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.

- AUGUST 2008 -

- INTELLIGENCE ALERT -

HEROIN PACKAGED IN FOIL BALLS IN CLEVELAND, OHIO

The Ohio Attorney General Bureau of Criminal Identification and Investigation Richfield Laboratory recently received 30 foil-wrapped plastic bags containing a reddish-brown powder, suspected heroin (see Photo 1). The exhibits were seized by the Ohio High Intensity Drug Task Force from an individual and subsequently at a residence in Cleveland (no further details). Analysis of the powder (total net mass 1,494 grams) by color testing (Marquis), microcrystal testing (mercuric iodide), and GC/MS confirmed heroin (not formally quantitated, but a high loading based on the TIC). No adulterants or diluents were identified; however, it was noted that the heroin would become sticky when exposed to air. Although the laboratory has previously received heroin in foil packets, this was the first submission of heroin in such large balls.

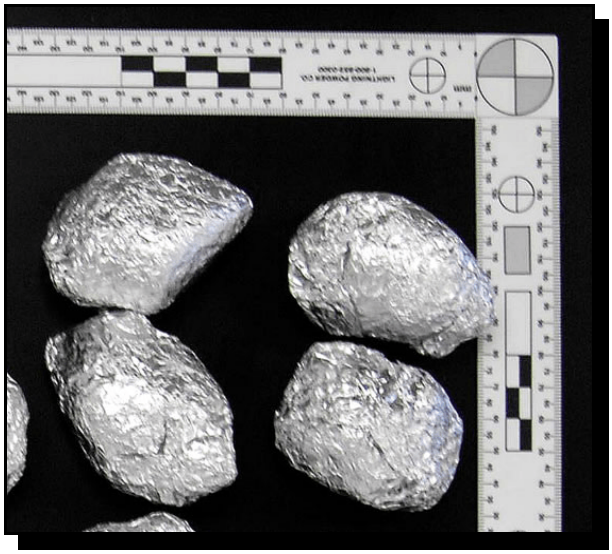

Photo 1

- INTELLIGENCE ALERT -

ECSTASY MIMIC TABLETS (ACTUALLY CONTAINING TFMPP, mCPP, CAFFEINE, AND TRACE PHENTERMINE) IN MONTGOMERY, ALABAMA

Photo 2

The Montgomery Regional Laboratory of the Alabama Department of Forensic Sciences recently received two cylindrical tablets with pink exteriors and yellow interiors, suspected Ecstasy (see Photo 2). The exhibits were seized in Tallassee, Alabama (east-northeast of Montgomery) by the Tallassee Police Department (details sensitive). The tablets (total net mass 0.45 grams) were approximately 7.1 millimeters in diameter, approximately 7.5 millimeters thick, and were unusually crude in their construction. Analysis by GC/MS (and comparisons with standards), however, indicated not MDMA but rather a 2 : 1 : 3 mixture of 1-(3-trifluoro-methylphenyl)piperazine (TFMPP), 1-(3-chlorophenyl)piperazine (mCPP), and caffeine, plus trace phentermine (not quantitated). This was the first such submission to the laboratory.

* * * * *

- INTELLIGENCE ALERT -

ECSTASY COMBINATION TABLETS (ACTUALLY CONTAINING MDMA, METHAMPHETAMINE, CAFFEINE, AND PROCAINE) ON GRAND CAYMAN (CAYMAN ISLANDS)

Photo 3

The Cayman Islands Forensic Science Laboratory (Grand Cayman) recently received a polydrug submission that included marijuana, *psilocybe* mushrooms, cocaine hydrochloride, and six round green tablets mixed with tablet fragments and green powder, suspected Ecstasy (see Photo 3); additional green powder (no tablets or fragments) was present in a separate exhibit. The exhibits were seized on Grand Cayman by the Royal Cayman Islands Police Drug Task Force. The tablets were poorly made, crumbled easily, had no discernable markings, weighed an average of 282 milligrams, and were approximately 9.1 millimeters in diameter and between 5.5 - 6.3 millimeters thick. Analysis of the tablets and powder (total net mass 4.20 grams) by color testing (Marquis - blue / black with orange speckles), GC/MS (underivatized and with MBTFA derivatization), and FTIR/ATR confirmed MDMA along with methamphetamine, caffeine, and procaine (not quantitated but in an approximate 15 : 5 : 12 : 1 ratio based on the TIC). This is

the first submission to the laboratory of this mixture of drugs, in either tablet or powder form. Of interest, the suspect was also in possession of red phosphorus, iodine crystals, and pseudoephedrine tablets; had he succeeded in synthesizing methamphetamine, this would have been the first ever seizure of a clandestine methamphetamine laboratory in the Cayman Islands.

