U.S. Department of Justice
Drug Enforcement Administration

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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. 2 FEBRUARY 2003

- INTELLIGENCE ALERT -

COCAINE BRICKS SEALED IN A POLYMERIC COATING IN EL PASO, TEXAS

The DEA South Central Laboratory (Dallas, Texas) recently received a submission of three unusually packaged bricks, suspected cocaine. The bricks were seized in El Paso, Texas by the U.S. Customs Service. In addition to the usual layers of plastic wrapping and tape, each brick was sealed in multiple coatings of an unknown, translucent polymer (see Photo 1). The polymeric material was fairly difficult to remove from the bricks. Analysis indicated that it was probably an ethylene/vinyl acetate copolymer. Analysis of the compressed brick powder (combined net mass 2,943 grams) confirmed 84

Photo 1

percent cocaine hydrochloride. This is the second encounter with polymer coated cocaine bricks by the South Central Laboratory.

[Editor's Notes: According to the analyst, this concealment technique is not commonly seen. The defendants in this case indicated that the bricks were dipped into the polymeric material to make them waterproof. The packaged bricks would then be dropped at pre-arranged locations in the Gulf of Mexico or in the bayous of Louisiana, for later retrieval. The total net mass of each brick (that is, 1 kilogram of cocaine and all the packaging) was about 1.5 kilograms. Somewhat surprisingly, the polymeric coating did *not* have a particularly noticeable odor.]

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- INTELLIGENCE ALERT -

COCAINE DISSOLVED IN CANNED LIQUIDS AT JFK AIRPORT, NEW YORK

The DEA Northeast Laboratory (New York, New York) recently received a submission of 10 metal cans, suspected of containing cocaine dissolved in various liquid food matrices. The cans were seized by the U.S. Customs Service at John F. Kennedy Airport from the luggage of a passenger arriving on a flight from Guyana. The cans had labels indicating they contained 400 milliliters each of "Sococo - Coconut Cream" or "Coconut Milk", and contained products which varied from a dark amber liquid to a cream colored paste (see Photo 2). Of note, the labels on some of the cans were slightly misaligned. The combined net mass of the contents in the ten cans was 6,159 grams. Analysis by crystal testing, GC/MS, GC/FID, and GC/IRD confirmed 39 percent cocaine (salt form undetermined). Caffeine, phenacetin, and dimethylterephthalate were also identified. The Northeast Laboratory has received several similar submissions of canned liquids containing cocaine in the past.

Photo 2

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- INTELLIGENCE ALERT -

BLACK TAR HEROIN CONCEALED BEHIND POSTAGE STAMPS IN CORCORAN, CALIFORNIA

The DEA Western Laboratory (San Francisco, California) recently received a case from the California Substance Abuse Treatment Facility and State Prison at Corcoran, consisting of four letters with suspected heroin behind the stamps. The letters had been mailed to an inmate, and

had been seized by prison authorities. The sender had secured about 200 mg of black tar heroin to the back of each stamp with a piece of clear plastic, then stuck the stamps on the envelopes (see Photo 3). The recovered material had a total net mass of 0.81 grams. Analysis by GC/FID and GC/MS confirmed 67 percent heroin. This was the first submission of this type to the Western Laboratory.

Photo 3

[Editor's Notes: Similar exhibits of heroin concealed behind postage stamps were reported in the August 1997 issue of *Microgram* and the November 2002 issue of *Microgram Bulletin*. Both of these previously reported cases also involved either postcards or letters sent to incarcerated prisoners.]

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PHENCYCLIDINE BASE IN GRAND JUNCTION, COLORADO

The Grand Junction Police Department Laboratory recently received two Gatorade gallon jugs containing an orange liquid, suspected phencyclidine (PCP) (see Photo 4). The jugs were located in a black cloth suitcase seized by the Grand Valley Joint Drug Task Force at the Grand Junction Greyhound bus station. The two suspects involved were travelling from Compton, California to Cincinnati, Ohio. Passive evaporation of the liquids (in a exhaust hood) reduced their volume by about two thirds (see Photo 5). Analysis of the final solution by GC/MS confirmed fairly clean phencyclidine base. The easily evaporated solvent was petroleum ether. The laboratory has previously received phencyclidine base samples seized at the bus station (two occasions), but not in these quantities.

Photo 4

Photo 5

Selected Intelligence Brief

Cocaine Signature Program Report (January 2003)

U.S. Drug Enforcement Administration
Special Testing and Research Laboratory
22624 Dulles Summit Court
Dulles, VA 20166

[Unclassified; Reprinted With Permission]

INTRODUCTION

Beginning in 1997, the DEA's Special Testing and Research Laboratory (SFL-1) began an in-house Cocaine Signature Program (CSP) to identify trends in cocaine processing. In this program, samples of cocaine hydrochloride obtained from major seizures within the United States are examined. Each year, through the CSP, in-depth chemical analyses are performed on over 2000 cocaine HCl exhibits obtained from bulk seizures throughout the United States. The program also examines cocaine exhibits seized throughout the world. Additionally, samples of solvents, reagents, and other materials seized from South American illicit cocaine laboratories are examined. Analytical methodologies developed at SFL-1 give evidence of how and where coca leaf was processed to cocaine base (geographical origin), and how and where cocaine base was converted to cocaine hydrochloride (processing origin). Correlated data from all these seizures are reported on a quarterly basis.

During the fourth quarter of 2002, 946 cocaine and cocaine related exhibits were examined by the CSP. Of these exhibits, 930 were from throughout the U.S. and 16 were from either Colombia, Korea, Ecuador, Brazil, Thailand, or Mexico.

4th QUARTER OF CY 2002 CSP RESULTS

Origin of Cocaine – Where the Coca Leaf Originated

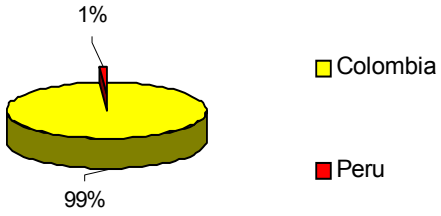
Scientists at SFL-1 have developed state-of-the-art methods that can determine the geographic origin (country) of the coca leaf used to produce a cocaine exhibit with a confidence level exceeding 95%. There are several coca-growing regions within South America. Due to recent major coca expansion, all Colombian coca-growing regions are now collectively reported as "Colombia". The major growing regions within Peru and Bolivia are reported as such. A map of these regions is presented below.

