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# Microgram

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## *Bulletin*

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- NOVEMBER 2007 -

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## *Microgram Bulletin Turns 40*

Welcome to the 40th Anniversary (and 467th) Issue of *Microgram Bulletin* (formerly known as *Microgram*). This periodical has progressed from a sporadically published paper-based "communication" from the Bureau of Drug Abuse Control and Bureau of Narcotics and Dangerous Drugs (BDAC/BNDD) in late 1967 to electronic posting on [www.dea.gov](http://www.dea.gov) by the DEA Office of Forensic Sciences today. Currently, over 1500 offices around the world receive *Microgram Bulletin*, and the *Microgram* website had over 1.4 million pageviews in CY 2006.

One thing has remained constant over the past 40 years, and that is the commitment of the Office of Forensic Sciences to keep the forensic science and law enforcement communities informed of the latest developments in the production, trafficking, and analysis of abused substances.

A publication of this nature cannot exist for 40 years without the support of its readership. As always, *Microgram Bulletin* and *Microgram Journal* will continue to be dependent on you, the law enforcement and forensic science communities, for the information we publish. I encourage you to

continue to forward items of interest for *Microgram Bulletin* and manuscripts for *Microgram Journal*.

As we move forward into our fifth decade, I want to thank you for your past and continuing support of *Microgram*.

Thomas J. Janovsky  
Deputy Assistant Administrator  
DEA Office of Forensic Sciences

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**- INTELLIGENCE ALERT -**

**VERY LARGE SEIZURE OF LIQUID COCAINE BEING SMUGGLED  
ON THE ECUADORIAN FISHING BOAT EMPERADOR**

The DEA Special Testing and Research Laboratory (Dulles, Virginia) recently received a small amount of a biphasic liquid suspected to be a mixture of diesel fuel and an aqueous solution of cocaine (see Photo 1). The exhibit was a representative sample taken from approximately 3,850 gallons of liquid seized from a fish-holding tank on an Ecuadorian fishing boat, the *Emperador*, which was apprehended by the U.S. Coast Guard in international waters in the east Pacific Ocean (see Photos 2 - 3, next page). The liquid was estimated to be approximately 2,000 gallons of diesel fuel overlaying approximately 1,850 gallons (7,000 liters) of the aqueous solution. Preliminary testing indicated that the top layer was consistent with diesel fuel. Following standard acid/base workup and chloroform extraction of the aqueous layer, analysis by GC/FID, GC/MS, NMR, and FTIR confirmed cocaine (salt form not determined) at 340 milligrams per milliliter (calculated as the base). This equals approximately 2,380 kilograms of cocaine base total in the seizure. This was the first submission of this type to the Special Testing and Research Laboratory.



**Photo 1 - Note Lower, Darker Layer**

[Editor's Notes: The seizure of the *Emperador* was well publicized in the mass media. This is the largest seizure of "liquid cocaine" ever reported to *Microgram*. According to the suspects, the liquid was to be transferred at sea to another vessel, for eventual processing at another, undetermined locale.]



