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. XXXVII, NO. 7 JULY 2004

- INTELLIGENCE ALERT -

5-METHOXY-*ALPHA*-METHYLTRYPTAMINE (5-MeO-AMT) IN COMMERCIAL BREATH FRESHENING DROPPER BOTTLES IN HOKE COUNTY, NORTH CAROLINA AND ONTARIO, OREGON

The North Carolina State Bureau of Investigation's Drug Laboratory (Raleigh, North Carolina) recently received a submission of four small squeeze bottles of commercial peppermint-flavored breath freshening drops, suspected to contain LSD (see Photo 1). The bottles were seized by the Hoke County Sheriff's Office during a traffic stop in Hoke County, North Carolina (located in the southeastern part of the state). Each bottle was one-half to three-quarters full of a slightly yellowish liquid (net total volume approximately 394 drops) with an odor of peppermint. The suspect stated that the bottles contained LSD, and the liquid in fact field-tested positive for LSD. Analysis by GC/MS, however, indicated not LSD but rather 5-methoxy-*alpha*-methyltryptamine

Photo 1

(5-MeO-AMT) in all four bottles (not quantitated). The analysis also identified menthol, suggesting that the drug was added to the breath freshening solution (not that a solution of the drug was substituted for the breath freshening solution). The laboratory has previously encountered commercial breath freshening dropper bottles containing solutions of LSD; however, this was the first submission of 5-MeO-AMT in liquid form to the laboratory.

- - - - - - - - - -

The Oregon State Police Forensic Services Division Laboratory (Ontario, Oregon) recently received a single squeeze bottle of a commercial, spearmint-flavored breath freshening solution, suspected to contain a controlled substance (identity unknown). The exhibit was seized by the Ontario City Police at an express mail facility. The bottle (label partially removed; see Photo 2) contained a clear liquid (total net volume approximately 3.5 milliliters) with a slight odor of spearmint. Analysis by GC/MS indicated 5-methoxy-*alpha*-methyltryptamine (5-MeO-AMT), probably dissolved in water (not quantitated). The only slight odor of spearmint suggested that the original breath freshening solution had been removed and replaced with the solution of 5-MeO-AMT. The suspect in the case is suspected to have synthesized the drug himself (no further details provided).

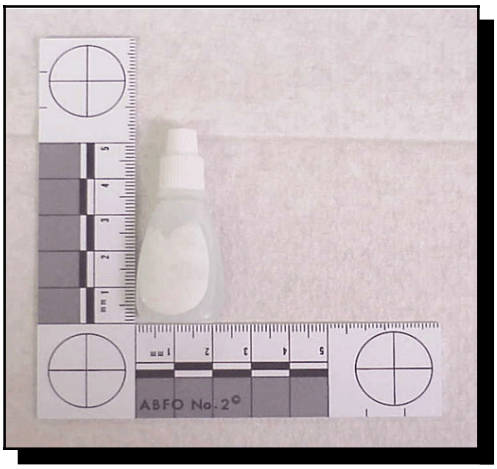

Photo 2

Within a week of the submission of the above exhibit to the Ontario Laboratory, the Oregon State Police Forensic Services Division Laboratory (Springfield, Oregon) received a submission of two capsules containing an off-white powder (total net mass 0.2 grams) and a paperfold of an off-white powder (total net mass 0.1 grams), all suspected methamphetamine (photos not available). The exhibits were seized by the Lincoln City Police Department, pursuant to a shoplifting arrest (Lincoln City is located on the Pacific coast, about 50 miles west of Salem). The suspect in the case claimed that the material was Vitamin B (field testing was not performed). Analysis by GC/MS, however, indicated not methamphetamine but rather 5-methoxy-*alpha*-methyltryptamine (5-MeO-AMT) (not quantitated).

* * * * *

- INTELLIGENCE ALERT -

BULK MARIJUANA IN COMPUTER CASES IN PEORIA, ARIZONA

The Arizona Department of Public Safety Central Regional Crime Laboratory (Phoenix, Arizona) recently received two “tower”-style computer cases containing five bundles of plant material (see Photo 3, next page), plus eight additional bundles of similarly packaged plant material removed from two other computer cases (not submitted), all suspected marijuana. The exhibits (total gross mass 50.06 kilograms) were seized by the Peoria Police Department

