DEA
INTELLIGENCE
REPORT

2016 Heroin Domestic Monitor Program

DEA-DCW-DIR-026-18

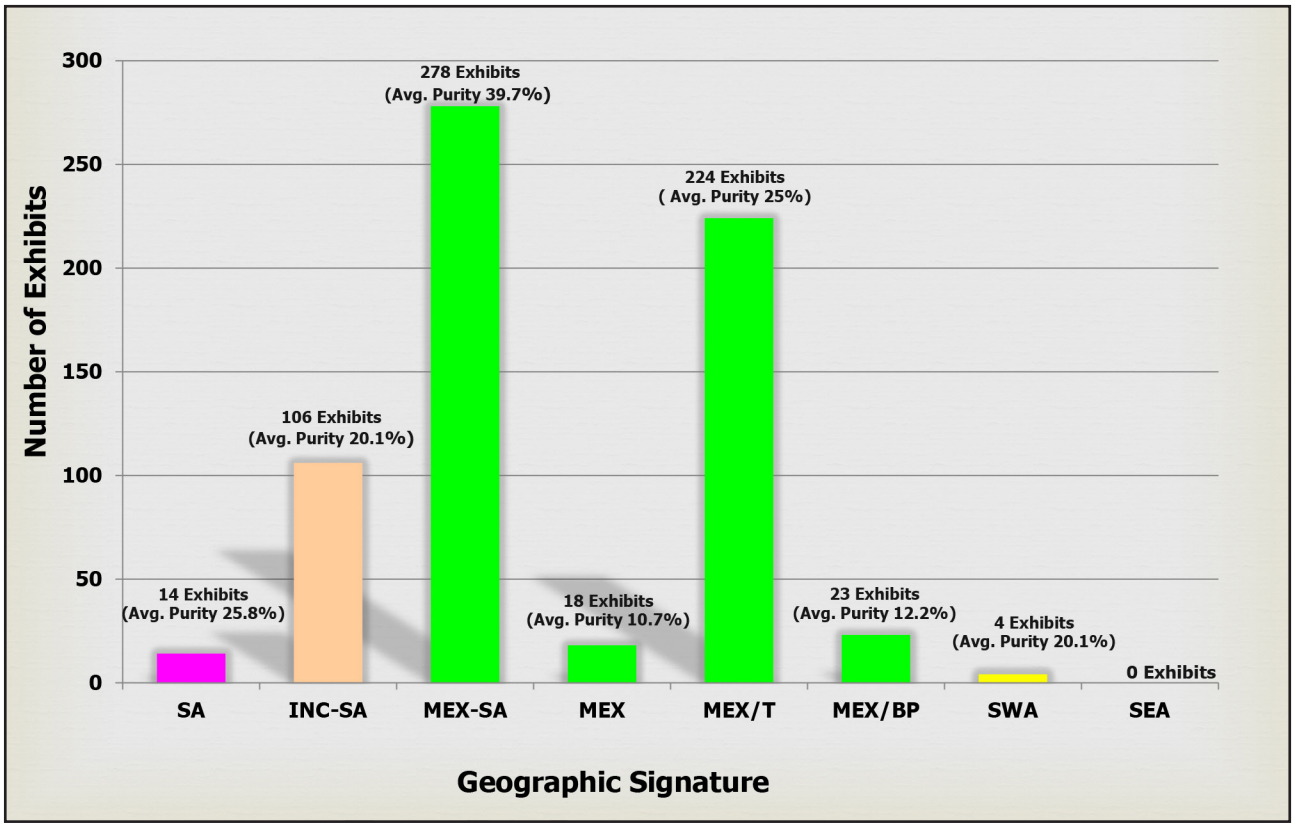
OCTOBER 2018

Executive Summary

The Drug Enforcement Administration's (DEA) Heroin Domestic Monitor Program (HDMP) is a retail-level heroin purchase program that provides data analysis about the geographic source of heroin along with price, purity, adulterants, and diluents sold at the street-level in 27 U.S. cities. In 2016, a total of 667 qualified exhibits were purchased. Of those exhibits, 543 were classified as Mexican-origin heroin (278 Mexican-South American [MEX-SA], 224 Mexican-Black Tar [MEX/T], 23 Mexican-Brown Powder [MEX/BP], and 18 Mexican [MEX]); 106 heroin exhibits were classified as Inconclusive Origin-South American Processing Method (INC-SA); 14 were classified as South American (SA) heroin; and 4 were classified as Southwest Asian (SWA) heroin. During 2016, for the eleventh consecutive year, no Southeast Asian (SEA) heroin exhibits were purchased through the HDMP.

