination of the three title compounds in cold medications. UV detection at 215 nm and 310 nm was used. Contact: Barbas C, Univ S Pablo, Fac CC Expt & Salud, CEU Urbaniz Monteprincipe, Ctra Boadilla Monte, Km 5, Madrid 28668 3, Spain.]

13. Jacobs JL, Martinez FS, Skinner HF. **Extraction of reaction by-products of common cold tablet ingredients via hydriodic acid reduction.** Journal of the Clandestine Laboratory Investigating Chemists Association 2003;13(1):13. [Editor's Notes: Presents a study of the HI/red P reduction of a variety of co-ingredients found in ephedrine or pseudoephedrine based cold tablets. Contact: Drug Enforcement Administration, Southwest Laboratory, 410 W. 35th St., National City, CA 91950.]

14. Courtney M, Ekis TR. **O, dem bones. Systematic analysis of remnants from "Nazi" methamphetamine laboratories.** Journal of the Clandestine Laboratory Investigating Chemists Association 2003;13(1):17. [Editor's Notes: Presents a systematic approach to analyzing the reaction dregs recovered from Birch reduction laboratories, for the purpose of identifying the original reactants, extraction solvents, and products. Contact: Forensic Consultant Services, P.O. Box 11668, Fort Worth, TX 76110.]

15. Blaszczyk P, Hernik H, Ehrmann R. **Salvinorin A (Salvinoryna A).** Problemy Kryminalistyk 2002;237:48. [Editor's Notes: Presents a GC/MS method for analysis of *Salvia Divinorum*. Language not specified (*may* be in Polish). Contact: No contact information was provided.]

16. Sokolowska-Jablonska Z. **Indoor cultivation of cannabis (Uprawa konopi w pomieszczeniach zamknietych).** Problemy Kryminalistyk 2002;237:48. [Editor's Notes: Presents a general review of illicit indoor cultivation of marijuana, based on reports from the United Kingdom and the Netherlands. Language not specified (*may* be in Polish). Contact: No contact information was provided.]

17. Hemmer R, Wilson R. **Methamphetamine and illegal drug manufacture detector.** U.S. Pat. Appl. Publ. US 20030020618 A1 30 Jan 2003, 10 pp. (English). CLASS: ICM: G08B017-10. NCL: 340632000; 340539000. APPLICATION: US 2002-127162 15 Apr 2002. PRIORITY: US 2001-PV283595 13 Apr 2001; US 2001-PV316309 29 Aug 2001. [Editor's Notes: Presents a system for detecting volatile organic compounds in apartments, hotel rooms, etc., that are suggestive of illicit drug manufacture. Contact: No contact information was provided.]

Additional References of Possible Interest:

1. Passie T, Seifert J, Schneider U, Emrich HM. **The pharmacology of psilocybin.** Addict Biol 2002;7:357. [Editor's Notes: Presents a review of the pharmacology and pharmacokinetics of psilocybin. Contact: Medical School Hannover, Dept. of Clinical Psychiatry and Psychotherapy, Carl-Neuberg-Strasse 1, D-30625 Hannover, Germany.]

2. Ramos MD, Teixeira LHP, Neto FRD, Barreiro EJ, Rodriguez CR, Fraga CAM. **Chiral separation of gamma-butyrolactone derivatives by gas chromatography on 2,3-di-O-methyl-6-O-tert-butyldimethylsilyl-beta-cyclodextrin.** Journal of Chromatography A 2003;985(1-2):321. [Editor's Notes: Presents the chiral separation of various 2-alkyl-2-keto-*gamma*-butyrolactone derivatives. Contact: Ramos MD, Univ Fed Rio de Janeiro, Inst Quim, LADETEC, Ctr Tecnol, Bloco A, Sala 607, BR-21949900 Rio de Janeiro, Brazil.]

3. Clare BW. **QSAR of benzene derivatives: Comparison of classical descriptors, quantum theoretic paramaters and flip regression, exemplified by phenylalkylamine hallucinogens.** Journal of Computer-Aided Molecular Design 2002;16(8-9):611. [Editor's Notes: Presents a

theoretical modeling approach and evaluation of the hallucinogenic phenalkylamines. Contact: Clare BW, Univ Western Australia, Dept Chem, 35 Stirling Highway, Crawley, WA 6009, Australia.]