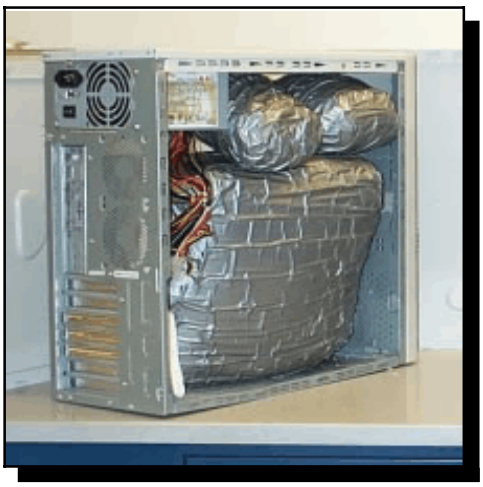

Photo 3

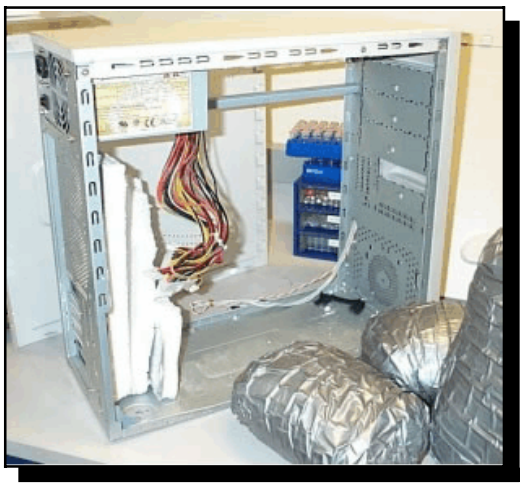

Photo 4

(circumstances of seizure not reported; Peoria is a suburb of Phoenix). Each bundle was wrapped with layers of plastic wrap and mustard, then duct-taped. With the exception of the power supplies, the two submitted computer cases had been emptied to provide space for the bundles (see Photo 4). In addition, the vent areas of the cases were blocked (on the inside) with pieces of styrofoam and metal foil. The computer cases were each packaged inside a plastic bag with formed styrofoam packing pieces, which were inside separate factory-labeled cardboard boxes. Finally, both boxes were packed into a single larger shipping box. It is assumed that the non-submitted computer towers were packaged in a similar manner. Analysis of the plant material by microscopic examination and the Duquenois-Levine color test confirmed marijuana. Although the laboratory frequently encounters these types of bundles, this was the first submission of marijuana bundles packed inside computer cases.

* * * * *

- INTELLIGENCE ALERT -

SOY-BASED LECITHIN TABLETS (CONTAINING A HEROIN/COCAINE MIXTURE) IN LONG ISLAND, NEW YORK

The Forensic Evidence Bureau of the Nassau County Police Department (Long Island, New York) recently received three brown plastic bottles containing a total of 425 brownish/tan tablets, suspected heroin (see Photo 5). The bottles had been mailed to a local residence from Bogota, Colombia and were seized by the Nassau County Police Department. Each bottle was labelled in Spanish as containing soy-based lecithin tablets (a phosphorus-containing "neutraceutical"), with additional information indicating the contents were a natural vitamin

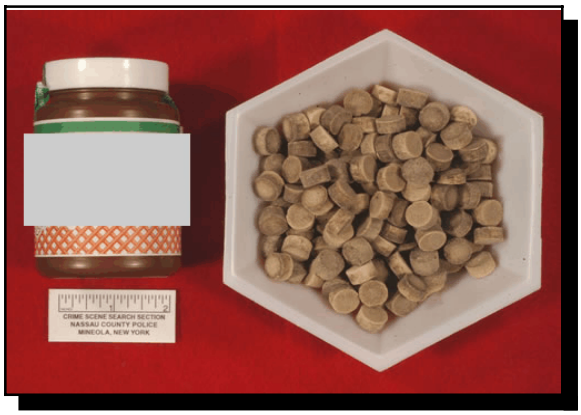

Photo 5

supplement. Each tablet was convex on one side, flat on the opposite side, 0.5 inch in diameter, and weighed an average of 1.142 grams (total net mass of all tablets 485.4 grams) (see Photo 6). Analysis by color testing, TLC, and GC/MS, however, indicated not just heroin but rather a mixture of heroin and cocaine (not quantitated, but in an approximate 60:35 ratio based on the Total Ion Chromatogram). Small amounts of acetylcodeine, monoacetylmorphine, and papaverine were also identified. This is the first ever submission of a heroin/cocaine mixture in tablet form to the laboratory (in fact, the laboratory has never previously encountered either heroin or cocaine in tablet form).

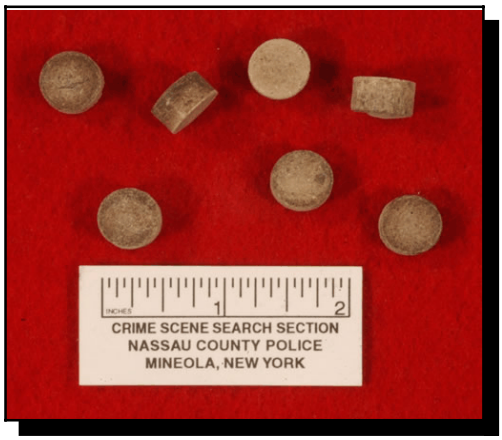

Photo 6

* * * * *

- INTELLIGENCE ALERT -

POWDERED COCAINE HYDROCHLORIDE IN CANS AND LIQUOR BOTTLES FROM EL SALVADOR

The DEA Mid-Atlantic Laboratory (Largo, Maryland) recently received four 30 ounce aluminum cans commercially labelled as "Corazón de Palmito" / "Heart of Palm" each containing tightly packed bundles of white powder (see Photo 7), and two brown glass 750 mL liquor bottles, one commercially labelled as containing rum and the other missing its label, each containing aluminum foil wrapped white powder (Photo 8), all suspected cocaine.

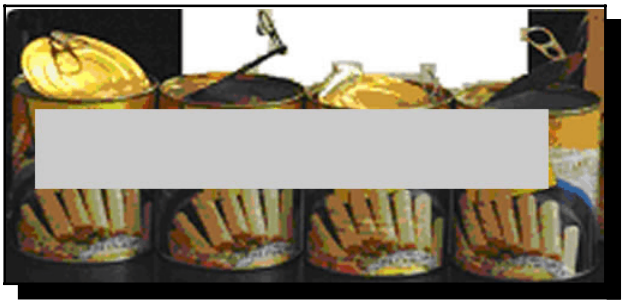

Photo 7

The exhibits originated in El Salvador, and were seized by Immigration and Customs Enforcement agents at Dulles International Airport (Dulles, Virginia). Analysis of the powder (total net mass 2,925 grams) by FT-IR, GC, and GC/MS confirmed 78 percent and 52 percent cocaine hydrochloride, respectively (cuts not identified). The information on the labelled bottle indicated that the rum was a product of Guatemala. The laboratory has previously received liquor bottles used for smuggling controlled substances, but not in this particular manner.