**Photo 2 - The Emperador**



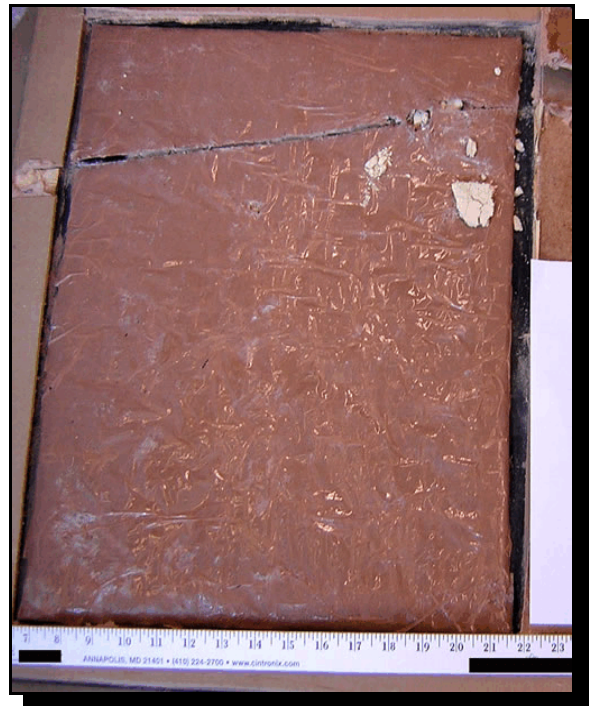
**Photo 3 - The Fishhold**

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**- INTELLIGENCE ALERT -**

**HEROIN SMUGGLED IN A LARGE, WOODEN-FRAMED PICTURE  
FROM LAGOS, NIGERIA**

The DEA Mid-Atlantic Laboratory (Largo, Maryland) recently received a submission of a large, wooden-framed picture, 24 x 20 x 3/4 inches, containing a sheet of compressed, brown powder, suspected heroin (see Photo 4). The exhibit was seized by German customs agents in Frankfurt, Germany from a flight en route from Lagos, Nigeria to Washington-Dulles airport, and was forwarded to the laboratory after a controlled delivery in the U.S. (no further details). The heroin was wrapped in several layers of plastic and tape, and was concealed behind the picture. Analysis of the powder (total net mass 1,085 grams) by GC/FID, GC/MS, NMR, and FTIR-ATR confirmed 55.9 percent heroin hydrochloride, also containing morphine, codeine, and caffeine (not quantitated). The Mid-Atlantic Laboratory has previously encountered heroin concealed inside picture frames.



**Photo 4**

[Editor's Note: This exhibit was unusual in that the heroin was in a thick sheet mimicking the picture "backing" - not in the wooden frame.]

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**- INTELLIGENCE ALERT -**

**COCAINE SMUGGLED IN DESIGNER BOAT SHOES IN KINGSTON, JAMAICA**

The DEA Mid-Atlantic Laboratory (Largo, Maryland) received three pairs of different color and style “designer”-brand boat shoes, each containing a package of white powder under their insoles, suspected cocaine (see Photo 5). The exhibits were seized by Jamaican authorities from a cruise ship docked at Kingston, and were remanded to the DEA Jamaica Country Office for laboratory analysis. Each package consisted of a plastic bag wrapped with tape. Analysis of the powder (total net mass 2.7 kilograms) by GC/MS, NMR, FTIR-ATR, and GC/FID confirmed 32, 46, and 61 percent cocaine hydrochloride, respectively, all adulterated with nicotinamide (not quantitated).



**Photo 5 - Ruler is 6-Inch**

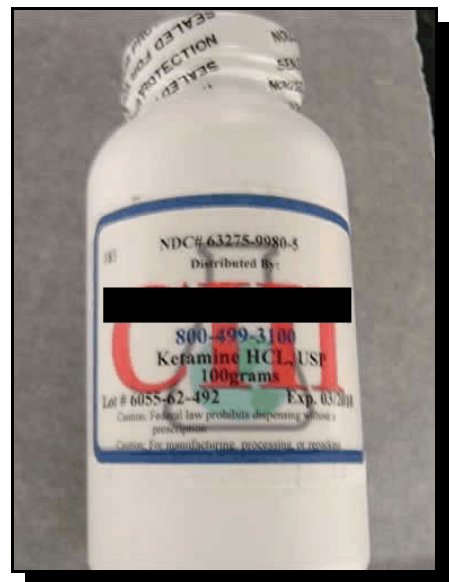
Although similar exhibits have been submitted to other DEA laboratories, this is believed to be the first submission of this concealment method to the Mid-Atlantic Laboratory.

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**- INTELLIGENCE ALERT -**

**VERY LARGE SEIZURE OF PHARMACEUTICAL GRADE KETAMINE HYDROCHLORIDE IN AURORA, COLORADO**

The DEA Western Laboratory (San Francisco, California) recently received a submission containing three purported pharmaceutical-grade ketamine hydrochloride exhibits, totaling over four kilograms of very fine, fluffy, white powders. The exhibits were seized at a small pharmaceutical firm in Aurora, Colorado by personnel from Immigration and Customs Enforcement and the Food and Drug Administration, and consisted of 30 100-gram bottles, 56 25-gram bottles, and approximately 100 grams of loose powder. The bottles were all factory-sealed and labelled as containing ketamine hydrochloride (e.g., see Photo 6). The loose powder had been taken on-site from two 25 kilogram drums, both also factory-sealed and labelled as containing ketamine hydrochloride. Analysis of the powders by GC/MS, FTIR, and NMR confirmed ketamine hydrochloride in each of the exhibits, all 95 percent or better pure. The drum labels indicated that the material was produced in China. This is one of the largest submissions of ketamine to the DEA Western Laboratory in recent memory.