4. Tanaka S, Iio R, Chinaka S, Takayama N, Hayakawa K. **Analysis of reaction products of morphine and codeine with high-performance liquid chromatography/mass spectrometry.** Analytical Sciences 2003;19(1):163. [Editor's Notes: The focus was on changes due to hydrogen peroxide present in hair dyes and decolorant treatments. Contact: Forensic Science Laboratory, Ishikawa Prefectural Police Headquarters, Kanazawa 920-8553, Japan.]

5. Goeringer KE, McIntyre IM, Drummer OH. **LC-MS analysis of serotonergic drugs.** Journal of Analytical Toxicology 2003;27(1):30. [Editor's Notes: Presents an LC/MS technique for the identification of 10 antidepressant and 2 antipsychotic drugs (not specified in the abstract). Contact: Victorian Institute of Forensic Medicine and Department of Forensic Medicine, Monash University, Southbank 3006, Australia.]

6. Tao QF, Zeng S. **Analysis of enantiomers of chiral phenethylamine drugs by capillary gas chromatography/mass spectrometry/flame ionization detection and pre-column chiral derivatization.** Journal of Biochemical and Biophysical Methods 2002;54(1-3):103. [Editor's Notes: Includes analysis of amphetamine, methamphetamine, fenfluramine, and others. The application focus is the analysis of biological fluids. Contact: China, College of Pharmaceutical Sciences, Department of Pharmaceutical Analysis, Zhejiang University, Hangzhou, PR 310031, USA (Additional Note: This address would appear to be in the People's Republic of China, but the listed address duplicates what was provided in the abstract).]

7. Kamimura H. **The fearful abuse of law-evading drugs.** Mycotoxins 2002;52(2):129. [Editor's Notes: A minor review and discussion of the title topic. Contact: Tokyo Metropolitan Research Laboratory of Public Health, Shinjuku, Tokyo, Japan 169-0073.]

8. Sensabaugh GF, Gaensslen RE. **Model standards for forensic science graduate program evaluation.** Journal of Forensic Sciences 2003;48(2):460. [Editor's Notes: Presents the recommendations of a national Technical Working Group on forensic science education and training. Contact: GF Sensabaugh, Forensic Science Group, School of Public Health, University of California at Berkeley, Berkeley, CA (no zip code was provided).]

9. Dale WM, Becker WS. **Strategy for staffing forensic scientists.** Journal of Forensic Sciences 2003;48(2):465. [Editor's Notes: Presents a conversational overview of the difficulties faced by public forensic laboratories in finding and retaining technical staff. Contact: WM Dale, NYPD Laboratory, 150-14 Jamaica Avenue, Jamaica, NY 11432.]

10. AnoCody JT, Valtier S. **Differentiation of the 2,3-methylenedioxy regioisomer of 3,4-MDMA (Ecstasy) by gas chromatography-mass spectrometry.** Journal of Analytical Toxicology 2002;26(7):537. [Editor's Notes: Presents a methodology for differentiating the regioisomers of MDMA by GC/MS; primary application is for analysis of biological fluids. Contact: AMEDD C&S, MCCS-HMP, Houston, TX 78234.]

11. Fang C, Liu J-T, Lin C-H. **Determination of lysergic acid diethylamide (LSD) by application of online 77K fluorescence spectroscopy and a sweeping technique in micellar electrokinetic chromatography.** Talanta 2002;58(4):691. Presents the development and use of the title technique for the ultra-sensitive detection of LSD in urine.]

12. Gartsev NA, Semeikin NP, Sharshin YA, Pomozov VV, Trushkov VN, Alekseev NP, Galev AV, Semin GK. **Device for detection of explosives and narcotics.** RU 2190842 C1 10 Oct 2002. CLASS: ICM: G01N024-00. APPLICATION: RU 2001-118733 9 Jul 2001. [Editor's Notes: Presents a detection device based upon nuclear quadruple resonance (Additional Note: "Quadruple" *may* be an incorrect translation of quadrupole; unclear). This patent is written in Russian. Contact: No contact information was provided.]

* * * * * * * * * * * * * * * * * * * * * * * * *

THE DEA FY - 2003 STATE AND LOCAL FORENSIC CHEMISTS SEMINAR SCHEDULE

The remainder of the FY - 2003 schedule for the DEA's State and Local Forensic Chemists Seminar is as follows:

June 9 – 13, 2003
September 15 – 19, 2003

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 in Northern Virginia, near the Washington/Dulles International Airport. For additional information, eligibility requirements, or to enroll, see the September 2002 issue of *Microgram Bulletin*, or call 703 668-3337.