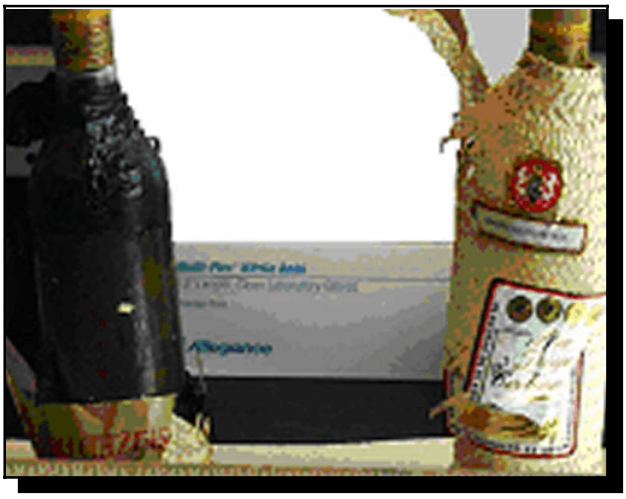

Photo 8

- INTELLIGENCE ALERT -

LARGE SEIZURE OF EPHEDRINE AND PSEUDOEPHEDRINE IN BLAINE, WASHINGTON

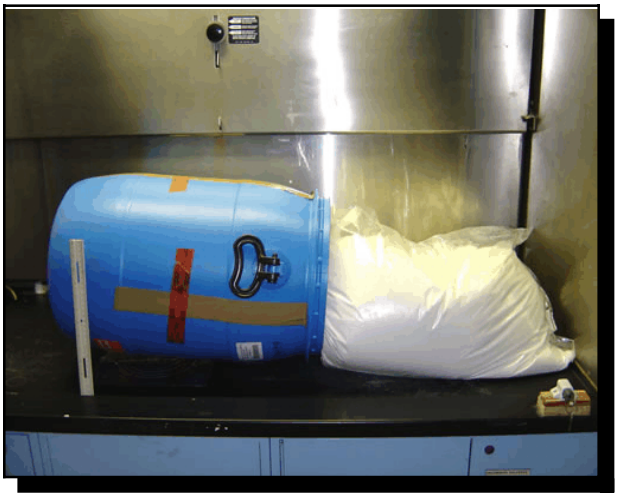

Photo 9

The DEA Western Laboratory (San Francisco, California) recently received an unusual submission consisting of two unlabelled, medium-sized, blue plastic barrels, each containing double-bagged plastic bags of white crystalline powder, suspected pharmaceutical grade pseudoephedrine (see Photo 9). The barrels (dimensions approximately 23 inches high and 46.5 inches in circumference around the center (widest) section) originated in Canada and were intercepted by Immigration and Customs Enforcement agents at the Blaine, Washington POE. Analysis of the powder (total net weights of 25.13 and 24.91 kilograms, respectively) by FTIR, GC/FID, and HPLC confirmed 100 percent *d*-pseudoephedrine hydrochloride in the first barrel, but 100 percent *l*-ephedrine hydrochloride in the second barrel. This is the largest such submission of bulk pharmaceutical ephedrine or pseudoephedrine to the laboratory in over five years.

* * * * *

- INTELLIGENCE ALERT -

MDMA LABORATORY SEIZED IN NASHVILLE

[From the NDIC *Narcotics Digest Weekly* 2004;3(23):2
Unclassified, Reprinted with Permission.]

On May 8, 2004, officials from DEA, Tennessee Bureau of Investigation (TBI), Nashville Metropolitan Police Department, and the Murfreesboro Police Department seized a fully operational MDMA laboratory in Nashville. On May 7, 2004, the Murfreesboro Police Department responded to a medical call regarding an unconscious male at a local hotel. When officers arrived at the hotel, they found the man conscious and in possession of one capsule of a white powdery substance subsequently determined to be MDMA. The man informed officers that he had obtained the capsule from another man staying at the hotel who was in possession of additional capsules. Officers proceeded to the man's room and found it occupied by a male and a female. The officers requested and obtained consent to search the room, where they discovered 65 capsules containing MDMA. The male occupant of the room informed officers that he had obtained the MDMA from a source in Nashville and had subsequently placed an order for an additional 100 capsules to be delivered to the hotel. The source was arrested when he arrived at

the hotel to deliver the drugs. Officers interviewed the source, who informed them that he had been manufacturing MDMA in his apartment in Nashville since September 2003. Officers from the Murfreesboro Police Department, along with officers from DEA, TBI, and the Nashville Metropolitan Police Department, obtained and executed a search warrant at the man's apartment on May 8, 2004. They discovered various chemicals used in the production of MDMA including sassafras oil, benzoquinone, hydrogen chloride, palladium chloride, and nitromethane as well as empty capsules, laboratory equipment, and buckets of chemical waste. The man was arrested and charged federally with possession of MDMA with intent to distribute, distribution of MDMA, and possession of chemicals and equipment with reasonable cause to believe they will be used in the manufacture of a controlled substance.