* * * * *

- INTELLIGENCE ALERT -

ECSTASY MIMIC TABLETS (ACTUALLY CONTAINING ISOPROPYLBENZYL-AMINE, COCAINE, AND CAFFEINE) IN LOS ANGELES, CALIFORNIA

Photo 4

The Los Angeles (California) Police Department's Scientific Investigation Division Narcotics Analysis Unit recently received 19 tablets, of three different types, apparent Ecstasy (see Photo 4). The exhibits were seized in south Los Angeles by the Los Angeles Police Department (no further details). Ten tablets were green with a dolphin imprint, eight were blue with the same dolphin imprint, and one was blue without any imprint (but had the same texture as the blue dolphin tablets). Analysis of the green tablets by color testing (Wagners - brown, Marquis - yellow, and sodium nitroprusside - blue, cobalt thiocyanate - color not discernable) and of a methanolic extract by GC/MS, however, indicated not MDMA but rather a mixture of isopropylbenzylamine, cocaine (confirmed), and caffeine. Similarly, analysis of the blue tablets by color testing (same tests and results, except the Marquis gave a pink color) and of a methanolic extract by GC/MS again indicated a mixture of isopropylbenzylamine, cocaine (confirmed), and caffeine. The tablets were not formally quantitated; however, the TIC indicated that there was significantly more caffeine than cocaine, and more cocaine than isopropylbenzylamine (the ratios were moderately different in the green versus the blue tablets). The laboratory has previously received Ecstasy-type tablets containing isopropylbenzylamine, and has also previously received Ecstasy-type tablets with dolphin imprints, but this was the first ever submission of Ecstasy mimic tablets containing cocaine.

* * * * *

- INTELLIGENCE ALERT -

ECSTASY MIMIC TABLETS (ACTUALLY CONTAINING COCAINE) IN SAN DIEGO, CALIFORNIA

The DEA Southwest Laboratory (Vista, California) recently received two dirty tablets with identical but worn, indiscernible logos, suspected Ecstasy (see Photo 5, next page). The exhibits were seized in San Diego by FBI personnel, consequential to a search warrant for methamphetamine and cocaine base (no further details). Both tablets were white, round

(approximately 7.5 millimeters in diameter), unscored, biconvex, and had an average weight of 189.8 milligrams. Analysis by GC and GC/MS, however, indicated not MDMA but rather cocaine (salt form not determined; not quantitated but a moderate loading based on the TIC). Ecstasy-type tablets containing cocaine are rarely submitted to the Southwest Laboratory.

[Editor's Note: Unlike the tablets analyzed by the Los Angeles Police Department's Scientific Investigation Division Narcotics Analysis Unit (preceding Intelligence Alert), these tablets did not contain either isopropylbenzylamine or caffeine.]

Photo 5
(Color Not True; Actual is Dirty White)

* * * * *

- INTELLIGENCE ALERT -

ECSTASY MIMIC TABLETS (ACTUALLY CONTAINING 4-IODO-2,5-DIMETHOXY-PHENETHYLAMINE HYDROCHLORIDE (2C-I)) IN SHERWOOD, ARKANSAS

The DEA South Central Laboratory (Dallas, Texas) recently received 30 pink, round tablets imprinted with an "Alien" face, suspected Ecstasy (see Photo 6). The exhibits were seized in Sherwood, Arkansas by the Sherwood Police (no further details). Analysis of the tablets (total net mass 4.9 grams) by FTIR/ATR and GC/MS, however, indicated not MDMA but rather 4-iodo-2,5-dimethoxyphenethylamine hydrochloride (2C-I; not quantitated but a moderate loading based on the TIC). Currently, 2C-I is not formally scheduled in the Controlled Substance Act, but it is considered to be an analogue of 4-bromo-2,5-dimethoxyphenethylamine (2C-B). The South Central Laboratory has received 12 submissions of 2C-I over the last four years, and has also previously received Ecstasy and Ecstasy-type tablets with the "Alien" face logo.