* * * * * * * * * * * * * * * * * * * * * * * * *

EMPLOYMENT OPPORTUNITIES

1. Johnson County Sheriff's Office Criminalistics Laboratory (2 Positions) (Second Posting)

Position 1: DNA Technical Leader/ Forensic Chemist
Location: Mission, Kansas (Kansas City metropolitan area)
Salary: $50,564.80 to $72,280.00 per year
Application Deadline: Open Until Filled

Duties: This position will serve as the laboratory's DNA Technical Leader and section coordinator. The major duties of this position include overseeing the technical operations of the Biology Section to ensure compliance with the American Society of Crime Laboratory Directors/Laboratory Accreditation Board Standards (ASCLD/LAB) as well as the Quality Assurance Standards for Forensic DNA Testing Laboratories standards. In addition, this position will have some casework responsibility; including evaluating the nature, origin and significance of physical evidence both in the laboratory and at crime scenes; performing physical, chemical, biochemical and genetic analysis of biological material associated with evidence using DNA analysis methods; maintaining laboratory records, preparing written technical reports of analysis, and providing effective expert testimony in courts of law. This position will oversee the training of laboratory examiners and the evaluation and implementation of new scientific techniques for the DNA section of the laboratory. The successful applicant will also be a commissioned Deputy Sheriff.

General Requirements: Candidates must meet the educational and experience requirements for a DNA Technical Leader as published in Section 5.2 of the Quality Assurance Standards for Forensic DNA Testing Laboratories (U.S. Department of Justice, Federal Bureau of Investigation, 07/15/98). These guidelines are available on-line at: http://www.cstl.nist.gov/biotech/strbase/dabqas.htm Candidates without a Master's degree must already possess a waiver of the degree requirements as provided in section 5.2.1.1 of the above standards. The successful candidate must also meet the minimum qualifications of a Deputy Sheriff.

The applicant will be required to successfully complete the Kansas Law Enforcement Training Center curriculum. Also, the applicant will be required to successfully complete a laboratory training program in biology and a qualifying test before beginning independent casework responsibilities.

Position 2: Firearms and Tool Mark Examiner
Location: Mission, Kansas (Kansas City metropolitan area)
Salary: $50,564.80 to $72,280.00 per year
Application Deadline: Open Until Filled

Duties: The major duties include examining firearms for function; comparison with bullets and cartridge cases; serial number restoration; GSR examination of clothing associated with firearm cases; and tool mark examinations. Other duties may be assigned based upon the qualifications of the successful applicant. The successful applicant will become a commissioned Deputy Sheriff and will be required to complete the Kansas Law Enforcement Training Center curriculum. Also, the successful applicant will be required to successfully complete a qualifying test before beginning independent casework responsibilities.

General Requirements: A minimum of three years of experience in firearm and tool mark examination. Experience must include the completion of a two-year, full-time training program under the direction of an experienced firearms and tool mark examiner. In addition, the successful candidate must have a least one-year of experience doing independent casework examination and being qualified as an expert witness in a court of law in the area of firearms and tool mark examination. Experience with the National Integrated Ballistic Information Network (NIBIN) and familiarity with the Association of Firearms and Tool Mark Examiners' (AFTE) Guidelines and the American Society of Crime Laboratory Directors/Laboratory Accreditation Board's (ASCLD/LAB) Standards is desired. Applicants must also meet the minimum qualifications of a Deputy Sheriff.

Application Procedures for both Positions: Applications can be obtained by contacting the Sheriff's Department Personnel Division at the following address.

Johnson County Sheriff's Department, Personnel and Training, 125 N. Cherry, Olathe, KS 66061; Phone: (913) 791-5511 (or Toll Free at: (866) 262-3744)

Additional Information about this position can be obtained from Director L. Keith Kerr at the Crime Laboratory by calling: (913) 826-3209.

The Johnson County Sheriff's Department does not discriminate on the basis of race, color, national origin, sex, religion, age, or disabled status in employment or the provision of programs and services.

* * * * *

2. Oklahoma State Bureau of Investigation (Second Posting)
Position: Senior Criminalist, Drug Analysis
Location: Lawton, Oklahoma
Salary: $46,250 per year
Application Deadline: Open Until Filled

Duties: Plan and perform advanced scientific and technical analysis of physical evidence in criminal cases, report on, and testify in court as expert witness. Successful applicants for OSBI Criminalist are required to become certified law enforcement officers in the state of Oklahoma, and are therefore required to satisfy related requirements, including a psychological examination. Applicants must possess the ability and willingness to perform job-related travel; willingness to carry and use deadly force, or less than lethal force, as required. Applicants must be willing and able to be called back to work at irregular times during the evenings and on weekends, willing to transfer where needed and to accept assignments anywhere in the state.