2016 HDMP data indicated that Mexican-origin heroin was the predominant type of heroin available in U.S. retail drug markets. In 2016, the overall average purity of Mexican-origin heroin was 31.5 percent, an increase of 2.5 percentage points[a] from 2015. The purity levels of Mexican-origin heroin in 2016 varied within the signature classifications developed by DEA's Special Testing and Research Laboratory (SFL 1) for Mexican-produced heroin. MEX/T averaged 25 percent pure, an increase of 3.3 percentage

FIGURE 1: HEROIN EXHIBITS: ORIGINS AND PURITIES.



Source: DEA

[a] A percentage point is a unit expressing the arithmetic difference between two percentages, e.g., a decline of one percentage point would be a decrease from 10 percent to nine percent. A complete list of other definitions is available in Appendix D.

points from 2015; and MEX/BP averaged 12.2 percent pure, an increase of 2 percentage points from 2015. Heroin exhibits classified as MEX-SA (formal signature for Mexican white powder heroin) averaged 39.7 percent pure, a decrease of 1.5 percentage points from 2015. Heroin classified as MEX, which is refined or crudely manufactured heroin from Mexico that does not fit in one of the other Mexican signature categories, averaged 10.7 percent pure, a decrease of 4.1 percentage points from 2015 (see Figure 1).

Overall, Mexican-origin heroin exhibits reflected an average price per milligram pure of $0.84,[b] a decrease of $0.09 from the 2015 price of $0.93 per milligram pure. Heroin classified as MEX cost $1.42 price per milligram pure, an increase of $0.32 from the 2015 price of $1.10 per milligram pure. MEX/T cost $0.80 price per milligram pure, the same price noted in 2015; and MEX/BP cost $1.95 price per milligram pure, an increase of $0.66 from the 2015 price of $1.29 per milligram pure. Heroin exhibits classified as MEX-SA cost $0.74 per milligram pure, a decrease of $0.23 from the 2015 price of $0.97 per milligram pure.

A significant number of 2016 HDMP heroin exhibits were classified as INC-SA which is the formal signature classification assigned by SFL1 to heroin where either Mexico or South America could be the geographic origin, but is produced or refined using South American processing methods. Extremely adulterated and/or diluted (low purity) heroin, such as that purchased at the retail level, is more likely to generate this classification.

2016 HDMP data indicated that SA heroin and heroin classified as INC-SA were encountered most often in the Eastern and Midwestern United States. HDMP data revealed that heroin classified as INC-SA had an average purity of 20.1 percent, a decrease of 7.4 percentage points from 2015, while SA heroin exhibits had an average purity at 25.8 percent, a decrease of 13.3 percentage points from 2015. HDMP data further reflected the average price per milligram pure for heroin classified as INC-SA was $1.69, an increase of $0.50 from 2015. SA heroin exhibits had an average price per milligram pure of $1.09, an increase of $0.04 from 2015.

SWA heroin exhibits purchased in 2016 under the HDMP were obtained in Miami, Florida, and Washington, DC. These exhibits had an average purity of 20.1 percent, an increase of 1.4 percentage points from 2015. SWA heroin exhibits had an average price per milligram pure of $0.96, an increase of $0.10 from 2015.

Exhibits classified as “unknown” (UNK) were purchased in only eight of the HDMP cities. Heroin exhibits are classified as UNK when their signature profiles are inconsistent with the signature profiles of authentic heroin exhibits[c] collected from the four geographic source regions: Mexico, South America, Southeast Asia, or Southwest Asia.

[b] All prices in this report are listed in U.S. currency.

[c] An authentic heroin exhibit meets at least one of the following criteria: 1) a heroin exhibit seized in heroin producing countries; 2) a heroin exhibit seized in a heroin/opium processing laboratory in a heroin/opium source country; 3) a heroin exhibit transported directly to the United States from a source country and seized at a U.S. land, sea, or airport port of entry.