Photo 6

* * * * *

- INTELLIGENCE ALERT -

HEROIN SMUGGLED IN A LAPTOP COMPUTER IN MIAMI, FLORIDA

The DEA Southeast Laboratory (Miami, Florida) recently received a laptop computer containing 15 black tape-wrapped packages, each containing a light brown powder, suspected heroin (see Photos 7 - 8, next page). The computer was seized by Immigration and Customs Enforcement (ICE) personnel at Miami International Airport (no further details). Analysis of the powder

(total net mass 531.6 grams) by color testing (Marquis), GC/FID, GC/MS, and FTIR confirmed 84.7% heroin hydrochloride.

Photo 7

Photo 8 - Removed Packages

[Editor's Notes: Laptop computers (both pseudo-operational and non-operational) containing heroin have been previously submitted to the DEA Northeast, Mid-Atlantic, and Southeast Laboratories; for recent examples, see: Microgram Bulletin 2008;41(1):3 and 2008;41(3):29. Various computer components have been similarly employed; for example, see: 2008;41(2):19.]

* * * * *

- INTELLIGENCE ALERT -

d,l-EPHEDRINE HYDROCHLORIDE DISSOLVED IN "MANGO PULP" IN THE NEW YORK AREA

The DEA Northeast Laboratory (New York, New York) recently received six containers of "Mango Pulp," each containing an orange colored viscous, gritty, pulpy liquid, suspected to contain ephedrine (see Photo 9). The exhibits were seized by personnel from the DEA New York Strike Force (details and location sensitive). Analysis of the material (total net mass 36.8 kilograms) by GC/MS, LC/MS, GC/IRD, FTIR, and NMR, confirmed 40% *d,l*-ephedrine hydrochloride. This is the first time the Northeast Laboratory has seen this preparation.

Photo 9

SELECTED REFERENCES

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

1. Ali EMA, Edwards HGM, Hargreaves MD, Scowen IJ. **In-situ detection of drugs-of-abuse on clothing using confocal Raman microscopy.** Analytica Chimica Acta 2008;615(1):63-72. [Editor's Notes: Raman spectra were obtained from minute particles of drugs trapped between the fibers of various types of cloth (spiked with cocaine HCl or MDMA HCl). Interfering bands from the fibers could be removed by spectral subtraction. Highly fluorescent specimens were handled by exact focusing of the beam. Spectra were obtained within 3 minutes, with little or no sample preparation. Contact: Raman Spectroscopy Group, University Analytical Centre, Division of Chemical and Forensic Sciences, University of Bradford, Bradford BD7 1DP, UK.]

2. Belal T, Awad T, Deruiter J, Clark CR. **GC-MS studies on acylated derivatives of 3-methoxy-4-methyl- and 4-methoxy-3-methyl-phenethylamines: Regioisomers related to 3,4-MDMA.** Forensic Science International 2008;178(1):61-82. [Editor's Notes: A series of side chain regioisomers of 3-methoxy-4-methyl- and 4-methoxy-3-methyl- phenethylamines have mass spectra essentially equivalent to MDMA (mw = 193; major ions in their EI-MS at *m/z* 58 and 135/136). However, the GC/MS spectra of the acetyl, propionyl, and trifluoroacetyl derivatives of the primary and secondary regioisomeric amines were significantly different, enabling differentiation and identification. Contact: Department of Pharmaceutical Analytical Chemistry, Faculty of Pharmacy, Alexandria University, Alexandria 21521, Egypt.]

3. Brandt SD, Martins CP, Freeman S, Dempster N, Riby PG, Gartz J, Alder JF. **Halogenated solvent interactions with N,N-dimethyltryptamine: Formation of quaternary ammonium salts and their artificially induced rearrangements during analysis.** Forensic Science International 2008;178(2-3):162-70. [Editor's Notes: DMT reacts with dichloromethane (methylene chloride) to give a quaternary N-chloromethyl ammonium salt, which undergoes rearrangement during GC/MS analysis to give 3-(2-chloroethyl)indole and 2-methyl-tetrahydro-*beta*-carboline. Exposure of DMT to dibromomethane and 1,2-dichloroethane gave the N-bromomethyl and N-chloroethyl quaternary ammonium derivatives, and their various rearrangement products were characterized by GC/MS and NMR spectroscopy. Contact: Institute for Health Research, School of Pharmacy and Chemistry, Liverpool John Moores University, Byrom Street, Liverpool, L3 3AF, UK.]