Determination of the geographical and processing origins of illicit cocaine exhibits provides valuable information to the counter-drug intelligence

community and U.S. policymakers. Intelligence information derived from this program enables the law enforcement community to determine cocaine distribution and trafficking routes throughout the world, and determine where cocaine base is specifically produced in the Andean Ridge.

For this reporting period, 930 exhibits seized throughout the U.S. were subjected to origin analysis. Results are presented in the chart below.

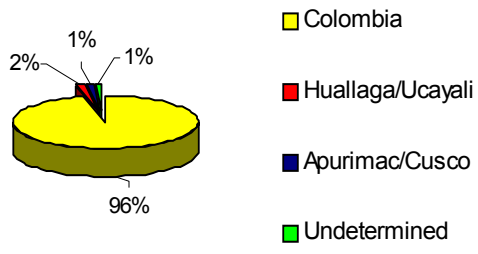
Origin of cocaine base (where the leaf was grown)



Ninety-nine percent of the exhibits originated from Colombian coca, while 1% originated from the Huallaga/Ucayali and Apurimac/Cusco Valleys of Peru. Exhibits of very poor quality were not subjected to origin analysis. Solvent profiles conducted on exhibits revealed that all of the Peruvian cocaine exhibits were actually converted to cocaine HCl by Colombian processing methods (probably outside of Peru). Three exhibits (not shown) were converted to cocaine HCl by the Bolivian Method.

For CY 2002, over 2,650 cocaine HCl exhibits from seizures within the United States were examined for cocaine base origin. The results are illustrated in the above chart.

Origin of cocaine base - CY 2002

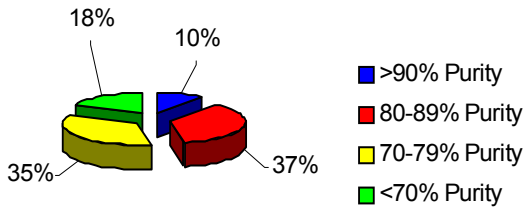


Ninety-six percent of the exhibits (N=2553) were produced from Colombian coca leaf. The Huallaga/Ucayali and Apurimac/Cusco Valleys of Peru accounted for 1.8% (N=49) and 1.1% (N=29), respectively. Only one exhibit was found to be from Bolivian coca leaf. Coca leaf origin could not be determined for 1% (N=25) of the exhibits.

Purity of Seized Kilograms

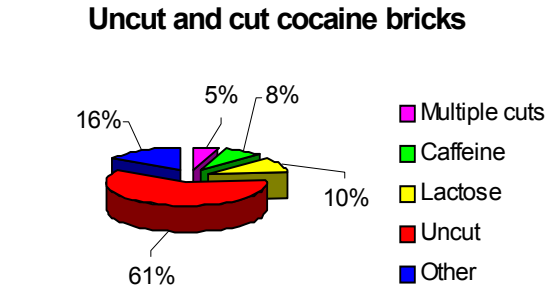
Generally, uncut exhibits (usually 1 kilogram bricks) have a purity of 80-90+%. Uncut means that nothing has been added to dilute the cocaine. Data pertaining to cocaine brick purity is shown in the chart below. There has been a continuous decrease in cocaine brick purity over the past four years and now appears to be leveling off at an average purity of 77%. The majority of the exhibits examined during the fourth quarter of CY 2002 had cocaine purities less than 80%. Those exhibits were usually cut with a diluent.

Purity of cocaine bricks



A significant decrease in the number of cut bricks has occurred during the last two reporting periods (36% and 39%). Data pertaining to cut versus uncut bricks for this reporting period is shown on the next page.

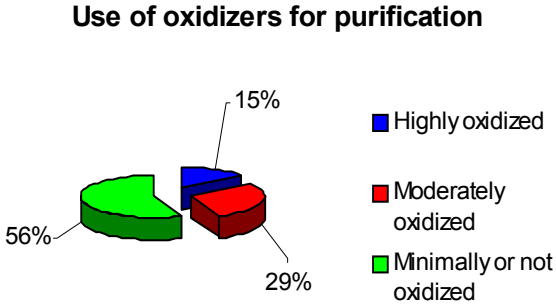
During this reporting period, lactose was the most prevalently used cutting agent, followed by caffeine. A significant number (16%) of exhibits contained other cutting agents, including procaine, mannitol, baking soda, lidocaine, inositol, boric acid, dimethyl terephthlate, phenacetin, and/or salt.



Production of Cocaine Base from Coca

When cocaine is extracted from coca leaf, the crude product is usually refined to remove two major impurities (*cis*- and *trans*- cinnamoyl-cocaine) and coloration. This purification is accomplished by adding potassium permanganate or a substitute oxidizing agent to an acidic solution of the crude cocaine. This step is referred to as oxidation, since potassium permanganate oxidizes the two major impurities and colored impurities.

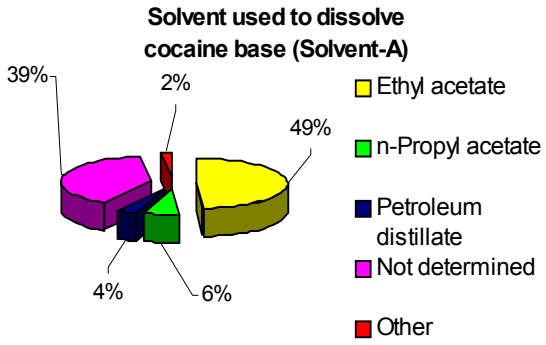
The CSP monitors the presence and relative abundance of the two above referenced impurities to determine the extent of oxidation. The relative use of an oxidizing reagent is directly related to its availability and cost on the black market. During this reporting period, approximately 15% of the exhibits were highly oxidized (or reoxidized), 29% of the exhibits had undergone only moderate oxidation, and 56% were minimally or not oxidized. The extent of oxidation is consistent with the last reporting period. Data depicting the extent of oxidation is presented below.