Background

The HDMP collects data on the geographic origin of street-level heroin along with price, purity, adulterants, and diluents available in major metropolitan areas of the United States. Each quarter, the DEA Intelligence Division provided funding for the purchase of retail (street-level) heroin exhibits in 27 metropolitan areas. Each purchase is submitted for in-depth chemical analysis at SFL1.

The goal of the HDMP is to provide federal, state, and local law enforcement authorities, as well as drug policymakers and drug abuse researchers, with information regarding domestic heroin available at the street level. Through Heroin Signature Analysis,[d] SFL1 determines the geographic origin of each qualified heroin exhibit submitted to the program. HDMP data analyses also reveal changes in heroin availability, price and purity, adulterants and diluents, use patterns, and marketing practices.

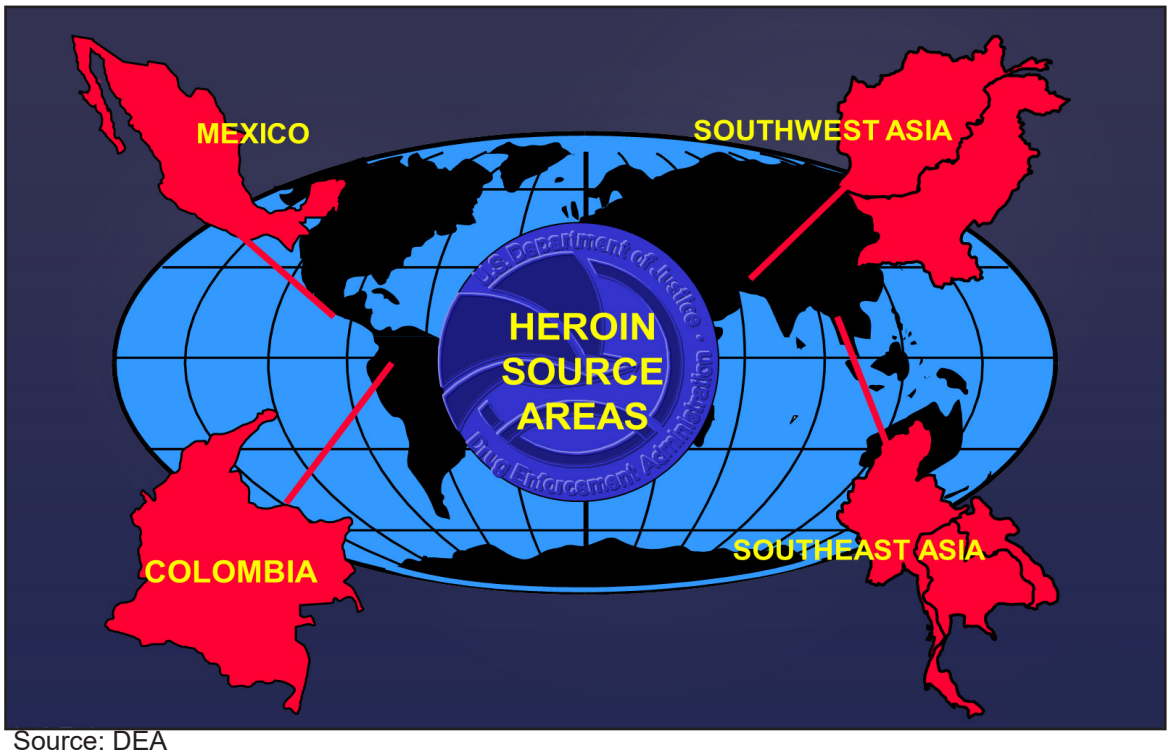
Since its inception more than 35 years ago, the HDMP has proven to be a valuable and reliable indicator for the detection of trends in U.S. retail-level heroin trafficking. The program also has provided accurate assessments of the fluctuations in the domestic retail availability of heroin sourced from each of the major heroin source areas – Mexico, South America, Southeast Asia, and Southwest Asia (see Figure 2). In recent years, the HDMP has tracked the increasing presence of Mexican white powder heroin at the retail level, particularly in the East and Midwest sections of the United States. In years past, the HDMP also documented the increased availability in the early to mid-1980s of SEA heroin at the retail level in a number of U.S. cities; further documented significant increases in the mid-1990s in the amount of SA heroin available at the retail level, particularly in the key metropolitan heroin markets of the Northeastern U.S.; and, in the early 2000s, HDMP program data highlighted the growth in competitive drug markets containing heroin from multiple geographic sources.

