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COMISION INTERAMERICANA PARA EL
CONTROL DEL ABUSO DE DROGAS
CICAD

Secretaría de Seguridad Multidimensional

CUADRAGÉSIMO SÉPTIMO PERÍODO ORDINARIO DE SESIONES
Del 3 al 5 de mayo de 2010
Washington, DC

OEA/Ser.L/XIV.2.47
CICAD/doc.1802/10
4 mayo 2010
Original: English

# INFORME DEL LABORATORIO DE PRUEBAS E INVESTIGACIONES ESPECIALES Y LA DIVISIÓN DE INTELIGENCIA DE LA ADMINISTRACIÓN PARA EL CONTROL DE DROGAS (DEA) DE LOS ESTADOS UNIDOS

POR JEFFERY H. COMPARIN

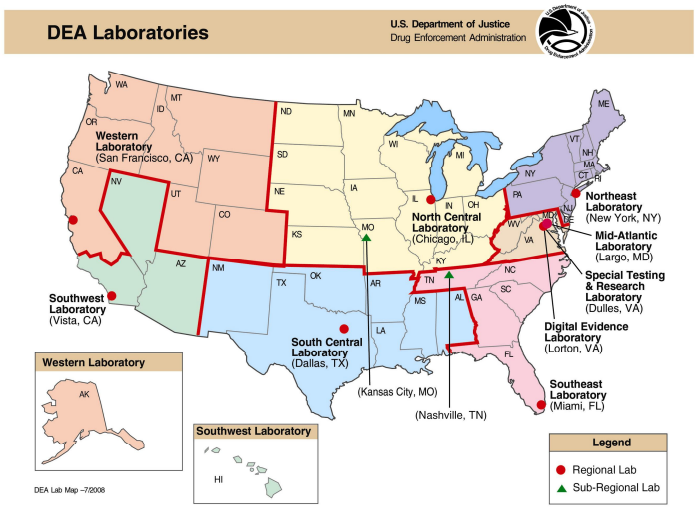
# Informe del Laboratorio de Pruebas e Investigaciones Especiales de la DEA y la División de Inteligencia de la DEA

## OEA/CICAD
## Mayo de 2010

Presentadores
Jeffrey H. Comparin
Director del Laboratorio

James Kinnison
Jefe de Unidad

# Administración para el Control de Drogas
# Sistema de Laboratorios




# Laboratorios regionales de la DEA

*Brindar apoyo para el control de drogas*

- Análisis de pruebas
  - Sustancias controladas
  - Huellas latentes
  - Pruebas digitales
- Testimonio en los tribunales
- Incautaciones de laboratorios de drogas clandestinos
- Seguimiento de la recopilación de pruebas sobre drogas

# Laboratorio de Pruebas e Investigaciones Especiales

- Orientado hacia la inteligencia
- Apoyo en el extranjero
  - Análisis
  - Trabajo de campo
- Capacitación
  - Interna
  - En el extranjero
- Proyectos de investigación/especiales
- Publicaciones y reseñas
- Drogas nuevas/desconocidas
- Evaluaciones de instrumentos
- Programa de normas de referencia
- Desarrollo de métodos

# Programas especiales

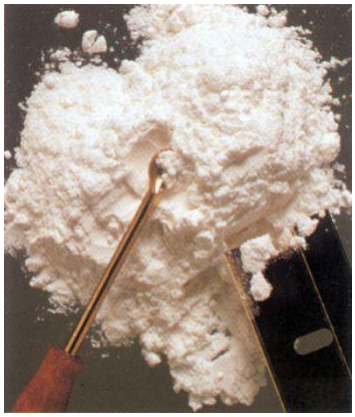
*Apoyo estratégico y táctico para la inteligencia*

- Identificación de Cocaína (Cocaine Signature Program)
- Identificación de Heroína (Heroin Signature Program)
  - Monitoreo Nacional de Heroína
- Perfil de metanfetaminas

# Programa de Identificación de Cocaína

**Misión**
•Determinación del origen mediante análisis químicos

**Clientes del laboratorio**
•División de Inteligencia de la DEA
•Personas encargadas de formular políticas sobre drogas en los Estados Unidos