Conversion of Cocaine Base to Cocaine HCl

Cocaine base is converted to cocaine HCl by the same general procedure throughout South America. In summary, one kilogram of cocaine base is dissolved into approximately 10 liters of a solvent (solvent-A.) Separately, approximately 10 liters of a second solvent (solvent-B) is mixed with a sufficient quantity of either concentrated hydrochloric acid (HCl) or alcoholic HCl. The solvent-B mixture is then added to solvent-A (containing the dissolved cocaine base.) Cocaine HCl immediately crystallizes from the combined solutions. The solid product is then filtered, pressed into bricks, microwaved until dry, and wrapped in appropriate materials for shipping.

Data specifying various types of Solvent-A's are presented in the chart below. For this reporting

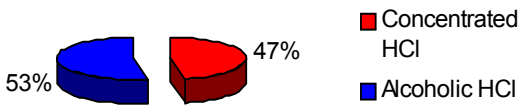


period, the CSP determined that the most prominent solvents (solvent-A) utilized for dissolving the cocaine base were ethyl acetate and n-propyl acetate. The identity of Solvent-A could not be determined for approximately 39% of the exhibits because of the complexity of the solvent profile. However, it should be noted that many of those exhibits listed as "not determined" (94 of 363) contained a mixture of xylenes, isobutyl acetate, and n-propyl acetate. **The data continues to indicate that a major cocaine processing change has occurred in Colombia. This new solvent combination appears to be consistent with a commercial solvent mixture used/sold as a "thinner" for the coatings/paint industry.** The CSP has been unable to acquire the suspected thinner (Dissolvente 1a) to authenticate

its use. **If the use of this new commercial mixture can be verified, it represents a significant share in cocaine processing.**

In order to convert cocaine base to cocaine HCl, a source of HCl is required. Either concentrated HCl or an alcoholic solution of hydrogen chloride gas (alcoholic HCl) is typically used. The latter solution is referred to as "yogurt," "concentrado," or "etachlor." Alcohols that are typically used are methanol, ethanol, 1-propanol, and 2-propanol. Data obtained by the CSP for the source of HCl are shown below.

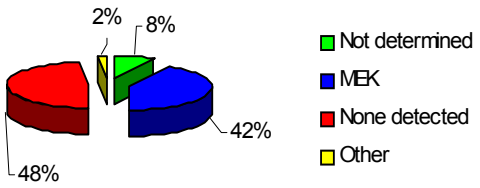
Source of HCl



The use of alcoholic HCl first appeared in 1998 and has been gradually replacing concentrated hydrochloric acid in many illicit laboratories. It is possible that the use of alcoholic HCl makes the recycling of waste solvents easier.

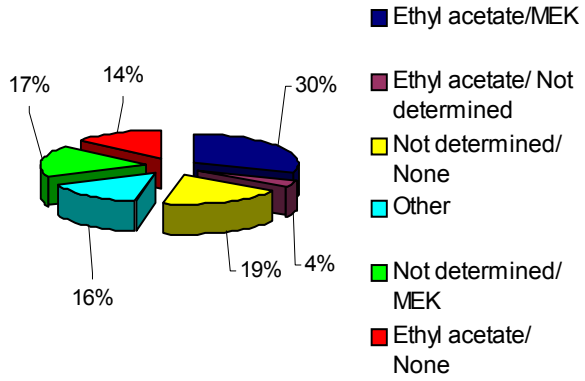
For this reporting period, the CSP determined that the most prominent solvent utilized for dissolving the HCl (solvent-B) was methyl ethyl ketone (MEK). Solvent-B could not be determined for approximately 9% of the exhibits due to the complexity of the solvent profile. For many of the exhibits (38%), no solvent-B was detected. In these instances, it appears that alcoholic HCl was added directly to the solvent-A/cocaine base mixture. Data specifying the various types of Solvent-B's are presented in the above chart. The results are similar to those reported last quarter.

Solvent used to dissolve HCl (Solvent-B)



The most commonly encountered solvent-A + solvent-B combinations were ethyl acetate/MEK (30%) and ethyl acetate/no solvent-B (14%). **These values do not take into account the possible use of a new commercial solvent mixture as discussed earlier.** The relative use of solvent combinations is presented in the chart below.

Solvent combinations



Operators in Colombia are currently known to use ethyl acetate and/or n-propyl acetate for solvent-A and MEK or nothing for solvent-B. Operators in Peru use acetone for both solvent-A and solvent-B (acetone only method). Processors in Bolivia generally use ether for solvent-A and acetone for solvent-B. Three of the above exhibits were produced by the Bolivian Method.

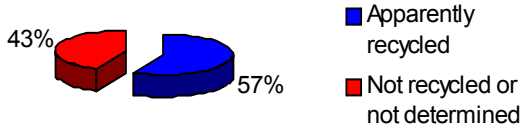
Distinguishing the processing origin of cocaine HCl is a relatively easy task based on the solvent profile of a seized cocaine HCl exhibit. It is extremely rare to encounter cocaine HCl made from ether and/or acetone in the United States. For CY 2002, over 2,600 cocaine HCl exhibits from seizures within the United States were examined for solvent profiles. Six exhibits (0.2%) were produced by the Bolivian method. One exhibit (0.04%) was produced from the Peruvian method. The processing method for 17 exhibits (0.6%) could not be determined. The remaining 2,633 exhibits (99.1%) were produced by the

Colombian method. Note that for CY 1998 through CY 2001, Colombian processors accounted for 98-99% of the exhibits. **These findings continue to show that the overwhelming majority of cocaine HCl being exported to the U.S. (>98%) is from Colombian-run cocaine HCl laboratories.** It should be noted that some Colombians operate laboratories in Ecuador, especially in the Putumayo Region (which borders Colombia.).

Recycling of Essential Solvents

Clandestine laboratory operators have been recycling their solvents since the early 1990's. Due to the various types of solvent-A's and B's used primarily in Colombia, the CSP is often able to determine if a cocaine HCl exhibit was manufactured from recycled solvents. As shown below, laboratory results demonstrate that 57% of the exhibits were apparently produced from

Production of cocaine HCl from recycled solvents



recycled solvents. Recycling of waste solvents plays a large role in the illicit production of cocaine.