NDIC Comment: Most of the MDMA available in the United States is produced in clandestine laboratories in the Netherlands and Belgium. Domestic production remains limited, as evidenced by few MDMA laboratory seizures. According to the DEA El Paso Intelligence Center (EPIC) National Clandestine Laboratory Seizure System (NCLSS), law enforcement agencies reported only three domestic MDMA laboratory seizures in 2003 - one each in Florida, Louisiana, and Texas. As of May 28, 2004, law enforcement officials reported six domestic MDMA laboratory seizures - one each in California, Florida, North Carolina, Pennsylvania, South Dakota, and Tennessee.

[Editor's Note: The presence of *para*-benzoquinone and palladium chloride at the laboratory indicated that the operator was using the Wacker oxidation technique for production of MDP2P. The Wacker technique is now in use all across the U.S.]

* * * * *

- INTELLIGENCE ALERT -

FIRST METHAMPHETAMINE LABORATORY SEIZED IN VERMONT

[From the NDIC *Narcotics Digest Weekly* 2004;3(25):3
Unclassified, Reprinted with Permission.]

On June 1, 2004, troopers from the Vermont State Police Drug Task Force seized an operational methamphetamine laboratory from a rental home located in a rural area near Shrewsbury and arrested two men on felony charges of manufacturing a regulated drug. According to investigators, the men - Arkansas residents who were working construction jobs in Missouri - traveled to Vermont in the week prior to their arrests to meet with a Vermont resident who had worked with them in Missouri. On their way to Vermont, the defendants allegedly obtained quantities of ephedrine and other supplies commonly used to manufacture methamphetamine. After arriving in Vermont, they and other associates including their former coworker and his girlfriend traveled to numerous local retail stores to purchase additional quantities of over-the-counter products such as bottles of pseudoephedrine, boxes of matches, and other items used to manufacture methamphetamine. After acquiring the necessary components and chemicals, the defendants set up a laboratory at the residence of their former coworker and his girlfriend and produced at least three batches of methamphetamine prior to their arrest.

NDIC Comment: Most methamphetamine production occurs in the Pacific, Southwest, and West Central regions of the country. Limited but increasing methamphetamine production occurs in the Northeast/Mid-Atlantic region. According to the DEA El Paso Intelligence Center (EPIC) National Clandestine Laboratory Seizure System (NCLSS), authorities report that 140 methamphetamine laboratories were seized in the Northeast/Mid-Atlantic region in 2003, an increase from 94 in 2002. According to officials from the Vermont State Police, this is the first methamphetamine laboratory seized in the state.

* * * * *

- INTELLIGENCE BRIEF -

NATIONAL DRUG THREAT ASSESSMENT 2004 SPOTLIGHT: MDMA

[From the NDIC *Narcotics Digest Weekly* 2004;3(25):4
Unclassified, Reprinted with Permission.]

According to the National Drug Threat Assessment 2004 released by NDIC in April 2004, the trafficking and abuse of MDMA (3,4-methylenedioxymethamphetamine) pose a moderate threat to the United States. Law enforcement reporting indicates that MDMA (also known as ecstasy) is readily available in all regions of the country, particularly in metropolitan areas, and that availability is stable overall. National Drug Threat Survey 2003 data reveal that 54.1 percent of state and local law enforcement agencies nationwide describe MDMA availability as high or moderate. Regionally, a greater proportion of agencies in the Northeast/Mid-Atlantic and Southeast regions report high or moderate availability than those in the Pacific, Southwest, Great Lakes, and West Central regions. The overall demand for MDMA in the United States is high, although national-level prevalence data indicate that MDMA use is trending downward, particularly among adolescents.

Most of the MDMA available in the United States is produced in clandestine laboratories located in the Netherlands and Belgium and, to a much lesser extent, in other foreign countries such as Canada and Mexico. Domestic MDMA production remains limited, as evidenced by few domestic MDMA laboratory seizures. MDMA is transported from Europe to the United States by couriers on commercial flights, via mail and package delivery services and, to a lesser extent, by air cargo and maritime vessels. MDMA is distributed in all regions of the United States, and law enforcement reporting indicates that distribution of the drug appears to be relatively stable to slightly increasing. Israeli and Russian criminal groups control most wholesale MDMA distribution in the United States; however, Asian, Colombian, Dominican, Middle Eastern, and traditional organized crime groups also distribute wholesale quantities of MDMA. Caucasian males aged 18 to 30 control most retail distribution of MDMA that generally occurs where teens and young adults congregate. The primary market areas for MDMA are Los Angeles, Miami, and New York.

* * * * *

- INTELLIGENCE ALERT -

SUSPECTED PSILOCYBIN MUSHROOM CULTIVATION OPERATION SEIZED [IN ESPANOLA, NEW MEXICO]

[From the NDIC *Narcotics Digest Weekly* 2004;3(26):2
Unclassified, Reprinted with Permission.]

On May 17, 2004, New Mexico State Police narcotics agents seized a suspected psilocybin mushroom cultivation operation located in an Espanola residence. The mushroom grow operation was uncovered during the execution of a search warrant issued in connection with the investigation of a suspected cocaine distributor. A male occupant of the residence, who was the target of the cocaine investigation, was arrested on an outstanding warrant for methamphetamine production in Farmington and subsequently admitted to operating the mushroom grow site. The grow was located in a bedroom within the residence. Mushroom cultures were placed in glass jars containing rice and placed in three separate refrigerators in the bedroom. The refrigerators were covered with a plastic tent and equipped with a humidifier to aid growth. Over 500 jars of cultures and mushrooms were seized.