# Programa de Identificación de Cocaína

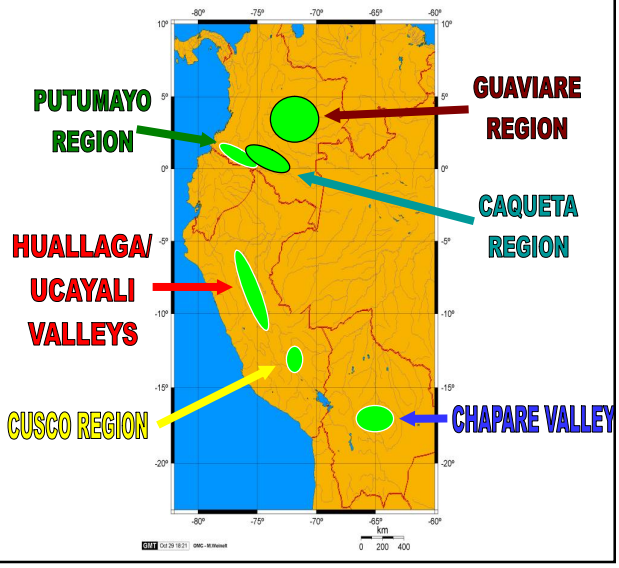
Historia
•Empezó en 1997

Muestras auténticas
•De regiones productoras de cocaína
  •Hoja
  •Muestras del Laboratorio de Procesamiento de Cocaína

# Programa de Identificación de Cocaína

Identificación – Origen de la pasta o base de cocaína
- Colombia
- Perú
- Bolivia

Metodología de conversión de la base de cocaína a HCl
- Colombia
- Perú
- Bolivia




# Programa de Identificación de Cocaína

## Origen de las muestras

- Todas las oficinas internacionales
- Incautaciones en los puertos de entrada
- Laboratorios de la DEA sobre el terreno
- Misceláneos

# Programa de Identificación de Cocaína

*Determinación del origen de la base de cocaína*

Se utilizan cuatro métodos:

- CISPA – Rastros múltiples de alcaloides, incluyendo alcaloides de tropacocaína y trimetoxi
  Oxidación/ Hidrolisis / Diluyentes /Origen de la base
- Cinamoil – Alcaloides de Cinamoilcocaína
  Oxidación / Origen de la base de cocaína
- Trux – Alcaloides de truxillina
  Origen de la base / Variedad de hoja de coca
- IRMS – Isótopos de carbono y nitrógeno
  13C a 12C y 15N a 14N – Variedad de hoja de coca

# Programa de Identificación de Cocaína

*Determinación del método de conversión a HCl*

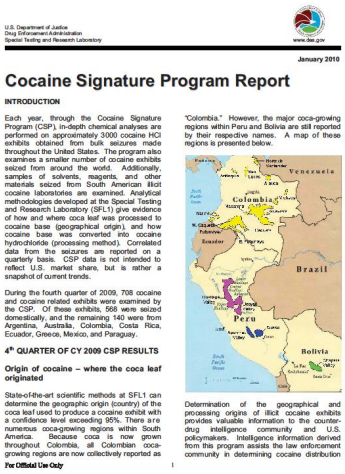
Espacio de cabeza estático GC/MS

Cuantifica los solventes ocluidos atrapados en la matriz cristalina del polvo

Determina
- Solvente utilizado para disolver la base de cocaína
- Solvente utilizado para la conversión a HCl
  - HCl concentrado o HCl alcohólico

# Programa de Identificación de Cocaína

## Informe de resultados



U.S. Department of Justice
Drug Enforcement Administration
Special Testing and Research Laboratory

www.dea.gov

January 2010

**Cocaine Signature Program Report**

**INTRODUCTION**

Each year, through the Cocaine Signature Program (CSP), in-depth chemical analyses are performed on approximately 3000 cocaine HCl exhibits obtained from bulk seizures made throughout the United States. The program also examines a smaller number of cocaine exhibits seized from around the world. Additionally, samples of solvents, reagents, and other materials seized from South American illicit cocaine laboratories are examined. Analytical methodologies developed at the Special Testing and Research Laboratory (SFL1) give evidence of how and where coca leaf was processed to cocaine base (geographical origin), and how cocaine base was converted into cocaine hydrochloride (processing method). Correlated data from the seizures are reported on a quarterly basis. CSP data is not intended to reflect U.S. market share, but is rather a snapshot of current trends.