Chemical Analysis of Cocaine and Related Exhibits Seized Outside the United States

Brazil

Three cocaine base and two cocaine HCl exhibits were examined. The base exhibits were 16-52% pure. One base exhibit (24% pure) was cut with benzocaine while the other exhibit (16% pure) was cut with phenacetin. The exhibit of 52% pure cocaine base originated from Peruvian coca leaf in the Huallaga/Ucayali Valleys. The cocaine HCl exhibits were 64% and 94% pure and originated from coca grown in the Huallaga/ Ucayali and Apurimac/Cusco Valleys of Peru, respectively.

Colombia

Non-laboratory seizures - Three purple powder exhibits were submitted and determined to be potassium permanganate. A white powder exhibit was determined to be sodium carbonate.

Clandestine lab – Three cocaine HCl exhibits were examined. The purity of the exhibits were 76-79%. All were highly oxidized, of Colombian leaf origin, and produced from recycled solvents.

Ecuador

An exhibit consisting of an oily substance was examined. It was determined to be palm oil containing approximately 5% cocaine.

Korea

One cocaine HCl exhibit was submitted. The exhibit contained only 2% cocaine and cut with large amounts of caffeine and lidocaine. The cocaine origin could not be determined due to the very low cocaine purity.

Mexico

One cocaine HCl exhibit was submitted. The exhibit consisted of 27% cocaine, 31% dimethylterephthalate, and 16% phenacetin. The exhibit was produced from Colombian cocaine base and recycled solvents.

Thailand

One cocaine HCl exhibit was examined. The exhibit was 80% pure, moderately oxidized, and of Colombian origin.

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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 provided by the abstracting services.]

1. Cheng W-C, Lee W-M, Chan —F, Phil M, Tsui P, Dao K-L. **Enantiomeric separation of methamphetamine and related analogs by capillary zone electrophoresis: Intelligence study in routine methamphetamine seizures.** Journal of Forensic Sciences 2002;47(6):1248. [Editor's Notes: The simultaneous separation of ephedrine, pseudoephedrine, and methamphetamine using CZE with *beta*-cyclodextrin as a chiral selector is presented. Application to the analysis of seized drugs is discussed. Contact: Forensic Science Division, Government Laboratory, Hong Kong, Peop. Rep. China.]

2. Katagi M, Tsutsumi H, Miki A, Nakajima K, Tsuchihashi H. **Analyses of clandestine tablets of amphetamines and their designer drugs encountered in recent Japan** [sic]**.** Japanese Journal of Forensic Toxicology 2002;20(3):303. [Editor's Notes: Presents analyses of various tablets recently seized in Osaka (including tablets containing MDMA, PMA, 2C-T-7, and various tryptamines). Contact: Forensic Science Laboratory, Osaka Prefectural Police H.Q., Chuo-ku, Osaka 541-0053, Japan.]

3. Ye NS, Gu XX, Zou H, Zhu RH. **Separation and determination of ephedrine enantiomers by capillary electrophoresis using l-leucine as chiral selector.** Chromatographia 2002;56(9-10):637. [Editor's Notes: The technique was applied to the analysis of *Ephedra* plant extracts. Contact: Gu XX, Capital Normal Univ, Dept Chem, Beijing 100037, Peoples R China.]

4. Bartlett V. **HPLC analysis of narcotic/acetaminophen admixtures. What to do if a compendium method doesn't work.** The Restek Advantage 2002;3:6. [Editor's Notes: Discusses modifications to established methods for separating admixtures of compounds with similar structures. Contact: No addressing information was provided.]

5. United Nations Office for Drug Control and Crime Prevention (UNODCCP). **Global Illicit Drug Trends 2002.** http://www.undcp.org/pdf/report_2002-06-26_1/report_2002-06-26_1.pdf [Editor's Notes: A 235 page report. Contact: UNODCCP, New York (No further addressing information was provided).]

Additional References of Possible Interest:

1. Smith JA, Hayes CE, Yolton RL, Rutledge DA, Citek K. **Drug recognition expert evaluations made using limited data.** Forensic Science International 2002;130(2-3):167. [Editor's Notes: Presents the results of a study of the ability and accuracy of law enforcement personnel to determine degree and type of drug intoxication based on face-to-face interviewing and other evidence. Contact: Pacific University College of Optometry, 2043 College Way, Forest Grove, OR 97116.]

2. Melker RJ, Goldberger BA, Gold M. **Method and apparatus for detecting illicit substances.** PCT Int. Appl. WO 2002095359 A2 28 Nov 2002. CLASS: ICM: G01N. Application: WO 2002-US16157 22 May 2002. Priority: US 2001-PV292962 23 May 2001. [Editor's Notes: For

analysis of vapor (breath), using a SAW sensor. Contact: University of Florida (No further addressing information provided).]

3. Thomson G, Batchelder D. **Development of a hand-held forensic-lidar for standoff detection of chemicals.** Review of Scientific Instruments 2002;73(12):4326. [Editor's Notes: Presents a hand-held lidar instrument that allows spectral identification at a distance of 5 meters. Contact: Department of Physics and Astronomy, Molecular Physics and Instrumentation Group, University of Leeds, Woodhouse Lane LS2 9JT, UK.]

4. Hinrichs K-U. **Exploiting the multivariate isotopic nature of organic compounds.** Geochemistry, Geophysics, Geosystems http://www.g-cubed.org/gc2001/2001GC000142/fs2001GC000142.html [Editor's Notes: Presents a review and discussion on the need to develop new technologies to study isotopic fractionation processes. Includes remarks on drugs. Contact: Hanse Inst. of Advanced Study, D-27753 Delmenhorst, Germany.]

5. Imaizumi M, Saito Y, Hayashida M, Takeichi T, Wada H, Jinno K. **Polymer-coated fibrous extraction medium for sample preparation coupled to microcolumn liquid-phase separations.** Journal of Pharmaceutical and Biomedical Analysis 2002;30(6):1801. [Editor's Notes: The analysis of of amitriptyline, imipramine, nortriptyline, and desipramine, was carried out with the referenced hyphenated system. The focus is on the analysis of biological samples. Contact: School of Materials Science, Toyohashi University of Technology, Toyohashi 441-8580, Japan.]