**Photo 6**

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## SELECTED REFERENCES

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

1. Billault I, Courant F, Pasquereau L, Derrien S, Robins RJ, Naulet N. **Correlation between the synthetic origin of methamphetamine samples and their 15N and 13C stable isotope ratios.** *Analytica Chimica Acta* 2007;593(1):20. [Editor's Notes: **Note that the title compound (methamphetamine) does not agree with the content (MDMA).** 45 samples of MDMA were synthesized following the five most common routes using N-precursors from 12 different origins and three different precursors for the aromatic moiety. The 13C and 15N contents of both the precursors and the MDMA samples were measured by isotope ratio mass spectrometry coupled to an elemental analyzer (EA-IRMS). The delta-15N values of MDMA are strongly influenced by a combination of the delta-15N values of the source of nitrogen used, the route by which the MDMA is synthesized, and the experimental conditions employed. Contact: Laboratoire d'Analyse Isotopique et Electrochimique de Metabolismes, CNRS UMR6006, University of Nantes, 44322 Nantes, Fr.]
2. Dubois J, Wolff J-C, Warrack JK, Schoppelrei J, Lewis EN. **NIR chemical imaging for counterfeit pharmaceutical products analysis.** *Spectroscopy* 2007;22(Suppl.):36. [Editor's Notes: NIR provides a rapid method for detecting and comparing suspected counterfeit products with no sample preparation. Contact: Malvern Instruments, Analytical Imaging, Columbia, MD (street address and zip code not provided).]
3. Gilmore S, Peakall R, Robertson J. **Organelle DNA haplotypes reflect crop-use characteristics and geographic origins of Cannabis sativa.** *Forensic Science International* 2007;172(2-3):179. [Editor's Notes: Comparative sequencing of cannabis individuals across 12 chloroplast and mitochondrial DNA loci revealed 7 polymorphic sites, including 5 length variable regions and 2 single nucleotide polymorphisms. Simple PCR assays were developed to assay these polymorphisms, and organelle DNA haplotypes were obtained for 188 cannabis individuals from 76 separate populations, including drug-type, fiber-type and wild populations. Contact: Centre for Forensic Science, Canberra Institute of Technology, GPO Box 826, Canberra ACT 2601, Australia.]
4. Lee JS, Yang WK, Han EY, Lee SY, Park YH, Lim MA, Chung HS, Park JH. **Monitoring precursor chemicals of methamphetamine through enantiomer profiling.** *Forensic Science International* 2007;173(1):68. [Editor's Notes: Reports the analysis of 416 methamphetamine samples seized in Korea from 1994 to 2005. The samples were derivatized with (S)-(+)-alpha-methoxy-alpha-(trifluoromethyl)phenylacetyl chloride, and the derivatives were analyzed by GC/MS in SIM mode. Most of the seizures were pure S-(+)-enantiomer, but 21% (95 samples) contained the R-(-)-enantiomer above 1%. Contact: National Institute of Scientific Investigation, Department of Narcotics Division, Seoul 158-707, S. Korea.]
5. Madej K, Karabinowska K, Wozniakiewicz M. **Stacking as a method of improvement of the quantification limit of drugs determination by capillary electrophoresis.** *Z Zagadnien Nauk Sadowych* 2006;66:173. [Editor's Notes: A review. Covers pharmaceuticals and drugs of forensic interest (not specified in the abstract). Contact: Institute of Chemistry, Jagiellonian University, Krakow, Pol.]