During the fourth quarter of 2009, 708 cocaine and cocaine related exhibits were examined by the CSP. Of these exhibits, 568 were seized domestically, and the remaining 140 were from Argentina, Australia, Colombia, Costa Rica, Ecuador, Greece, Mexico, and Paraguay.

**4th QUARTER OF CY 2009 CSP RESULTS**

**Origin of cocaine – where the coca leaf originated**

State-of-the-art scientific methods at SFL1 can determine the geographic origin (country) of the coca leaf used to produce a cocaine exhibit with a confidence level exceeding 95%. There are numerous coca-growing regions within South America. Because coca is now grown throughout Colombia, all Colombian coca-growing regions are now collectively reported as "Colombia." However, the major coca-growing regions within Peru and Bolivia are still reported by their respective names. 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 assists the law enforcement community in determining cocaine distribution

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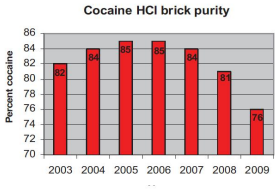
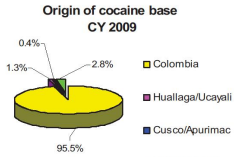



# Programa de Identificación de Heroína

**Misión**

•Determinar el origen mediante análisis químicos

**Clientes del laboratorio**

•División de Inteligencia de la DEA

•Personas encargadas de formular políticas sobre drogas en los Estados Unidos

•Otros países

# Programa de Identificación de Heroína

- Historia
  - Empezó en 1977
- Muestras auténticas
  - De las regiones productoras de heroína de todo del mundo
  - Espina dorsal es la autenticidad de la base de datos

# Programa de Identificación de Heroína

- Muestras auténticas
  - Todas las oficinas internacionales
  - Incautaciones en puertos de entrada
  - Laboratorios regionales de la DEA
- Programa de Monitoreo Nacional
  - Compra de heroína al por menor
  - Programa de inteligencia: 28 ciudades

# Programa de Identificación de Heroína

*Clasificaciones*

- Sudeste Asiático
  - SEA/2
  - SEA/4
- Sudoeste Asiático
  - SWA/A
  - SWA/B
  - SWA/C
- Sudamérica - SA
- México - MEX

## Programa de Identificación de Heroína

COLECCIÓN DE LA GOMA/LÁTEX DEL OPIO

↓

EXTRACCIÓN DE LA MORFINA DEL OPIO

↓

PRODUCCIÓN DE LA BASE DE HEROÍNA

↓

PRODUCCIÓN DEL HIDROCLORHIDRATO DE HEROÍNA

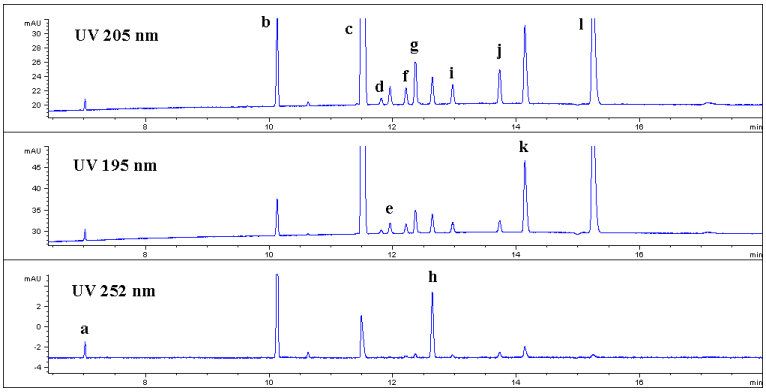
*Procesos regionales*

*Bases para la clasificación de muestras*

# Identificación de Heroína I: Electroforesis capilar

*Extracción clandestina de morfina del opio – nunca completa o consistente*

*Los alcaloides y derivados del opio permanecen en el producto final de heroína*




(a) thiamina (b) quinina (c) heroína (d) O6-monoacetilmorfina (e) O3-monoacetilmorfina (f) morfina