6. Aristarkhova AA, Volkov SS, Dmitrevskii YE, Kitaeva TI, Ognev VI, Plotkin DM, Timashev MY. **Characteristics of ion spectroscopy use in forensic science** [sic]**.** Vzaimodeistvie Ionov s Poverkhnost'yu Materialy Mezhdunarodnoi Konferentsii, 15th, Zvenigorod, Russian Federation, Aug. 27-31, 2001 2001;1:335. [Editor's Notes: Presents a review on the use of ion spectroscopic methods in forensic science. Contact: Nauchno-Issled. Tekhnol. Inst., Ryazan, Russia. This article is written in Russian.]

7. De Boeck G, Wood M, Samyn N. **Recent applications of LC-MS in forensic science.** LC-GC 2002;15(11):19. [Editor's Notes: Presents an overview of the use of LC/MS in forensic science (however, illicit drugs are not specifically covered). Contact: National Institute of Criminalistics and Criminology, Belgium (no further addressing information was provided).]

8. Herraez-Hernandez R, Campins-Falco P, Verdu-Andres J. **Enantiomeric separation of amphetamine and related compounds by liquid chromatography using pre-column derivatization with o-phthaldialdehyde.** Chromatographia 2002;56(9-10):559. [Editor's Notes: The referenced technique was applied to amphetamine, norephedrine, norepinephrine, and MDA. The focus was on application to biological samples. Contact: Herraez-Hernandez R, Univ Valencia, Dept Analyt Chem, Dr Moliner 50, Valencia 46100, Spain.]

9. Nikas SP, Thakur GA, Makriyannis A. **Synthesis of side-chain specifically deuterated (-)-*delta*(9)-tetrahydrocannabinols.** Journal of Labelled Compounds and Radiopharmaceuticals 2002;45(12):1065. [Editor's Notes: A method for specific deuteration on the –pentyl side-chain, with no scrambling, was developed. Contact: Makriyannis A, Univ Connecticut, Dept Pharmaceut Sci, Ctr Drug Discovery, Storrs, CT 06269.]

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Notice of Intent to Place *alpha*-Methyltryptamine and 5-Methoxy-N,N-diisopropyltryptamine into Schedule I

[Editor's Preface: This is a pre-publication "courtesy" copy of the CFR notification, and is *not* an exact match of the CFR version. See the CFR for the actual notice.]

DEPARTMENT OF JUSTICE

Drug Enforcement Administration

21 CFR Part 1308

[DEA-238N]

Schedules of Controlled Substances: Temporary Placement of *alpha*-Methyltryptamine and 5-Methoxy-N,N-diisopropyltryptamine into Schedule I

AGENCY: Drug Enforcement Administration (DEA), Justice

ACTION: Notice of Intent.

SUMMARY: The Deputy Administrator of the Drug Enforcement Administration (DEA) is issuing this notice of intent to temporarily place *alpha*-methyltryptamine (AMT) and 5-methoxy-N,N-diisopropyltryptamine (5-MeO-DIPT) into Schedule I of the Controlled Substances Act (CSA) pursuant to the temporary scheduling provisions of the CSA. This intended action is based on a finding by the DEA Deputy Administrator that the placement of AMT and 5-MeO-DIPT into Schedule I of the CSA is necessary to avoid an imminent hazard to the public safety. Finalization of this action will impose the criminal sanctions and regulatory controls of a Schedule I substance on the manufacture, distribution, and possession of AMT and 5-MeO-DIPT.

FOR FURTHER INFORMATION, CONTACT: Frank Sapienza, Chief, Drug and Chemical Evaluation Section, Office of Diversion Control, Drug Enforcement Administration, Washington, DC 20537, Telephone (202) 307-7183.

SUPPLEMENTARY INFORMATION:

Background

The Comprehensive Crime Control Act of 1984 (Pub. L. 98-473) amended section 201 of the CSA (21 U.S.C. 811) to give the Attorney General the authority to temporarily place a substance into Schedule I of the CSA for one year without regard to the requirements of 21 U.S.C. 811 (b) if he finds that such action is necessary to avoid an imminent hazard to the public safety. The Attorney General may extend the temporary scheduling up to 6 months. A substance may be temporarily scheduled under the emergency provision of the CSA if that substance is not listed in any other schedule under section 202 of the CSA (21 U.S.C. 812) or if there is no exemption or approval in effect under 21 U.S.C. 355 for the substance. The Attorney General has delegated his authority under 21 U.S.C. 811 to the Deputy Administrator of DEA (28 CFR 0.100).

Section 201(h)(4) of the CSA (21 U.S.C. 811(h)(4)) requires the Deputy Administrator to notify the Assistant Secretary for Health, delegate of the Secretary of Health and Human Services, of his intention to temporarily place a substance into Schedule I of the CSA. Comments submitted by the Assistant Secretary for Health in response to this notification, including whether there is an exemption or approval in effect for the substance in question under the Federal Food, Drug and Cosmetic Act, shall be taken into consideration before a final order is published.

In making a finding that placing a substance temporarily into Schedule I of the CSA is necessary to avoid an imminent hazard to the public safety, the Deputy Administrator is required to consider three of the eight factors set forth in section 201(c) of the CSA (21 U.S.C. 811(c)). These factors are as follows: (4) History and current pattern of abuse; (5) The scope, duration and significance of abuse; and (6) What, if any, risk there is to the public health.

***alpha*-Methyltryptamine and 5-methoxy-N,N-diisopropyltryptamine**

alpha-Methyltryptamine (AMT) and 5-methoxy-N,N-diisopropyltryptamine (5-MeO-DIPT) are tryptamine (indoleethylamine) derivatives and share several similarities with the Schedule I tryptamine hallucinogens, *alpha*-ethyltryptamine (AET) and N,N-dimethyltryptamine (DMT), respectively. Several other tryptamines also produce hallucinogenic/stimulant effects and are controlled as Schedule I substances under the CSA (bufotenine, diethyltryptamine, psilocybin and psilocin). Although tryptamine itself appears to lack consistent hallucinogenic/stimulant effects, substitutions on the indole ring and the ethylamine side-chain of this molecule result in pharmacologically active substances (McKenna and Towers, J. Psychoactive Drugs, 16: 347-358, 1984).