Minimum Requirements: A baccalaureate degree in Chemistry, Biochemistry, Criminalistics, Forensic Science, or a closely related field and three years or more of experience as a laboratory criminalist. Preference is given to those applicants whose coursework includes General Chemistry, Organic Chemistry, and Analytical Chemistry. The required experience must be in the analysis and identification of controlled dangerous substances (drugs) and marijuana, and/or in the analysis and identification of controlled substances (drugs) and alcohol in human blood, all using GC and GC/MS instrumental analysis.

Application Procedures: Application Procedure: Send resume and photocopy of all transcripts (certified copies are not required) to:

Phyllis Decker, HR Management Specialist
OSBI Human Resources Section
6600 North Harvey
Oklahoma City, OK 73116
Fax: (405) 842-0675
E-mail: phyllisd@osbi.state.ok.us

* * * * * * * * * * * * * * * * * * * * * * * * *

SCIENTIFIC MEETINGS

1. **Title: Mid-Atlantic Association of Forensic Sciences (MAAFS) Annual Meeting** (First Posting)
Sponsoring Organization: Mid-Atlantic Association of Forensic Sciences
Inclusive Dates: May 5 - 9, 2003
Location: Annapolis, MD (Sheraton Barcelo)
Meeting Registration Procedure, Deadline, and Costs: [See website]
Recommended Lodging (Registration Deadline and Costs): [See website]
Contact Individual's Name, Phone Number, and email Address: [See website]
Website: [www.maafs.org/annualmeeting.htm]

* * * * *

2. **Title: Annual New England Seminar in Forensic Sciences** (First Posting)
Sponsoring Organization: Colby College, Special Programs
Inclusive Dates: August 10 - 14, 2003
Location: Colby College, Waterville, ME
Meeting Registration Procedure, Deadline, and Costs: [See website]
Recommended Lodging (Registration Deadline and Costs): [See website]
Contact Individual's Name, Phone Number, and email Address: Jesse Davis, 207/872-3386 (FAX -3383), summer@colby.edu
Website: [www.colby.edu/spec.prog/cme..html]

* * * * *

3. **Title: 3rd European Academy of Forensic Science Triennial Meeting** (First Bimonthly Posting)
Sponsoring Organization: European Academy of Forensic Science
Inclusive Dates: September 22 - 27, 2003
Location: Instanbul, Turkey (Instanbul Convention Centre)
Meeting Registration Procedure, Deadline, and Costs: [See website]
Recommended Lodging (Registration Deadline and Costs): [See website]
Contact Individual's Name, Phone Number, and email Address: [No Contact Name Provided, +90 212 287-5800 (FAX 263-4581, eafs2003@enfsi.org]
Website: [www.eafs2003.enfsi.org]

* * * * * * * * * * * * * * * * * * * * * * * * *

THE JOURNAL/TEXTBOOK COLLECTION EXCHANGE

FREE TO ANY SUBSCRIBER

1) ***Microgram* Archives - Final Offer**

In mid-2002, the Office of Forensic Sciences completed a comprehensive reorganization and inventory of its entire *Microgram* archive 1967 – 2002. As a result, several thousand excess monthly issues, dating

back to 1971, were identified. These issues were first offered in the September 2002 issue of *Microgram Bulletin*, with the specification that they were intended to fill "holes" in existing collections (not to create new, partial collections), and over 500 issues were requested in that spirit. The remaining issues are now available to any current *Microgram* subscribing office **that has a law enforcement affiliation** (all issues 1967 to 2002 were and remain law enforcement restricted). The Office also has several dozen "bound" (2 year) issues, and these are available to libraries only at this time.

All issues are now available on a first come/first serve basis, including to those who wish to create a "best possible" partial collection. Note that there are many gaps in the available archive (including many entire years), and only a very few available copies for other issues. It is therefore quite unlikely that any request can be completely satisfied. Also note that the condition of the available issues vary from "mint" to only "fair".

Requests should be emailed to the *Microgram* Editor at: microgram_editor@mailsnare.net Requests should include complete mailing address information. Note that the entire remaining collection will eventually be destroyed, so interested subscribers should respond as soon as possible. [Note: Postage will be covered by the DEA Office of Forensic Sciences.]