(g) acetilcodeína (h) papaverina (i) codeína (j) noscapina (k) procaína (l) difenhidramina

# Identificación de Heroína II: Resultados Cuantificación

*44 – 48 impurezas ácidas y neutras*

SIG II GCQ Quantitation Report

Sample Name: 2-83835 Sample Type: Unknown Sample ID: 1 Comment: H. WOJNO
Acquisition Date: 08/16/2004 3:40:31 PM Operator: Polaris Q Data Path: D:\Xcalibur\Data\081304\
Run Time (min): 56.72 Scans: 2441 Low Mass (m/z): 43 High Mass (m/z): 575
Vial: 1 Samp Vol: 0 Samp Wt: 64.4 ISTD Amt: 1 Dil Factor: 0.33719
Inst Method: D:\Xcalibur\methods\BIGII_1u\DEA#345396.meth Proc Method: D:\Xcalibur\methods\call-081304-GCQ3

| Compound Name | Actual RT | % Relative to Morphine | Area Response |
|---|---|---|---|
| S194 | 10.81 | 2.81E-04 | 48317 |
| Meta-Meconin | 11.26 | N/A | 3184313 |
| S3-Methoxy-4-Acetylphenanthrene | 15.68 | N/A | 349773 |
| S252 | 15.79 | 9.39E-06 | 1535 |
| S254 | 18.50 | 5.22E-06 | 1236 |
| S296 | 20.19 | 9.71E-05 | 22331 |
| S1_369 | 22.09 | 3.50E-02 | 866740 |
| S1_425 | 26.36 | 1.17E-05 | 1498 |
| S2_369 | 28.28 | 3.94E-04 | 36825 |
| S3_369 | 29.00 | 8.06E-05 | 18783 |
| S1_427 | 30.02 | 2.23E-04 | 17424 |
| db-1-395 | 30.32 | N/A | 66170 |
| S1-395 | 30.45 | 2.25E-03 | 173572 |
| db-TANM | 30.82 | N/A | 2327 |
| S1_397 | 31.07 | 2.86E-03 | 101854 |
| UNK381 | 32.26 | 6.92E-04 | 22819 |
| UNK2_453 | 32.35 | 7.90E-05 | 6140 |
| S385 | 33.12 | 6.77E-05 | 16314 |
| NPNL | 34.35 | N/A | 424733 |
| S1_413 | 35.75 | 1.58E-02 | 1334343 |
| S1_459 | 36.31 | 8.02E-06 | 7301 |
| S2_517 | 37.18 | 2.28E-05 | 5472 |
| UNK560 | 37.36 | 2.60E-06 | 509 |
| S1_487 | 37.91 | 6.77E-05 | 21841 |
| S2_487 | 38.63 | 7.15E-05 | 26813 |
| S_B1 | 39.62 | 5.28E-05 | 4976 |
| S3_455 | 39.97 | 2.94E-04 | 58763 |
| S1_399 | 41.12 | 1.58E-05 | 1525 |
| S1_453 | 41.21 | 2.25E-05 | 7192 |
| S_C1 | 41.37 | 5.45E-04 | 40382 |
| S1_457 | 41.37 | 4.19E-06 | 959 |
| S2_457 | 41.88 | 1.39E-05 | 2499 |
| S3_515 | 42.14 | 3.49E-06 | 395 |
| UNK2_433 | 43.10 | 4.49E-05 | 6811 |
| S3_427 | 44.12 | 9.53E-06 | 3961 |
| S1_441 | 43.93 | 2.28E-04 | 51669 |
| S1_485 | 44.22 | 1.71E-06 | 543 |
| NPNN | 45.09 | N/A | 306668 |
| S4_455 | 46.99 | 3.71E-05 | 3513 |
| S1_455 | 47.84 | 1.27E-04 | 15096 |
| S1_515 | 50.16 | 1.03E-04 | 10288 |
| S2_455 | 50.97 | 1.24E-04 | 12379 |