The chemical structures of AMT and 5-MeO-DIPT possess the critical features necessary for hallucinogenic/ stimulant activity. Thus, both AMT and 5-MeO-DIPT are likely to have a pharmacological profile substantially similar to other Schedule I tryptamine derivatives such as DMT and AET. In drug discrimination studies, both AMT and 5-MeO-DIPT substitute for 1-(2,5-dimethoxy-4-methylphenyl)-aminopropane (DOM), a phenethylamine-based hallucinogen in Schedule I of the CSA. The potencies of DOM-like discriminative stimulus effects of these and several other similar tryptamine derivatives correlate well with their hallucinogenic potencies in humans

(Glennon et al., Eur. J. Pharmacol. 86: 453-459, 1983).

AMT shares other pharmacological properties with Schedule I hallucinogens such as AET. AMT increases systolic and diastolic arterial blood pressures. The behavioral effects of orally administered AMT (20 mg) in humans are slow in onset, occurring after 3 to 4 hours and gradually subside after 12 to 24 hours, but may last up to 2 days in some subjects. The majority of the subjects report nervous tension, irritability, restlessness, inability to sleep, blurry vision, mydriasis and equate the effects of a 20 mg dose to those of 50 micrograms of lysergic acid diethylamide (LSD) (Hollister et al., J. Nervous Ment. Dis., 131: 428-434, 1960; Murphree et al., Clin. Pharmacol. Ther., 2: 722-726, 1961). AMT also produces hallucinations and dextroamphetamine-like mood elevating effects.

5-MeO-DIPT also produces pharmacological effects similar to those of other Schedule I hallucinogen such as DMT. The synthesis and preliminary human psychopharmacology study on 5-MeO-DIPT was first published in 1981 (Shulgin and Carter, Comm. Psychopharmacol. 4: 363-369, 1981). 5-MeO-DIPT is an orally active hallucinogen. Following oral administration of 6-10 mg, 5-MeO-DIPT produces subjective effects with an onset at about 20-30 minutes, a peak at about 1-1.5 hours and a duration of about 3-6 hours. Subjects who have been administered 5-MeO-DIPT are talkative and disinhibited. 5-MeO-DIPT causes mydriasis. High doses of 5-MeO-DIPT produce nausea, jaw clenching, muscle tension and overt hallucinations with both auditory and visual distortions.

History and Current Pattern of Abuse

The popularity and use of hallucinogenic/stimulant substances at raves (all-night dance parties) and other social venues have been a major problem in Europe since the 1990s. In the past several years, this activity has spread to the United States. The Schedule I controlled substance 3,4-methylenedioxymethamphetamine (MDMA or Ecstasy) and its analogues are the most frequently abused drugs at these raves. Their abuse has been associated with both acute and long-term public health and safety problems. Raves have also become venues for the trafficking and abuse of new, non-controlled substances distributed as legal substitutes for, or in addition to, MDMA. 5-MeO-DIPT and AMT belong to such a group of substances.

Data gathered from published studies, supplemented by reports on Internet websites indicate that these are often administered orally at doses ranging from 15-40 mg for AMT and 6-20 mg for 5-MeO-DIPT. Other routes of administration include smoking and snorting. Data from law-enforcement officials indicate that 5-MeO-DIPT is often sold as "Foxy" or "Foxy Methoxy", while AMT has been sold as "Spirals" at least in one case. Both substances have been commonly encountered in tablet and capsule forms.

Scope, Duration and Significance of Abuse

According to forensic laboratory data, the first encounter of AMT and 5-MeO-DIPT occurred in 1999. Since then, law enforcement officials in Arizona, California, Colorado, Delaware, Florida, Idaho, Illinois, Iowa, New Jersey, Oregon, Texas, Virginia, Washington, Wisconsin and the District of Columbia have encountered these substances. According to the Florida Department of Law Enforcement (FDLE), the abuse by teens and young adults of AMT and 5-MeO-DIPT is an emerging problem. There have been reports of abuse of AMT and 5-MeO-DIPT at clubs and raves in Arizona, California, Florida and New York. Many tryptamine-based substances are illicitly available from United States and foreign chemical companies and from individuals through the Internet. A gram of AMT or 5-MeO-DIPT as bulk powder costs less than $150 from illicit sources on the Internet. DEA is not aware of any legitimate medical or scientific use of AMT and 5-MeO-DIPT. There is recent evidence suggesting the attempted clandestine production of AMT and 5-MeO-DIPT in Nevada, Virginia and Washington DC.

Public Health Risks

AMT and 5-MeO-DIPT share substantial chemical and pharmacological similarities with other Schedule I tryptamine-based hallucinogens in Schedule I of the CSA (AET and DMT). This makes it likely that these drugs cause similar health hazards. Tryptamine, the parent molecule of AMT and 5-MeO-DIPT, is known to produce convulsions and death in animals (Tedeschi et al., J. Pharmacol. Exp. Ther. 126: 223-232, 1959). AMT and 5-MeO-DIPT, similar to other tryptamine- or phenethylamine-based hallucinogens, through the alteration of sensory perception and judgement can pose serious health risks to the user and the general public. Further, there have been several self-reports on Internet websites describing the reported abuse of these substances in combination with other controlled drugs, namely MDMA, marijuana, *gamma*-hydroxybutyric acid (GHB) and 2,5-dimethoxy-4-(n)-propylthiopheneth ylamine (2C-T-7). This practice of drug abuse involving combinations poses additional health risks to the users and the general public. Available information indicates that AMT and 5-MeO-DIPT lack any approved therapeutic use in the United States. The safety of these substances for use in humans has not been studied.

DEA has considered the three criteria for placing a substance into Schedule I of the CSA (21 U.S.C. 812). The data available and reviewed for AMT and 5-MeO-DIPT indicate that these substances each have a high potential for abuse, no currently accepted medical use in treatment in the United States and are not safe for use under medical supervision.

Role of the Assistant Secretary for Health In Temporary Scheduling

Section 201(h)(4) of the CSA (21 U.S.C. 811(h)(4)) requires the Deputy Administrator to notify the Assistant Secretary for Health, delegate of the Secretary of Health and Human Services, of his intention to temporarily place substances into Schedule I of the

CSA. Comments submitted by the Assistant Secretary for Health in response to the notification regarding AMT and 5-MeO-DIPT, including whether there is an exemption or approval in effect for the substances in question under the Federal Food, Drug and Cosmetic Act, shall be taken into consideration before a final order is published.