6. Rowe WF. **Forensic chemistry.** Kirk-Othmer Encyclopedia of Chemical Technology (5th Edition) 2005;12:89. Edited by Seidel, Arza. John Wiley & Sons, Inc.: Hoboken, NJ 978-0-471-48494-3. [Editor's Notes: A review, focusing on criminal investigations. Contact: The George Washington University, Washington, DC (street address and zip code not provided).]
7. Soltaninejad K, Faryadi M, Akhgari M, Bahmanabadi L. **Chemical profile of counterfeited buprenorphine vials seized in Tehran, Iran.** Forensic Science International 2007;172(2-3):e4. [Editor's Notes: Analyses of counterfeited buprenorphine by GC/MS and HPLC indicated heroin, acetylcodeine, and pheniramine (but no buprenorphine). Contact: Forensic Toxicology Laboratory, Legal Medicine Organization, Tehran, Iran.]
8. Stanaszek R, Zuba D. **1-(3-chlorophenyl)piperazine (mCPP) - A new designer drug that is still a legal substance.** Z Zagadnien Nauk Sadowych 2006;66:220. [Editor's Notes: mCPP in seized tablets, capsules, and powders was analyzed by GC/MS and HPLC. Differentiation between mCPP and para-chlorophenylpiperazine was carried out using UV. Contact: Institute of Forensic Research, Krakow, Pol.]
9. Sukrong S, Zhu S, Ruangrunsi N, Phadungcharoen T, Palanuvej C, Komatsu K. **Molecular analysis of the genus Mitragnyna existing in Thailand based on rDNA ITS sequences and its application to identify a narcotic species: Mitragnyna speciosa.** Biological & Pharmaceutical Bulletin 2007;30(7):1284. [Editor's Notes: The nucleotide sequences of internal transcribed spacers (ITS) and the 5.8S coding region of nuclear ribosomal DNA (rDNA) of the four Mitragnyna species were analyzed (M. speciosa, M. hirsuta, M. diversifolia, and M. rotundifolia). This method provides the basis for an effective and accurate identification of M. speciosa (Kratom). Contact: Department of Pharmacognosy, Faculty of Pharmaceutical Sciences, Chulalongkorn University, Bangkok 10330, Thailand.]
10. Zhu E-Y, Lin Y, Zhuang Z-Y. **Partial least squares variable selection method and its application in drug source analysis.** Fenxi Huaxue 2007;35(7):973. [Editor's Notes: Presents the data analysis of 244 heroin samples that were analyzed by ICP-MS. This article is written in Chinese. Contact: Department of Chemistry and the Key Laboratory of Analytical Science of the Ministry of Education, College of Chemistry and Chemical Engineering, Xiamen University, Xiamen, Peop. Rep. China 361005.]

**Additional References of Possible Interest:**

1. Gaines RB, Frysinger GS, Reddy CM, Nelson RK. **Comprehensive two-dimensional gas chromatography (GC×GC) in environmental forensics.** Preprints of Extended Abstracts presented at the ACS National Meeting, American Chemical Society, Division of Environmental Chemistry 2007;47(2):530. [Editor's Notes: Presents a new technique for the analysis of environmental samples containing complex mixtures of organic compounds. The instrument can also be interfaced with a mass spectrometer. Contact: Dept. Science, U.S. Coast Guard Academy, New London, CT 06320.]
2. Perz RC, Sproll C, Lachenmeier DW, Buschmann R. **Opiate alkaloids in poppy seeds - A consequence of globalization of trade?** Deutsche Lebensmittel-Rundschau 2007;103(5):193. [Editor's Notes: A survey and discussion. This article is written in German. Contact: Chemisches und Veterinaeruntersuchungsamt (CVUA) Stuttgart, D-70736 Fellbach, Germany.)]

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## EMPLOYMENT OPPORTUNITIES

Position: **Assistant Drug Chemist and Forensic Drug Chemist** (2 positions). (Second Posting)  
Location: Hudson County Prosecutor's Office, Forensic Laboratory, Jersey City, NJ.  
Salary: Commensurate with Experience.  
Application Deadline: Open until Filled.