# Análisis de solventes ocluidos en la heroína: GC/MS

## Conversión de la base de heroína a HCl de heroína

*Solventes orgánicos quedan atrapados en la matriz cristalina*

# Informes del Programa de Identificación de Heroína

*Del Laboratorio*

**Profile Data**
**For Intelligence Purposes Only**

Case Number XXXX-XX-XXXX
Lab Number XXXXX
Exhibit Number X
Date Collected 10/1/2005

Net Weight Received (grams) 1.0
Reserve Weight (grams) 0.78

| | |
|---|---|
| Signature 1 Classification | SA1 |
| Signature 2 Classification | SA3 |
| Solvent Classification | SA |
| Final Classification | SA |

Authentic Classification: 5
Appearance Beige

| Substance | % Potency |
|---|---|
| Heroin HCl | 71.6 |
| O6-Monoacetylmorphine as HCl | 1.0 |
| O3-Monoacetylmorphine as HCl | - - |
| Morphine as HCl | - - |
| Acetylcodeine as HCl | 1.9 |
| Papaverine as HCl | 2.1 |
| Codeine as HCl | - - |
| Noscapine as Base | 0.1 |

| Alkaloid Ratios | |
|---|---|
| O6MAM/Total Morphine | 0.014 |
| O3MAM/O6MAM | 0.000 |
| O6MAM/Total Codeine | 0.506 |
| Total Codeine/Total Morphine | 0.029 |
| Papaverine/Total Codeine | 1.283 |
| Papaverine/Total Morphine | 0.037 |
| Noscapine/Total Morphine | 0.002 |
| Noscapine/Total Codeine | 0.086 |
| Papaverine/Noscapine | 15.000 |

**Other Substances Detected**

Sucrose

Key: UNK Unknown
NA Not Analyzed
IS Insufficient Sample
NQ Not Quantitated

Printed 02/27/2006 Chemist Initials _____

*De la División de Inteligencia*

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Drug Intelligence Brief

DRUG ENFORCEMENT ADMINISTRATION
INTELLIGENCE DIVISION

March 2009
DEA - 08031

**Heroin Signature Program: 2007**

**Overview**

Each year several hundred heroin samples are analyzed through the Drug Enforcement Administration's (DEA) Heroin Signature Program (HSP) to identify the geographic area – South America, Mexico, Southwest Asia, or Southeast Asia – in which they were manufactured. In 2007, heroin from South America (SA) accounted for 70 percent (by weight) of the heroin analyzed through the HSP. Heroin from Mexico (MEX) and Southwest Asia (SWA) accounted for 25 and 5 percent, respectively. Only one Southeast Asian (SEA) heroin exhibit was submitted to the program in 2007. Since its inception, the HSP has proven to be a valuable indicator of changes in the supply of heroin and provides insight into the wholesale level of heroin trafficking to the United States.

**Background**

The HSP is an essential component of the Intelligence Division's ability to identify trends in heroin trafficking and distribution in the United States. The objective of the program is to identify and quantify the chemical constituents of heroin seized at U.S. ports of entry (POE), as well as randomly chosen samples and special requests for analysis.[1] Samples submitted to the HSP undergo in-depth chemical analysis at DEA's Special Testing and Research Laboratory. Once analyzed, the heroin samples are classified by the process by which they were manufactured, which, in turn, enables the association of the samples to specific geographic source regions.

Signature analysis is the only scientifically based source of information currently available on the origin of heroin encountered in the U.S. drug market. HSP chemical analysis data, combined with investigative and intelligence reporting, allows for the identification of possible changes in the geographic source and purity of heroin found in the United States, as well as changes in trafficking routes and methods. The program continually undergoes quality assurance by obtaining and analyzing authentic samples obtained from the primary heroin production regions.

**2007 Heroin Signature Program Results**

In 2007, heroin from SA accounted for 70 percent (by weight) of the heroin analyzed through the HSP. Heroin from MEX and SWA accounted for 25 and 5 percent, respectively. Only one SEA

[1] The HSP provides a snapshot of wholesale heroin trafficking in the United States. In contrast to the HSP, DEA's Heroin Domestic Monitor Program (HDMP) is a quarterly purchase program designed to identify the purity, price, and source of origin of heroin available at the retail level in 20 U.S. cities.