Based on the above data, the continued uncontrolled distribution and abuse of AMT and 5-MeO-DIPT pose an imminent risk to the public safety. DEA is not aware of any recognized therapeutic uses of these substances in the United States.

In accordance with the provisions of section 201(h) of the CSA (21 U.S.C. 811(h)) and 28 CFR 0.100, the Deputy Administrator has considered the available data and the three factors required for a determination to temporarily schedule AMT and 5-MeO-DIPT in Schedule I of the CSA and finds that placement of AMT and 5-MeO-DIPT into Schedule I of the CSA is necessary to avoid an imminent hazard to the public safety.

Because the Deputy Administrator finds that it is necessary to temporarily place AMT and 5-MeO-DIPT into Schedule I to avoid an imminent hazard to the public safety, the final order, if issued, will be effective on the date of publication of the Federal Register. AMT and 5-MeO-DIPT will be subject to the regulatory controls and administrative, civil and criminal sanctions applicable to the manufacture, distribution, possession, importing and exporting of a Schedule I controlled substance under the CSA. Further, it is the intention of the Deputy Administrator to issue such a final order as soon as possible after the expiration of thirty days from the date of publication of this notice and the date that notification was transmitted to the Assistant Secretary for Health.

Regulatory Certifications

Regulatory Flexibility Act

The Deputy Administrator hereby certifies that this rulemaking has been drafted in accordance with the Regulatory Flexibility Act (5 U.S.C. 605(b)), has reviewed this regulation, and by approving it certifies that this regulation will not have a significant economic impact on a substantial number of small entities. This action provides a notice of intent to temporarily place AMT and 5-MeO-DIPT into Schedule I of the CSA. DEA is not aware of any legitimate uses of AMT and 5-MeO-DIPT in the United States.

Executive Order 12988

This regulation meets the applicable standards set forth in Sections 3(a) and 3(b)(2) of Executive Order 12988 Civil Justice Reform.

Executive Order 13132 Federalism

This rule will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. Therefore, in accordance with Executive Order 13132, it is determined that this rule will not have sufficient federalism implications to warrant the preparation of a Federalism Assessment.

Unfunded Mandates Reform Act

This rule will not result in the expenditure by State, local and tribal governments, in the aggregate, or by the private sector, of $100,000,000 or more in any one year, and it will not significantly or uniquely affect small governments. Therefore, no actions were deemed necessary under provisions of the Unfunded Mandates Reform Act of 1995.

Small Business Regulatory Enforcement Fairness Act of 1996

This rule is not a major rule as defined by § 804 of the Small Business Regulatory Enforcement Fairness Act of 1996. This rule will not result in an annual effect on the economy of $100,000,000 or more; a major increase in costs or prices; or significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based companies to compete with foreign-based companies in domestic and export markets.

List of Subjects in 21 CFR Part 1308

Administrative practice and procedure, Drug traffic control, Narcotics, Prescription drugs, Reporting and Record keeping requirements.

Under the authority vested in the Attorney General by Section 201(h) of the CSA (21 U.S.C. 811 (h)), and delegated to the Deputy Administrator of the DEA by Department of Justice regulations (28 CFR 0.100), the Deputy Administrator hereby intends to order that 21 CFR Part 1308 be amended as follows:

PART 1308 – SCHEDULES OF CONTROLLED SUBSTANCES

1. The authority citation for 21 CFR Part 1308 continues to read as follows:

Authority: 21 U.S.C. 811, 812, 871b, unless otherwise noted.

2. Section 1308.11 is to be amended by adding paragraph (g)(6) and (7) to read as follows:

§ **1308.11 Schedule I.**

* * * * *

(g) * * *

(6) *alpha*-Methyltryptamine (AMT), its isomers, salts and salts of isomers - 7432.

(7) 5-Methoxy-N,N-diisopropyl-tryptamine (5-MeO-DIPT), its isomers, salts and salts of isomers - 7439.

* * * * *

Dated: __/__/__.

John B. Brown, III

Deputy Administrator

[Various Administrative Codes Here]

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Computer Corner #167

Examination Backlogs - The Management Challenge

by Michael J. Phelan
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Digital evidence forensics, of which computer forensics is only a subset, has been the fastest growing forensic sub-discipline for the last decade. It is possible within the next year or two that digital evidence collection at most crime scenes will equal in importance and in number the fingerprint exhibits. Inherent in this phenomenal growth, however, is the concurrent growth of evidence backlogs.

Not surprisingly, therefore, computer forensic examination backlogs are perhaps the single most important issue when the topic of digital evidence is raised. Since the bottom line in this business is the recovery of data accurately, swiftly, and in a court admissible manner, the minimization of backlogs is critical. Hence, it is perplexing that many law enforcement organizations allow significant computer evidence examination backlogs to exist - many in excess of 6 months. In some programs, evidence can languish for years, with minimal or no efforts at remediation. The problem is widespread, affecting Federal, state, and local law enforcement organizations. The impact is even greater. In the worst-case scenarios, investigators may *never* know what was contained on a seized computer. More commonly, the evidence will be examined too late to be useful, or in such a cursory, rushed manner that case-important information is missed.

The reality is that it's impossible to know the value of the digital evidence in a case until it has been thoroughly examined. There may be nothing of importance - but there could also be definitive leads on a terrorist cell, a kidnapping, or a child pornography exchange ring.

Trends

Consider these trends in explaining why there are digital evidence examination backlogs: First, submissions are growing at a very rapid rate. For example, DEA Special Agents have been submitting between 20 – 30 percent more exhibits every year for each of the last five years!

Second, the increasing complexity of the technology, and the varied forms of electronic evidence (consisting of computers, diskettes, data tapes, Zip cartridges, cellular telephones, two-way pagers, satellite phones, digital cameras, memory sticks, RAM drives, Personal Digital Assistants, Palm Computers), are both growing geometrically.

Third, the volume of data to be collected and searched is also increasing at an alarming rate, as hard drive capacity increases and cost per megabyte of data storage decreases. Most medium and large scale digital evidence programs are searching terabytes of data annually (one terabyte is a thousand billion characters or 1×10^{12}).

Fourth, digital evidence examiner personnel are (still) scarce human resource commodities. Private sector salaries start in the low 60's and often exceed six figures for senior level personnel. These salaries are at the high end of the salary scale compared to other information technology professionals, and have a direct impact on the ability of Federal, state, and local governments to hire personnel to staff their digital evidence programs.