Duties and responsibilities: The successful candidate will independently carry out examinations of suspected controlled dangerous substances submitted by various law enforcement agencies in connection with criminal investigations and prosecutions using chemical and instrumental analyses. Responsibilities include: Utilize GC/MS and FTIR instruments; interpret chromatographic data; carry out wet chemical analyses; perform peer review of case files; maintain essential laboratory equipment, instruments, records and files; prepare certified laboratory reports; testify in federal, state and municipal courts; and perform other related duties as assigned. The applicant must have the ability to communicate well and work closely with laboratory, legal and administrative personnel; have a working knowledge of computer software, databases and word processing; and have knowledge of Quality Control/Assurance principles.

Qualifications: A minimum of a B.S. degree in forensic science or chemistry or a physical science with at least twenty-four (24) semester hours in chemistry. The ideal candidate will have a minimum of one-year experience analyzing controlled substances.

Contact: DLT. Roger Forsthoff, Director  
HCPO Forensic Laboratory  
[rforsthoff-at-hcpo.org](mailto:rforsthoff-at-hcpo.org) (201/915-1309)

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### Microgram Surface Mail Address Change

Effective October 12th, 2007 the address for "hard" mailings to the *Microgram* Editor was changed to:

DEA Headquarters  
Attn: Office of Forensic Sciences/Microgram Editor  
8701 Morrisette Drive  
Springfield, VA 22152

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### Microgram email Address Change

Effective January 1st, 2008 the email address for the *Microgram* Editor will be:

[DEA-Microgram-2008-at-mailsnare.net](mailto:DEA-Microgram-2008-at-mailsnare.net)

The current email address ( [microgram-2007-at-mailsnare.net](mailto:microgram-2007-at-mailsnare.net) ) will be monitored until January 31st, 2008. An automated response will direct senders to the new address.

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## UPDATED EMAIL ADDRESSES NEEDED

The email addresses for the following organizations returned rejection notices to the *Microgram* sending address for at least the past three issues of *Microgram Bulletin*, and therefore the respective organizations have been dropped from the subscription list. Note that the errors include “mailbox full,” “over quota,” “user not found,” or “user unknown” messages, and also a variety of anti-spam/filtering messages (the latter resulting from failure to “whitelist” the *Microgram* sending address). The Editor requests your assistance in contacting these organizations, determining if they wish to remain on the subscription e-net, and if so asking them to forward a valid email address to the *Microgram* sending address. In addition, if the Office is closed or is no longer interested, please forward that information.

### **U.S. Subscribers (by State, except U.S. Government organizations):**

**Alabama** - Abbeville Police Department/Abbeville;

**Arizona** - Arizona Department of Public Safety - State Gang Task Force/Bullhead City;

**Arkansas** - Baxter County Sheriff's Office/Mountain Home;

**California** - Bakersfield Police Department - Crime Laboratory/Bakersfield; California Department of Justice - Santa Barbara Laboratory/Santa Barbara; Huntington Beach Police Department - Crime Laboratory/Huntington Beach; Manteca Police Department/Manteca; San Bernardino County Sheriff - Scientific Investigations Unit/San Bernardino; Ventura County Sheriff's Department - Forensic Science Laboratory/Ventura;

**Colorado** - Grand Junction Police Department Laboratory/Grand Junction; Western Forensic Law Enforcement Training Center - Colorado State University/Pueblo;

**Connecticut** - Connecticut Dept of Public Safety - Meriden Laboratory/Meriden;

**Delaware** - Delaware Office of the Chief Medical Examiner - Forensic Sciences Laboratory/Wilmington; Delaware State Police - Crime Laboratory/Dover;

**Florida** - Manatee County Sheriff's Office/Bradenton; Pinellas County Forensic Laboratory/Largo; Pinellas County Sheriff's Office - Narcotics Division/Largo;

**Georgia** - Albany State University - Criminal Justice Department - Forensic Sciences/Albany; Northwestern Technical College - Department of Criminal Justice/Rock Spring;

**Illinois** - Illinois State Police - Southern Illinois Forensic Science Center/Carbondale; Northeastern Illinois Regional Crime Laboratory/Vernon Hills;

**Indiana** - Indianapolis-Marion County Forensic Services Agency/Indianapolis;

**Louisiana** - Acadiana Criminalistics Laboratory/New Iberia;

**Maine** - Portland Police Bureau - Drugs and Vice Division/Portland;

**Massachusetts** - Massachusetts Department of State Police - Western Satellite Laboratory/Springfield; Massachusetts Department of State Police - North East Satellite Laboratory/Danvers;