* * * * *

2) ***Journal of Chemical Information and Computer Sciences*** **Collection - Final Offer**

The following, partial collection of the journal *Journal of Chemical Information and Computer Sciences* is offered free of charge to any subscriber who wants it, on an all-or-nothing basis (i.e., no "cherry picking" of single issues). Note that the focus of this journal is primarily theoretical in nature (i.e., it is not an analytical journal). Libraries will be given preference. If interested, please contact the Editor at: microgram_editor@mailsnare.net [Note: Postage will be covered by the DEA Office of Forensic Sciences.]

Journal of Chemical Information and Computer Sciences - 1995 - 1999 (missing 1995(6) and 1998(5)).

If there are no responses, this collection will be discarded one month after the hard copy of the April 2003 issue (this issue!) is mailed; therefore, interested subscribers should contact the Editor as soon as possible.

* * * * *

3) **FBI *Crime Laboratory Digest***

The following issues of the FBI's *Crime Laboratory Digest* are offered to any current *Microgram* subscribing office **that has a law enforcement affiliation** (all issues are law enforcement restricted):

Year;Volume(Number)

1984;11(4)
1985;12(1)
1986;13(3) and (4)
1987;14(1), (2), (3), and (4)
1988;15(1) and (3)
1989;16(2)
1990;17(1)

1992;19(1) and (2)
1993;20(1), (2), and (4)
1994;21(4)
1995;22(4)
1996;23(2)

If interested, contact the donor at: rparsons@ircc.edu

Note that the next offering of journals and textbooks will be in the July 2003 issue of *Microgram Bulletin*. Subscribers who are interested in donating items or collections should consult the *Microgram* website for instructions.

* * * * *

Special Request for 2003 Journals (from the Harrison Medical Library / Johns Hopkins Bayview Medical Center)

Recently, a large journal subscription vendor went bankrupt. Many libraries had already paid for their 2003 journal subscriptions, but the vendor had not paid the publishers before filing for bankruptcy. Due to fiscal restraints and unfavorable budgetary timelines, most of the libraries that were caught up in this situation will not be able to reorder their journals.

We are seeking to help these libraries get through this crisis. You can help. If you subscribe to **any** 2003 journal, but do not retain your issues after reading them, and are willing to donate them, please let me know (contact info below). I will in turn offer these issues to any libraries needing them. Thank you in advance for your help.

Tillie Horak
Library Information Specialist
Harrison Medical Library
Johns Hopkins Bayview Medical Center
4940 Eastern Avenue
Baltimore, MD 21224

Phone: 410/550-0678
FAX: 410/550-2465

email: thorak@jhmi.edu

* * * * *

* * * * * * * * * * * * * * * * * * * * * * * * *

Computer Corner #169

DEA Digital Evidence Laboratory Established

by Michael J. Phelan
DEA Special Testing
and Research Laboratory

Effective January 23, 2003 DEA elevated its forensic digital evidence program to full laboratory status, establishing the Digital Evidence Laboratory in Lorton, Virginia (about 20 miles south of Washington, DC). The decision to create a separate laboratory dedicated to digital evidence signified the increasing importance of the program within DEA.

The Trend

The concept of a Digital Evidence Laboratory is not new either in law enforcement or in the private sector. Both the FBI and the Department of Defense already have well established laboratories, staffed by full time examiners who are highly experienced in the examination of computers and similar electronic devices seized in criminal cases. Computer forensics laboratories also exist within the private sector; typically, however, these latter programs process civil discovery tasks involving large amounts of corporate computer data (for example, searches for pertinent documents involved in tobacco, asbestos, or other product liability lawsuits), or provide in-house examination support for investigations involving computer security or computer or Internet misuse. In a related endeavor, some private sector laboratories specialize in highly technical data recovery from damaged hard drives and other storage media. This latter specialization has become increasingly important when essential data on hard drives are intentionally or inadvertently damaged.

A Short History

DEA has operated a formal digital evidence program since October 1994. Initially, the function was assigned to DEA's Engineering Section. A new Unit, designated "Computer Forensics", was established within the Section, and was tasked with developing the necessary protocols to recover, in a court admissible manner, information of investigative value from the hard drives of seized computers. DEA (correctly) surmised that such information could greatly assist the identification of co-conspirators, trafficker assets, and related information.

When first started, the initial feeling within the Engineering Section was that the already extensive diversity and complexity of computer technology would make timely data recovery very challenging. Despite these difficulties, however, the program was an immediate success.