NDIC Comment: Psilocybin mushrooms contain psilocybin, a Schedule I controlled substance that may induce hallucinations. Psilocybin mushrooms often are available at raves, dance clubs, and college campuses and are most commonly abused by teenagers and young adults. While seizures of personal use amounts (usually one-quarter-ounce quantities) of psilocybin mushrooms are common in northern New Mexico, a seizure of this magnitude is extremely rare and represents the first large-scale production site seized in the area. Additionally, this case demonstrates a trend toward polydrug distribution. The defendant, whose illegal activities allegedly included cocaine distribution, methamphetamine production, and mushroom cultivation, is one of an increasing number of drug traffickers who distribute more than one drug.

* * * * *

- INTELLIGENCE BRIEF -

LICIT POPPY CULTIVATION IN INDIA

During a recent training assignment in India, two DEA Forensic Chemists received a rare opportunity to visit the Government of India's legally grown opium poppy fields. India is the world's largest legal producer of opium. The legal opium poppy fields are distributed in the northern states of Uttar Pradesh, Rajasthan, and Madhya Pradesh. The two chemists visited some of the fields in the Neemuch District in Madhya Pradesh. The farmers who cultivate legal opium poppies hold licenses from the Government of India. Fields are assigned to each farmer, and typically measure anywhere between 0.1 and 0.4 hectares. The Government of India predicts (and expects) an opium yield of 54 kilograms per hectare for opium fields in the Neemuch District for the 2004 harvest. This is based on research on the variety of opium poppy under cultivation, and consideration of the agronomical and climatic conditions. Similar calculations are performed for opium production in other growing regions. Farmers who do not

meet the minimum yield (for whatever reason) can lose their licenses at the end of the season. At the time of the visit, the poppy fields were being harvested. Therefore, very few poppy flowers were observed. According to the farmers, white flowers are common in the District, along with some red or pink flowers. Poppy seeds can be purchased from the local markets for cultivation. Several types of lancing and collection tools were displayed for the visiting chemists. The collection of opium using one of the specialized tools was also demonstrated for their benefit (see Photo 10). There is no mechanized harvesting employed in these fields. During their tour, the chemists observed workers lancing the capsules in a local poppy field (see Photo 11).

Photo 10

Photo 11

Once the farmers begin the harvest, collection camps are established throughout the region where Chemists and law enforcement officials from the Narcotic Control Bureau (NCB) screen the incoming opium for quality, and ensure its safe transportation to a nearby Government of India Laboratory of Opium and Alkaloid Works. Farmers are paid about 90 percent of their income at the collection camps, providing they produce the proper quantity of high-grade, unadulterated opium. According to a representative of the Government Laboratory of Opium and Alkaloid Works, adulteration is "common". However, if the chemists at the collection camps suspect adulteration, the farmers will not be paid until their product is analyzed at the laboratory. Once the opium is transported to the laboratory and analyzed for quality assurance, it is combined based on its moisture content, then dried to approximately 10 percent moisture content for export. This is done both by sun drying and by using mechanical drying methods. The export quality opium is a dry solid. Following the drying process, it is packaged in paper, then wrapped in plastic for export. The majority of the product is shipped to foreign pharmaceutical companies for alkaloid extraction.

* * * * *

CORRECTIONS, CLARIFICATIONS, AND UPDATES

ADDITIONAL INFORMATION ON THE MDMA LABORATORY IN MARION, SOUTH DAKOTA

[Editor's Preface: The June issue of *Microgram Bulletin* included an Intelligence Alert (reprinted from the NDIC's *Narcotics Digest Weekly*) that reported the seizure of an MDMA/polydrug laboratory in Marion, South Dakota (the NDIC summary indicated that a marijuana grow operation was also found, along with psilocybe mushrooms. Note that Marion is located about 30 miles west-southwest of Sioux Falls. Forensic chemists from the DEA North Central Laboratory (Chicago, Illinois) responded to this laboratory. Analysis of the chemicals on site indicated that the laboratory operator had also synthesized 4-bromo-2,5-dimethoxyphenethylamine (2C-B). The laboratory's report follows.]

Photo 12

Photo 13

Twenty-six exhibits were seized at the site and submitted to the North Central Laboratory for evaluation. Analysis by color tests, GC/MS, FTIR, GC/FID, and NMR confirmed both MDMA and 4-bromo-2,5-dimethoxy-phenethylamine (2C-B), as well as numerous precursors and reaction intermediates for MDMA and 2C-B, including safrole, isosafrole, 3,4-methylenedioxyphenyl-acetone (MDP2P), 2,5-dimethoxybenzaldehyde, and 2,5-dimethoxy-*beta*-nitrostyrene. In addition, 228.9 grams of 3,4,5-trimethoxybenzaldehyde and 11.4 grams of 3,4,5-trimethoxy-*beta*-nitrostyrene were identified, which suggested that the synthesis of mescaline was also being attempted. One of the MDMA exhibits (total net mass 38.0 grams of white, crystalline powder) was quantitated at 99+ percent. This powder was located on a plate near the glassware set-up in the laboratory (see Photo 12). The defendant claimed to have finished an MDMA synthesis 4 - 5 hours prior to the raid. The 2C-B (total net mass 5.1 grams) was not quantitated, but appeared to also be of high purity. The three safrole exhibits were quantitated at 95 percent (two exhibits of a yellowish-brown liquid) and 100 percent (one exhibit of a clear, colorless liquid), for a net total of over 500 milliliters of actual safrole. The marijuana grow had plants as tall as 3 feet (see Photo 13; total net mass approximately 550 grams). The total net mass of psilocybe mushrooms was approximately 300 grams (photo not provided). The MDMA was synthesized via the Wacker oxidation route, while the 2C-B and mescaline were being synthesized via the respective nitrostyrene intermediates. This is believed to be the first ever 2C-B laboratory seized by the North Central Laboratory.