Fifth, there are very few technical training providers, and most training sources offer only a one or two week introductory course. Digital evidence forensic course offerings are infrequent and enrollment is often limited to law enforcement personnel. Only a handful of academic institutions have recognized the need for digital evidence examination courses, and they are still experimenting with curriculum development and distance learning.

Need to Prioritize

Concomitant with these trends has been a lively internal debate in law enforcement that can best

be described as: "What is Computer Forensics?" This fundamental question takes several forms. First, there is the never-ending argument over whether Computer Forensics is an investigative technology or a forensic science. A corollary to this debate concerns the sufficiency of examination - or simply stated: "What are the minimum requirements?"

The Ford Motor Strategy

There are two competing management philosophies when it comes to approaches to reduce digital evidence backlogs. One theory (the Ford assembly line model) relies on tried and true management principals that state that the key to higher productivity lay in: A) Economies of scale; B) Work simplification; and C) Task specialization. Examples of integrating these concepts into Computer Forensics might include, e.g., centralizing technical support at the state level, or regionalization at the multi-county level, for economy of scale purposes. Another example would be the organization of examiners by functional specialization, such as on-site data collection specialists, basic computer examiners, network examiners, non-Microsoft operating system examiners, and volatile memory examiners.

The DNA Strategy

The competing management philosophy borrows from the relatively recent success within the forensic science community on the handling of DNA evidence. DNA scientists do not examine the entire DNA sequence when conducting an analysis. Rather, relatively small (but highly critical) segments are analyzed. These segments contain all the information that is needed to determine the degree of match. Similarly, the luxury of examining every last byte of data in a digital evidence case is highly labor intensive and is almost certainly not needed in most exams. Like DNA analyses, a complete digital evidence examination might take weeks - whereas a thorough examination of the critical area(s) may take no more than three to five days.

A second lesson learned from the DNA forensic experience is the recognition that the fundamental nature of computer forensics is forensic science. Accordingly, all of the standard scientific checks and balances must be incorporated into every Computer Forensics program - just as it was for DNA evidence - in order to meet prevailing legal admissibility standards. These checks include examiner training, proficiency standards (and testing), quality assurance programs, and the establishment of "best practices" and proper evidence handling protocols.

However, the adoption of forensically acceptable methods and procedures does not necessarily mean that the service must be provided by a forensic organization or, for that matter, by any particular law enforcement organization or office. The vast majority of computer forensic practitioners nationally are deputy sheriffs, detectives, and Special Agents that perform Computer Forensics work on only a part time basis. In other instances, the private sector has played a significant role in providing computer forensic services, especially in providing contract examiners.

The important points are that the methods employed must be forensically acceptable, and the provider may be from any of several labor categories, including part-time investigator-examiner, full time government forensic laboratory examiner, or contracted forensic examiner.

Minimum Needs

It seems evident that maintaining the status quo or submitting budget requests with the unending plea of "need more people" will not suffice in an era of fiscal constraints and limited government growth. However, there are some changes that can make a difference. Consider these four elements:

Analytical Sufficiency

First, define what are the minimal information requirements to support a case. Allow flexibility in defining analytical sufficiency based upon the nature of the alleged crime, legal rules of evidence, and prosecution policies. Develop a mechanism to classify and prioritize cases.

Network Hierarchies

Second, recognize that no law enforcement organization stands alone. Resources should be organized within a support structure whereby a part-time examiner can reach out to a regional or state computer forensic laboratory when more

technical types of support are needed. Additional technical support could be provided from a Federal crime laboratory – especially those laboratories providing highly specialized subject matter expertise. Research and development should be restricted to organizations that have adequate budgets and the technical abilities to manage projects from start to finish. Succinctly stated, simplify, specialize, and develop network support hierarchies wherever possible.

Evidence is Evidence

Third, the debate over whether digital evidence examination is an investigative technology or forensic science should be transcended. The focus should be on doing it right. Embrace best practices, control the evidence, institutionalize quality control mechanisms, and ensure examiners are trained and qualified. Remember, "evidence is evidence".

Training Need

Lastly, the crisis of digital evidence backlogs will not go away until effective national training strategies are in place. This essential infrastructure must include academia, private industry, and government in a partnership that is globally aware, accessible, and relevant to the tasks at hand. Both introductory and advance training are needed, as well as opportunities for internships, and distance learning for working professionals.

DEA's Experience

DEA has historically struggled with large digital evidence backlogs. More recently, DEA has adopted a three-fold strategy to reduce its evidence backlog and increase examiner productivity. First, DEA has hired 11 full-time contractors to work on-site at its digital evidence laboratory to supplement the existing DEA examiner workforce. The use of contractors has allowed DEA to have greater flexibility in acquiring a staff that has a wide range of technical skills.

Second, DEA has simplified its software tool kit to include fewer tools to reduce the training burden and simplify the software validation process. This seems paradoxical, since the experience at DEA has shown that multiple tools are often needed to perform basic digital evidence examination tasks such as duplication, file viewing and keyword searching. In fact, the high degree of variability in data storage formats may require the use of several tools before satisfactory results are achieved. Therefore, the purchase of only one or two software examination software suites would appear to be risky given the current complexity and variability of digital evidence. However, too much of a good thing can be equally problematic, and a minimum of two and a maximum of four different tools to perform the same functions (such as duplication, file viewing, keyword searching), is a reasonable compromise.

Third, DEA continues to operate a single digital evidence facility, thus resulting in an economy of scale. The concentration of the entire examiner workforce at one location means that all digital evidence examination issues can be addressed on-site. Centralization has also helped eliminate duplication of hardware and software procurements, minimize supply inventories, and most importantly, provide a single focus for field support.

Opportunities

Management should continue to maintain an open mind when addressing digital evidence backlogs. There are multiple solutions to the problem. The history and current operational protocols of each law enforcement organization are different and will affect what works best. Mixed management models, consisting of varying organizational structures (centralized or distributed), labor categories (Agents, civilian technicians or contractors), and examination strategies, will more efficiently utilize the very limited resources currently available. It is important to maintain flexibility and be opportunistic, but also important to remain diligent when it comes to basics - because in the final analysis, evidence is still evidence.

Questions or comments?
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