In June 1999, the Computer Forensics Unit was reassigned to the DEA Office of Forensic Sciences, and then relocated to the Special Testing and Research Laboratory (then located in McLean, Virginia). Six years of successful operations by the Unit had proved that hard drive data recovery was very valuable to drug investigations. The reassignment to the Office of Forensic Sciences took the already established engineering capability and supplemented it with basic forensic science operational protocols, including evidence handling and accountability, examiner proficiency testing, sub-discipline accreditation, and method validation. The reassignment was also made in anticipation that the prosecutors, defense attorneys, and judges would expect the same level of proficiency from Computer Forensics that they received from the other, more established forensic sub-disciplines such as fingerprint identification, drug analysis, or DNA testing.

By January 2003, the Computer Forensic Group of the DEA Special Testing and Research Laboratory had grown to 17 personnel, and the program had been relocated from McLean to Lorton because of its growing size. DEA also recognized that the Digital Evidence program merited greater organizational visibility commensurate with its specialized role within DEA. In fact, the name of this new DEA laboratory (Digital Evidence) symbolized the technical reality that computers, the Internet, and

digital communications are rapidly converging, and also that a wide variety of digital consumer electronic devices could and likely would be submitted as evidence. The Digital Evidence Laboratory has therefore developed examination protocols for both seized computers and also volatile memory devices such as two-way pagers, satellite phones, personal digital assistants, and GPS navigational devices.

Scope of Operation

Unlike the DEA's other eight laboratories, which service either a specific region of the United States or the DEA foreign offices, the Digital Evidence Laboratory services all DEA offices, both domestic and abroad.

Organizational Strategy

Continued examiner staffing shortages, and anticipated budget constraints, will require DEA to maintain a centralized program for the immediate future in order to maximize its limited resources. In the longer term, distributing some digital evidence analysis capability to the other DEA laboratories may be considered in order to enhance field response times.

Centralized operations have several advantages:

Technical Synergism

First, the consolidation of relatively scarce technical personnel at one location allows for cooperation and synergism among the laboratory examiner staff. This manifests itself in several ways, such as group problem solving and cooperative assistance in training new examiners.

Specialization

A second benefit of centralization is specialization. The hiring and training of the examiner staff can be customized to meet the technical demands of the parent organization. At DEA, there is a heavy demand for examination of Windows-based stand-alone computers, Windows NT- or 2000-based business servers, SCO Unix-based systems hosting specialized pharmacy database software, and consumer digital communication electronic devices. Other organizations will likely have different specialization requirements.

Cost Savings

A third and very important advantage of centralization is cost savings. DEA's Digital Evidence Laboratory shares many specialized resources, thereby maximizing the utility of the personnel, computer equipment, and software. For example, DEA operates a single, dedicated computer to crack file passwords (usually a very time-consuming task). Use of this specialized computer therefore eliminates the need for the examiners to process password cracking software on their examination computers, thereby freeing up the latter computers to complete all of the other tasks required for a typical examination in a more timely fashion. Similarly, only a few portable computer systems are needed in order to handle on-site hard drive duplication requests from the field.

Economy of Scale

A fourth important benefit of centralization is its economy of scale. Several expensive laboratory infrastructure components are almost infinitely scaleable. For example, a properly designed evidence vault can store 500 computers as easily as it can store 50 computers. A technical library can support 100 examiners as easily as 10 examiners. An alarm system can protect a 10,000 square foot laboratory as easily as a 1,000 square foot facility.

Parallel Evolution

The establishment of a Digital Evidence Laboratory by DEA parallels the recent recognition by ASCLD/LAB of the digital evidence sub-discipline (see Computer Corner #168 for more on ASCLD/LAB accreditation of digital evidence programs). Member laboratories can now have their digital evidence programs inspected and accredited. Three specialty areas are now recognized by ASCLD/LAB – Computer Forensics, Digital Audio Forensics, and Digital Video Forensics.

The Challenge

Laboratory managers need to assess if the time has come to include a digital evidence section within their crime laboratory system. Most law enforcement organizations already have such programs, although only a small minority of these programs are organized within these organizations' respective crime laboratories. Most programs within criminal law enforcement organizations

are currently considered to be an investigative methodology.

In the private sector, computer forensic laboratories have evolved within the corporate IT computer security sector, or as part of their litigation support/audit staff. At present, in the private sector, individual examiner qualifications and/or external certifications are considered to be more important than program accreditation.

The high standards required in judicial discovery will have a significant future impact on how both government law enforcement agencies and private sector computer forensic organizations manage their digital evidence programs. One key component to success will be how their programs are organized.

Questions or comments:
E-mail: mphelan@erols.com