SELECTED REFERENCES

[Notes: 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 provided by the abstracting services. In addition, in order to prevent automated theft of email addresses off the Internet postings of *Microgram Bulletin*, unless otherwise requested by the corresponding author, all email addresses reported in the *Bulletin* have had the "@" character replaced by " -at- "; this will need to be converted back (by hand) before the address can be used.]

1. Bishop SC, Lerch M, McCord BR. **Micellar electrokinetic chromatographic screening method for common sexual assault drugs administered in beverages.** Forensic Science International 2004;141 (1):7. [Editor's Notes: The title analysis was applied for detection of GHB, GBL, and eight benzodiazepines (unspecified in abstract) in spiked beverages. Contact: 136 Clippinger Laboratories, Department of Chemistry and Biochemistry, Ohio University, Athens, OH 45701.]

2. Christian DR Jr. **Analysis of controlled substances.** Forensic Science 2003:375. [Editor's Notes: Presents a review of the title topic (forensic emphasis). This is a CRC Press publication. Contact: U.S. Department of Justice, Washington, DC (zip code not provided in the abstract).]

3. Barzilov AP, Womble PC, Vourvopoulos G. **NELIS - A neutron inspection system for detection of illicit drugs.** AIP Conference Proceedings 2003;680:939. [Editor's Notes: Presents a Neutron Elemental Inspection System for inspection of cargo pallets. Contact: Applied Physics Institute, Western Kentucky University, Bowling Green, KY 42101.]

4. Rudolf PM, Bernstein IBG. **Counterfeit drugs.** New England Journal of Medicine 2004;350:1384. [Editor's Notes: No abstract provided. Contact: Food and Drug Administration, Rockville, MD (zip code not provided in the abstract).]

5. Yinon J. **Advances in forensic applications of mass spectrometry.** CRC Press LLC:Boca Raton, FL, 2004. [Editor's Notes: No abstract provided. Contact: USA (no further addressing information provided in the abstract).]

6. Anonymous. **Forensic sample analysis on a microchip.** Analytical Chemistry 2004;76(7):117A. [Editor's Notes: No abstract or Contact information provided.]

7. Khedkar V, Tillack A, Michalik M, Beller M. **Efficient on-pot synthesis of tryptamines and tryptamine homologues by amination of chloroalkynes.** Tetrahedron Letters 2004;45(15):3123. [Editor's Notes: Presents the title study. Contact: M Beller, Univ Rostock, Leibniz Inst Organ Katalyse, Buchbinderstr 5-6, D-18005 Rostock, Germany.]

8. Lurie IS, Hays PA, Garcia AE, Panicker S. **Use of dynamically coated capillaries for the determination of heroin, basic impurities, and adulterants with capillary electrophoresis.** Journal of Chromatography A 2004;1034(1-2):227. [Editor's Notes: Presents the title study. Contact: IS Lurie, US Drug Enforcement Adm, Special Testing & Res Lab, 22624 Dulles Summit Court, Dulles, VA 20166.]

9. Conemans JMH, Van Der Burgt AAM, Van Rooij JML, Pijnenburg CC. **The simultaneous determination of illicit drugs with HPLC-DAD.** Bull TIAFT 2004;34(1):11. [Editor's Notes: The presented method is applied to drug powders, various dosage forms, and various biological matrices, in a clinical setting. Contact: Ziekenhuisapotheek Noordoost-Brabant, Hervensebaan 2, 5232 JL's-Hertogenbosch, The Netherlands.]

10. Liu B, Chang Y. **Solid-phase microextraction and its application in the analysis of drugs of abuse.** Zhongguo Yaowu Yilaixing Zazhi 2002;11(4):313. [Editor's Notes: Presents a review of the title topic. This article is written in Chinese. Contact: Ningbo Institute of Technology, Zhejiang University, Ningbo, Peop. Rep. China 315104.]

11. Friedman AJ. **Method for identification of flunitrazepam.** U.S. US 6713306 B1 30 Mar 2004. CLASS: ICM: G01N033-00. NCL: 436096000; 436106000;436164000; 436150000; 436901000. APPLICATION: US 2001-946225 5 Sep 2001. [Editor's Notes: Presents a field method for detection of flunitrazepam in a sample (few details provided in the abstract). Contact: R.E. Davis Chemical Corporation, USA (no further addressing information was provided).]

12. Kuo C, Nagarajan R, Bannister WW, Loder RA, Furry JW, Chen C-C. **Detection of concealed explosives and drugs by thermal analysis and thermal profiles of samples with microsensors.** PCT Int. Appl. WO 2004027386 A2 1 Apr 2004. CLASS: ICM: G01N. APPLICATION: WO 2003-US29741 22 Sep 2003. PRIORITY: US 2002-PV412619 20 Sep 2002. [Editor's Notes: Presents the title patent (the explosives and drugs were not specified in the abstract). Contact: University of Massachusetts, USA (no further addressing information was provided).]