The HDMP was initiated in DEA's New York Division in 1979 and, to this day, particular attention is paid to HDMP results for New York City because it remains one of the most prominent heroin destination and distribution centers in the United States. Between 1979 and 1991, the number of DEA offices that participated in the HDMP fluctuated between 6 and 12. In 1991, DEA expanded the HDMP to include one city in each of DEA's 21 domestic field divisions. Between 1995 and 1999, Baltimore, Maryland, Orlando, Florida, and El Paso, Texas, joined as program participants. San Antonio, Texas, and Richmond, Virginia, were added as participants in early 2003. In 2006, the program was expanded further to include Pittsburgh, Pennsylvania; Minneapolis, Minnesota; and Portland, Oregon. In January 2010, the DEA El Paso Field Division transferred the program from El Paso, Texas, to Albuquerque, New Mexico, and in September 2011, Minneapolis–St. Paul, Minnesota was removed from the HDMP.

As previously noted, the HDMP is conducted in 27 metropolitan areas, as opposed to nationwide sampling. Consequently, attempts to calculate a national average for price and purity cannot be extrapolated solely from program results because the sampling reflects local user preferences and market availability. The dynamics of the local heroin market are unique to each metropolitan area; 2016 HDMP data accurately reflect long-term local trends as well as changes in price per milligram pure and purity in the participating cities.

[d] Heroin Signature Analysis is a program developed by DEA to identify the geographic source area of a heroin exhibit. Heroin signature analysis is based on exhaustive chemical profiles of authentic exhibits acquired from each of the four major heroin source areas: Mexico, South America, Southeast Asia, and Southwest Asia.

FIGURE 2: HEROIN SOURCE AREAS.



Source: DEA

Qualified Exhibits

DEA offices in most cities where the HDMP is conducted are tasked with 10 street-level heroin purchases per quarter, or a total of 40 purchases per year. In New York City, 15 purchases are made per quarter, a total of 60 per year. The following cities purchase only five exhibits per quarter, a total of 20 per year: Albuquerque, New Mexico, Houston, Texas, Orlando, Florida, Pittsburgh, Pennsylvania, Portland, Oregon, Richmond, Virginia, and San Antonio, Texas. Thus, 960 heroin exhibits were scheduled for purchase during 2016 as part of the HDMP.

The total number of exhibits included in HDMP analysis varies year to year based on a number of factors. For example, some purchased exhibits are determined to contain no controlled substance; some are determined to contain another controlled substance such as cocaine; and others, while containing heroin, do not include a sufficient amount to allow for geographic signature classification and are classified as "UNK." Such exhibits are not included in this report. Those that are included in the yearly HDMP analysis are deemed "qualified exhibits," signifying that geographic source data could be obtained for the exhibit.

Exhibits Classified as Inconclusive–South America (INC-SA)

A significant number of 2016 HDMP heroin exhibits (106) were classified as INC-SA. This signature classification indicates inconclusive geographic origin for a heroin sample that was produced using South American processing methods. It is generally employed when adulterants in the sample hinder the determination of origin as to South America or Mexico. Extremely adulterated and diluted (low purity)

heroin, such as that purchased at the retail level, is more likely to generate this classification. 2016 HDMP results reflect that the average purity of INC-SA heroin was only 20.1 percent, indicating high levels of adulteration and/or dilution.