4. Casale JF, Boudreau DK, Jones LM. **Tropane ethyl esters in illicit cocaine: Isolation, detection, and determination of new manufacturing by-products from the clandestine purification of crude cocaine base with ethanol.** Journal of Forensic Sciences 2008;53(3):661-76. [Editor's Notes: Seven ethyl ester homologues of known tropane esters are formed when ethanol is used to purify crude cocaine base during illicit cocaine processing. These compounds result from the transesterification of tropane methyl esters or possibly ethyl esterification of their respective tropane C-2 carboxylic acids. The compounds were tentatively identified by GC/FID and GC/MS analyses, and confirmed by independent syntheses. Contact: Special Testing and Research Laboratory, Drug Enforcement Administration, U.S. Department of Justice, 22624 Dulles Summit Court, Dulles, VA 20166.]

5. Elliott S, Smith C. **Investigation of the first deaths in the United Kingdom involving the detection and quantitation of the piperazines BZP and 3-TFMPP.** Journal of Analytical Toxicology 2008;32(2):172-7. [Editor's Notes: Focus is toxicological; however, the UV and

LC/MS data for the positional isomers of 3-TFMPP and mCPP are also reported (not clear from the abstract if these isomers were synthesized or acquired from an outside source or sources). Contact: Sandwell and West Birmingham Hospitals NHS Trust, City Hospital, Birmingham, B18 7QH United Kingdom.]

6. Klenkar G, Liedberg B. **A microarray chip for label-free detection of narcotics.** Analytical and Bioanalytical Chemistry 2008;391(5):1679-88. [Editor's Notes: A protein array chip for label-free optical detection of low molecular weight compounds (including cocaine, ecstasy, heroin, and amphetamine) is presented. Imaging surface plasmon resonance (SPR) was used for detection. Analyses took approximately 1 minute. LODs were in the picogram/microliter level. Contact: Division of Molecular Physics, Department of Physics, Chemistry and Biology, Linköping University, 581 83, Linköping, Sweden.]

7. Lee JS, Chung HS, Kuwayama K, Inoue H, Lee MY, Park JH. **Determination of impurities in illicit methamphetamine seized in Korea and Japan.** Analytica Chimica Acta 2008;619(1):20-5. [Editor's Notes: GC/FID and GC/MS analyses of 436 methamphetamine samples seized in Korea displayed more than 100 compounds, among which 31 impurities and three additives were identified. 26 impurity peaks (including unknowns) were selected and used for cluster analysis, and showed that some of the samples seized in Japan might have the same origin as those seized in Korea. Contact: National Institute of Scientific Investigation, Department of Forensic Science, Seoul 158-707, Republic of Korea.]

8. Marquis R, Delaporte C, Esseiva P, Weyermann C, Aalberg L, Besacier F, Bozenko JS, Dahlenburg R, Kopper C, Zrcek F. **Drug intelligence based on MDMA tablets data 2. Physical characteristics profiling.** Forensic Science International 2008;178(1):34-9. [Editor's Notes: This is the latest in an ongoing series of articles detailing the progress in the "Collaborative Harmonisation of Methods for Profiling of Amphetamine Type Stimulants" (CHAMP) program. This part focuses on physical characteristics of MDMA tablets. Diameter, thickness, weight, and scoring were determined to be reliable and relevant features. The results also support the hypothesis that most of the MDMA tablets found on the international market come from the same countries. Contact: School of Criminal Sciences, BCH, University of Lausanne, Batiment Batochime, CH-1015 Lausanne-Dorigny, Switzerland.]

9. Wang Y, Wen Y-x, Luo A-q, Zou H. **Application of hierarchical clustering to the classification of spectra of pyrolytic cracking of heroin.** Lihua Jianyan, Huaxue Fence 2008;44(3):205-8. [Editor's Notes: Pyrolytic gas chromatographic analysis was performed on 10 different "kinds" of heroin ("kinds" not clear in the abstract - probably "samples" was intended). The results were evaluated using hierarchical clustering. This article is written in Chinese. Contact: College of Chinese People's Armed Police, Langfang 065000, Peop. Rep. China.]

Additional References of Possible Interest:

1. Wang Y, McCaffrey J, Norwood DL. **Recent advances in headspace gas chromatography.** Journal of Liquid Chromatography & Related Technologies 2008;31(11-12):1823-51. [Editor's Notes: A review covering the literature 2002 - 2007, including static headspace, dynamic headspace, headspace solid phase microextraction (HS-SPME), and headspace single drop microextraction (HS-SDME). Contact: Boehringer Ingelheim Pharmaceuticals, Inc., Ridgefield, USA (state and zip code not provided).]

* * * * *