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# Programa de perfil de mentanfetaminas

## Misión

- Determinar las rutas de drogas sintéticas
- Monitorear precursores químicos
- Monitorear agentes reactivos y solventes
- Seguir las tendencias de fabricación

*Drogas sintéticas vs. producto natural*

# Programa de perfil de mentanfetaminas

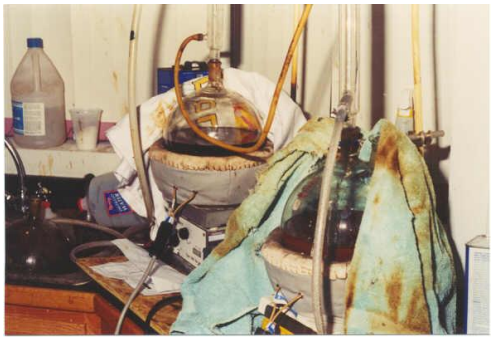
## Historia

1997 – Se iniciaron los procedimientos de desarrollo
Fines de 1998 – Se empezaron a examinar muestras
- Recopilación de datos

2000 – Informe inaugural
2003 – Programa formalizado

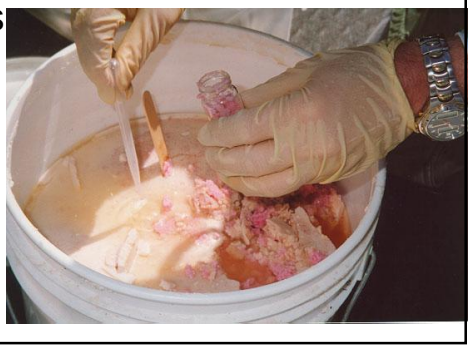
## Programa de perfil de mentanfetaminas

**Clientes del laboratorio**
Agentes especiales de la DEA
División de Inteligencia de la DEA
Personas encargadas de formular políticas sobre drogas en los Estados Unidos



## Programa de perfil de mentanfetaminas

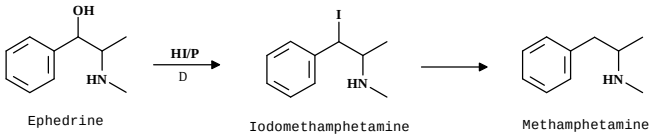
Muestras auténticas/Origen de las muestras
- Laboratorios de la DEA sobre el terreno
- Oficinas Internacionales de la DEA
- Policía nacional y local
- Laboratorios clandestinos



# Programa de perfil de mentanfetaminas

## *Métodos analíticos*

- NMR – Análisis cualitativos y cuantitativos
- Electroforesis capilar – Determinación de isómeros
- GC/MS – Determinación de impurezas orgánicas
- LC/Fluorescencia – Rastros de compuestos de naftaleno
- FTIR – Análisis cualitativo
- ICPMS – Análisis de rastros de metales

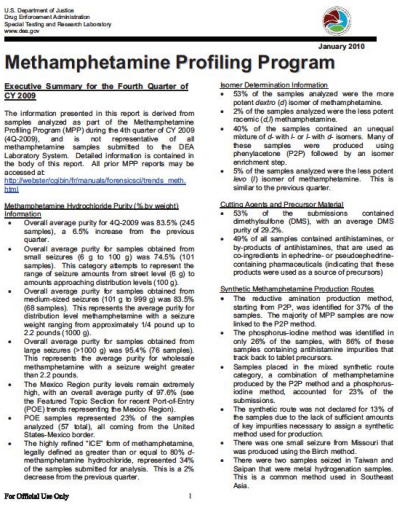



Ephedrine Iodomethamphetamine Methamphetamine

# Programa de perfil de mentanfetaminas

## Informe de resultados

- Pureza promedio
  - Regional
  - Nacional
- Determinación de isómeros
- Rutas de drogas sintéticas
- Adulterantes/Diluyentes
- Tendencias
- Características especiales



U.S. Department of Justice
Drug Enforcement Administration
Special Testing and Research Laboratory
www.dea.gov