Additional References of Possible Interest:

1. Lachance PA. **Nutraceutical/drug/anti-terrorism safety assurance through traceability.** Toxicology Letters 2004;150(1):25. [Editor's Notes: Presents an overview of techniques used to ensure traceability of nutraceutical products. Contact: The New Jersey Agricultural Experimental Station, Food Science and Center for Advanced Food Technology, The Nutraceutical Institute, 65 Dudley Road, New Brunswick, NJ 08901.]

2. Fenton JJ. **Forensic toxicology.** Forensic Science 2003:45. [Editor's Notes: Presents a review of the title topic (discussion includes (unspecified) drugs of abuse). This is a CRC Press publication. Contact: Crozer-Keystone Health Systems and West Chester University, Media, PA (zip code not provided in the abstract).]

3. Sherma J. **High-performance liquid chromatography/mass spectrometry analysis of botanical medicines and dietary supplements: A review.** J Assoc Off Anal Chem 2003;86(5):873. [Editor's Notes: Presents the title topic, with additional discussion of related techniques. Contact: Lafayette College, Department of Chemistry, Easton, PA 18042.]

4. Jacob P, Haller CA, Duan MJ, Yu L, Peng M, Benowitz NL. **Determination of ephedra alkaloid and caffeine concentrations in dietary supplements and biological fluids.** Journal of Analytical Toxicology 2004;28(3):152. [Editor's Notes: No abstract provided. Contact: P Jacob, Univ Calif San Francisco, Div Clin Pharmacol, San Francisco, CA 94110.]

5. Wickens J. **The chemistry of fingerprints.** Chemistry Review 2003;13(1):6. [Editor's Notes: A review of the title topic. Contact: Department of Chemistry, University of York, UK.]

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

NEW EMAIL ADDRESSES NEEDED

The email addresses for the following organizations have returned rejection notices to the *Microgram* Editor for the past three issues of *Microgram Bulletin*, and will therefore be dropped from the subscription list unless a corrected email address is provided by the end of July 2004. Note that the errors include anti-spamming, mailbox full, user not found, or user unknown messages. The Editor requests your assistance in contacting these organizations, determining if they wish to remain on the *Microgram* subscription e-net, and if so asking them to provide a valid email address to the Editor at: microgram_editor -at- mailsnare.net

Baltimore County Police Department Forensic Laboratory, Towson, Maryland

Michigan State Police, Bridgeport Forensic Science Laboratory, Bridgeport, Michigan

Mississippi Crime Laboratory, Jackson, Mississippi

Multi Area Narcotics Task Force, Defiance, Ohio

Nara Prefectural Police Headquarters, Forensic Science Laboratory, Nara, Japan

Orangeburg Department of Public Safety, Orangeburg, South Carolina

---

The following organizations (listed in the June issue) were dropped on 7/31/04:

Delaware Office of the Chief Medical Examiner, Wilmington, Delaware

Mississippi Crime Laboratory / Gulf Coast Branch, Biloxi, Mississippi

Tripura State Forensic Science Laboratory, West Tripura, India

USAF / AFOSI DET 303, Travis AFB, California

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

THE JOURNAL/TEXTBOOK COLLECTION EXCHANGE

There were no offerings of journals or textbooks made over the past quarter.

Subscribers are encouraged to donate surplus or unwanted items or collections; if interested, please consult the *Microgram* website for further instructions.

The next offering of journals and textbooks will be in the October 2004 issue of *Microgram Bulletin*.

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

THE DEA FY - 2004 STATE AND LOCAL FORENSIC CHEMISTS SEMINAR SCHEDULE

The remaining FY - 2004 schedule for the DEA's State and Local Forensic Chemists Seminar is as follows:

September 20 - 24, 2004

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 appended onto the October 2003 issue of *Microgram Bulletin*, and should be mailed to the Special Testing and Research Laboratory (Attention: Pam Smith or Jennifer Kerlavage) at: 22624 Dulles Summit Court, Dulles, VA 20166. For additional information, call 703 668-3337.

* *

SCIENTIFIC MEETINGS

1. Title: 14th Annual CLIC Training Seminar (Third Posting)
Sponsoring Organization: Clandestine Laboratory Investigating Chemists Association
Inclusive Dates: September 8 - 11, 2004
Location: Portland Marriott Downtown; Portland, OR
Contact Information: Pam Smith, 703/668-3337, auk.ling -at- verizon.net and Roger Ely, 415/744-7051, rogely -at- atdial.net
Website: [None]

* * * * *

2. Title: SWAFS Fall Conference (Third Bimonthly Posting)
Sponsoring Organization: Southwestern Association of Forensic Scientists
Inclusive Dates: October 11 - 15, 2004
Location: Oklahoma City, OK
Contact Information: Brandy Reese, 405/425-3857, brandyr -at- osbi.state.ok.us
Website: [www.swafs.us]

* * * * *

3. Title: Joint Meeting of the Southern Association of Forensic Scientists, the Midwestern Association of Forensic Scientists, the Mid-Atlantic Association of Forensic Scientists, and the Canadian Society of Forensic Science (Third Bimonthly Posting)
Sponsoring Organization: Southern Association of Forensic Scientists
Inclusive Dates: September 19 - 24, 2004
Location: Lake Buena Vista, FL
Contact Information: David Baer, 407/650-5152, davidb7818 -at- aol.com; Mike Healy 941/747-3011, Ext. 2280, mike.healy -at- co.manatee.fl.us
Website: [www.southernforensic.org]

* *

Computer Corner #184

Deleterious Change - Concerns and Potential Responses

by Michael J. Phelan
DEA Digital Evidence Laboratory

The proper handling and documentation of evidence has always been a critical best practice for all forensic subdisciplines, including digital evidence. However, even though digital evidence is a relatively new and somewhat unusual endeavor relative to traditional forensic disciplines, most laboratory or agency evidence policies and procedures can be easily adapted to accommodate its "everyday" requirements. After all, "evidence is evidence".