**Mississippi** - University of Mississippi - Department of Chemistry - Forensics Program/University;  
University of Southern Mississippi - Forensic Science Minor Program/Hattiesburg;

**Missouri** - Jefferson College - Police Training Program/Hillsboro;

**Nebraska** - Fairbury Police Department/Fairbury;

**New Jersey** - Newark Police Department/Newark; Ocean County Sheriff's Department/Tom's River;  
Union County Prosecutor's Office/Westfield;

**New Mexico** - College of the Southwest - Carlsbad - Criminal Justice Department/Carlsbad; New  
Mexico Department of Health - Scientific Laboratory Division - Toxicology/Albuquerque;  
Albuquerque Police Department/Albuquerque;

**New York** - International Narcotics Enforcement Officer's Association/Albany; Nassau County Medical  
Examiner's Office - Toxicology Laboratory/East Meadow; Onondaga County District Attorney's  
Office/Syracuse; Pace University - Department of Chemistry and Physical Sciences/New York;  
Ulster Correctional Facility/Napanoch; Westchester County Department of Laboratories/Valhalla;

**North Carolina** - Forsyth County Sheriff's Office Crime Laboratory/Winston-Salem;

**Ohio** - Cuyahoga County Coroner's Office/Cleveland; Defiance College - Department of Chemistry and  
Forensics/Defiance; Newark Police Department Forensic Services/Newark;

**Oklahoma** - Broken Arrow Police Department Crime Laboratory/Broken Arrow; Midwest City Police  
Department/Midwest City; Oklahoma State Bureau of Investigation - Central  
Laboratory/Oklahoma City; Oklahoma State Bureau of Investigation - Regional  
Laboratory/Edmond; Oklahoma State Bureau of Investigation - Regional Laboratory/Enid; Ponca  
City Police Department/Ponca City;

**Pennsylvania** - Waynesburg College - Forensic Science Program/Waynesburg; West Chester  
University - Department of Chemistry (Forensic Science Program)/West Chester;

**South Carolina** - Aiken County Sheriff's Office Regional Forensics Laboratory/Aiken; Law  
Enforcement Center Crime Laboratory/Greenville; South Carolina Department of Corrections -  
K9 Drug Interdiction Unit/Columbia;

**Texas** - Bexar County Forensic Science Center/San Antonio; Dallas ISD Police Department/Dallas;  
Harris County Court Liaison Officer/Houston; Tarrant County Medical Examiner's Office -  
Toxicology Laboratory/Fort Worth;

**Utah** - Utah Department of Public Safety - Central Utah Criminalistics Laboratory/Salt Lake City;

**Virginia** - Chesapeake Police Department/Chesapeake;

**Washington (State)** - Eastern Washington University - Forensic Sciences Program/Cheney; Lakewood  
Police Department/Lakewood; Seattle Police Department Crime Laboratory/Seattle;

**Washington, DC** - Europol (Attaches);

**West Virginia** - West Virginia State Police Crime Laboratory/South Charleston.

**U.S. Government (by Agency):**

**Bureau of Alcohol, Tobacco, and Firearms** - National Laboratory Center/Rockville, MD; Regional Laboratory/Atlanta, GA;

**Federal Bureau of Investigation** - Laboratory/Washington, DC;

**Naval Criminal Investigative Service** - FEYK; HQs/Washington, DC; Regional Forensic Laboratory/Norfolk, VA; Regional Forensic Laboratory/San Diego, CA;

**U.S. Army** - Criminal Investigations Laboratory/Fort Park, GA;

**U.S. Attorney's Office** - Lafayette, LA;

**U.S. Customs Service** - Research Laboratory/Springfield, VA; San Juan Laboratory/San Juan, PR.

**U.S. Fish and Wildlife Service** - Lacey, WA;

**International Subscribers (by Country):**

**Australia** - New South Wales Police - Forensic Science Laboratory/Westmead, NSW;

**Belgium** - Scientific Institute of Public Health/Brussels;

**Colombia** - Departamento Administrativo de Seguridad/Bogota;

**West Indies** - Forensic Science Centre/St. Michael, Barbados.

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