January 2010

**Methamphetamine Profiling Program**

**Executive Summary for the Fourth Quarter of CY 2009**

The information presented in this report is derived from samples analyzed as part of the Methamphetamine Profiling Program (MPP) during the 4th quarter of CY 2009 (4Q-2009), and is not representative of all methamphetamine samples submitted to the DEA Laboratory System. Detailed information is contained in the body of this report. All prior MPP reports may be accessed at: http://webster/cgibin/tr/manuals/forensicsci/trends_meth.html

Methamphetamine Hydrochloride Purity (% by weight) Information

- Overall average purity for 4Q-2009 was 83.5% (245 samples), a 6.5% increase from the previous quarter.
- Overall average purity for samples obtained from small seizures (6 g to 100 g) was 74.5% (101 samples). This category attempts to represent the range of seizure amounts from street level (6 g) to amounts approaching distribution levels (100 g).
- Overall average purity for samples obtained from medium-sized seizures (101 g to 999 g) was 83.5% (68 samples). This represents the average purity for distribution level methamphetamine with a seizure weight ranging from approximately 1/4 pound up to 2.2 pounds (1000 g).
- Overall average purity for samples obtained from large seizures (>1000 g) was 95.4% (76 samples). This represents the average purity for wholesale methamphetamine with a seizure weight greater than 2.2 pounds.
- The Mexico Region purity levels remain extremely high, with an overall average purity of 97.6% (see the Featured Topic Section for recent Port-of-Entry (POE) trends representing the Mexico Region).
- POE samples represented 23% of the samples analyzed (57 total), all coming from the United States-Mexico border.
- The highly refined "ICE" form of methamphetamine, legally defined as greater than or equal to 80% *d*-methamphetamine hydrochloride, represented 34% of the samples submitted for analysis. This is a 2% decrease from the previous quarter.

Isomer Determination Information

- 53% of the samples analyzed were the more potent *dextro* (*d*) isomer of methamphetamine.
- 2% of the samples analyzed were the less potent racemic (*d,l*) methamphetamine.
- 40% of the samples contained an unequal mixture of *d*- with *l*- or *l*- with *d*- isomers. Many of these samples were produced using phenylacetone (P2P) followed by an isomer enrichment step.
- 5% of the samples analyzed were the less potent *levo* (*l*) isomer of methamphetamine. This is similar to the previous quarter.

Cutting Agents and Precursor Material

- 53% of the submissions contained dimethylsulfone (DMS), with an average DMS purity of 29.2%.
- 49% of all samples contained antihistamines, or by-products of antihistamines, that are used as co-ingredients in ephedrine- or pseudoephedrine-containing pharmaceuticals (indicating that these products were used as a source of precursors)

Synthetic Methamphetamine Production Routes

- The reductive amination production method, starting from P2P, was identified for 37% of the samples. The majority of MPP samples are now linked to the P2P method.
- The phosphorus-iodine method was identified in only 26% of the samples, with 86% of these samples containing antihistamine impurities that track back to tablet precursors.
- Samples placed in the mixed synthetic route category, a combination of methamphetamine produced by the P2P method and a phosphorus-iodine method, accounted for 23% of the submissions.
- The synthetic route was not declared for 13% of the samples due to the lack of sufficient amounts of key impurities necessary to assign a synthetic method used for production.
- There was one small seizure from Missouri that was produced using the Birch method.
- There were two samples seized in Taiwan and Saipan that were metal hydrogenation samples. This is a common method used in Southeast Asia.

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## Valor estratégico de los programas de identificación/perfil para la inteligencia

Programas de Identificación y Perfil de la DEA:

- Programa de Identificación de Heroína (HSP)
- Programa de Identificación de Cocaína (CSP)
- Programa de Perfil de Metanfetaminas (MPP)

Estos programas son valiosos para la inteligencia ya que identifican:

- Cambios en la fuente de origen de la cocaína y heroína incautadas
- Rutas de tráfico y métodos para los distintos tipos de drogas
- El uso de nuevos métodos de procesamiento y/o precursores químicos
- Cambios en la pureza de las drogas
- La presencia de adulterantes y diluyentes

## Muchas gracias

Jeffrey H. Comparin
Director del Laboratorio

James A. Kinnison
Jefe de Unidad