There are, however, some unique aspects of digital evidence which merit management attention, especially those that have the potential to effect deleterious change(s). In this context, deleterious changes are those which modify or destroy the evidence. Proactive actions on the part of laboratory managers in the areas of digital evidence supply kit procurement, investigator awareness training, and written evidence handling procedures can help preclude such problems.

It is important to maintain perspective in any discussions concerning digital evidence handling. Policies and procedures must address basic core concerns such as evidence paperwork documentation, accuracy of evidence descriptions, evidence labeling, evidence seals, chain-of-custody record keeping, evidence access control, and evidence storage. Evidence handling is not, however, a new concept to any law enforcement organization, and so the focus should be on adaptation of existing agency policies and procedures to the digital evidence program. There is no need to start from "ground zero".

Environmental Issues

The environmental concerns with digital evidence are few, but do merit special consideration. Certain potentially harmful conditions must be avoided. First, some digital evidence can be lost or modified by magnetic fields. Second, heat, extreme cold, high humidity, and water can affect both hardware and data contained within the hardware. Third, static discharge can be a big problem - particularly on carpeted floors in low humidity environments. Fourth, some biohazard sanitizing scanner technology (such as "e-beam" radiation used to sanitize mail (to destroy Anthrax)) can cause damage by melting some forms of plastic based storage media.

Evidence Packaging and Sealing

Another area of concern is the proper packaging of digital evidence. Most digital evidence objects do not fit into standard agency evidence envelopes. The use of tape to seal a computer case is impractical, because of the number of access gateways (CD/DVD drive, floppy drive, Zip drive, parallel port, USB port, Firewire port, PCMCIA slot, removable hard drive bays, etc.). It is therefore more practical to package and seal the entire case in a box or a large plastic bag. The use of large anti-static bags is preferred, but they are not yet commonly available. The DEA Digital Evidence Laboratory recently purchased a large lot of such bags with labels at a cost of $1.00 apiece.

In addition, computer evidence should be protected from rough handling, using packing material to offset excessive vibrations and impacts. This is particularly important when mailing evidence. While the external (metal) case itself does a reasonable job of protecting the internal components of a computer, the CPU should still be packaged to avoid damage (for example, to prevent the unseating of internal circuit boards and wire connectors).

The seizure and submission of a removed hard drive creates new challenges. In such instances, use of protective cardboard or plastic shipping cases, such as those already used in retail sales

of new or replacement hard drives, is very desirable. However, these carrying cases are not readily available.

Similarly, external storage media such as diskettes, CDs, DVDs, Zip cartridges, data tapes, and thumb drives require some protection for shipping. Even just the normal sliding around in a loosely packed sealed box or evidence bag can result in damage during transport. Floppy diskettes, tape cartridges, and Zip drive media access shields and cases can bend, crush, or crack. CDs and DVDs can be scratched. Such damage can result in the partial or complete loss of the evidence.

Need for Training

The solution to these problems is threefold. First, investigators in the field need training on how to handle, label, and package digital evidence – especially those items with which they are unfamiliar. Digital evidence laboratories need to reach out to the investigators that it serves, and provide some basic "Do's and Don't's". The recommended handling procedures for all major types of digital evidence should be provided. This can easily be accomplished by providing a simple instruction sheet during training.

Evidence Collection Kit

Second, digital evidence laboratories should provide digital evidence seizure kits to its field offices and crime scene teams. At a minimum, the seizure kit should consist of: 1) Large anti-static bags capable of securing a full tower computer; 2) Small anti-static padded bags for securing external storage media such as diskettes or tapes; 3) Paper sleeves for securing loose CDs or DVDs; 4) Large labels for identifying or differentiating evidence exhibits; 5) Plastic or card board hard drive transport boxes; 6) Plastic or metal ties to seal large bags containing digital evidence; 7) Tamper resistant evidence tape (such as saw tooth tape); 8) General evidence bags; and 9) Standard agency evidence seals. Unfortunately, there are currently no commercial sources for such kits – so a laboratory will most likely have to contract out for them, or purchase and assemble the components locally and distribute them as needed.

Finally, a ready supply of anti-vibration packaging material (e.g., Styrofoam popcorn or foam packaging) is needed for shipping evidence.

Policy and Procedure Review and Modification

Third, agency policies and procedures should be reviewed to determine their ability and adequacy to accommodate digital evidence. For example, an area that may need revision is in-process storage (that is, because the digital evidence object may be too large to fit into a standard lock box). Similarly, digital evidence lock boxes should be lined internally with bubble wrap to ameliorate potentially harmful jarring when moving a lock box between the laboratory and storage vault. Another issue that may need modification is the breaking of evidence seals on battery powered, embedded digital evidence objects (e.g., cell phones, two way pagers, and personal digital assistants (Palm and Blackberry computers)), in order to be able to plug the item into a charger or replace its batteries. [All battery powered evidence should be checked to determine if its batteries need replacement or charging - failure to do so can result in the loss of the data.]

Be Proactive

A proactive approach to digital evidence handling can prevent loss of evidence. Improved handling will also enhance the chain-of-custody. Digital evidence laboratory managers should evaluate if everything that can reasonably be done, is being done. After all, "evidence is evidence".

Questions or comments?
E-mail: mphelan -at- erols.com