Although the majority of the 2016 HDMP exhibits classified as INC-SA were purchased in the Eastern and Midwestern United States where SA heroin has typically dominated the market, SFL1 is currently unable to provide any additional attribution (i.e., Mexico or South America, as origin) for these exhibits as both SA and MEX-SA heroin types were well-represented in this group. SFL1 reports that the overlapping presence of common adulterants in MEX-SA, SA, and INC-SA heroin types continues. Regardless of origin (Mexico or South America) and high purities at the POEs, once powder heroin shipments reach the U.S., the cutting involves adulterants such as caffeine, quinine, lidocaine, procaine, etc., and diluents such as mannitol and lactose for many cities. In addition, unique local adulterants such as diphenhydramine (for states like Illinois and Missouri), and xylazine (for Puerto Rican trafficked heroin) can also be found. This indicates consistent cutting patterns for heroin distributed in Eastern and Midwestern retail markets irrespective of the presence of fentanyl(s).

2016 HDMP Results

General

In 2016, a total of 667 qualified exhibits were purchased under the HDMP. Of those exhibits, 543 were classified as Mexican origin heroin (278 MEX-SA; 224 MEX/T; 23 MEX/BP; and 18 MEX), 106 were classified as INC-SA, 14 were classified as SA heroin, and 4 were classified as SWA heroin. During 2016, for the 11th consecutive year, no SEA heroin exhibits were purchased through the HDMP.

According to 2016 HDMP data, the overall average purity for Mexican-origin heroin was 31.5 percent (MEX-SA heroin exhibited the highest overall purity in the program at 39.7 percent; MEX/T averaged 25 percent pure; MEX/BP at 12.2 percent pure and MEX heroin at 10.7 percent pure). Heroin exhibits under the classification of INC-SA exhibited an average purity of 20.1 percent, while SA heroin exhibits exhibited an average purity of 25.8 percent. SWA heroin exhibits had an average purity of 20.1 percent pure.

Overall, Mexican-origin heroin exhibits reflected an average price per milligram pure of $0.84 with MEX/BP displaying the highest price of Mexican-origin exhibits at $1.95 price per milligram pure followed by MEX heroin at $1.42 price per milligram pure, MEX/T at $0.80 price per milligram pure and MEX-SA at $0.74 price per milligram pure. The average price per milligram pure for heroin classified as INC-SA and SA heroin was $1.69 and $ 1.09, respectively while SWA heroin exhibits reflected an average price per milligram pure of $0.96.

From 2015 to 2016, the overall average price per milligram pure of Mexican-origin heroin decreased $0.09, while the overall average purity of Mexican-origin heroin in 2016 increased to 31.5 percent from 29 percent in 2015. The average price per milligram pure of INC-SA heroin increased $0.50 in 2016, from the 2015 price of $1.19 per milligram pure. The average purity of INC-SA heroin decreased 7.4 percentage points in 2016. The average price per milligram pure of SA heroin increased $0.04 in 2016, from the 2015 price of $1.05 per milligram pure. In 2016, the average purity of SA heroin decreased 13.3 percentage points. In 2016, the average purity of SWA heroin increased to 20.1 percent from 18.7 percent in 2015, while the average price per milligram pure increased to $0.96 in 2016 from its 2015 price of $0.86 per milligram pure.

Figures 6 and 7 (see pages 21 and 22) reflect the characteristics of heroin purchased in the 27 unique heroin markets sampled by the HDMP. The values shown in these tables are "snapshots" and are not representative of national averages. Figure 3 reflects 2016 values for heroin price and purity by source area and includes price and purity values for the period 2012 through 2016.

FIGURE 3. HEROIN EXHIBITS: ORIGINS, PURITIES, AND PRICES.

Heroin Sources	2012	2013	2014	2015	2016
Mexican Origin Exhibits	339	357	287	600	543
Mexican Origin Percent Pure	17.6%	20.3%	21.1%	29%	31.5%
Mexican Origin Price Per Milligram Pure	$1.40	$1.13	$1.15	$0.93	$0.84
South America Exhibits	375	334	34	42	14
South America Percent Pure	35.3%	35.1%	31.1%	39.1%	25.8%
South America Price Per Milligram Pure	$1.15	$1.04	$1.03	$1.05	$1.09
Inconclusive Origin-South America Exhibits	-	-	303	178	106
Inconclusive Origin-South America Percent Pure	-	-	38%	27.5%	20.1%
Inconclusive Origin-South America Price Per Milligram Pure	-	-	$1.07	$1.19	$1.69
Southwest Asia Exhibits	12	8	1	3	4
Southwest Asia Percent Pure	18.6%	23%	16.2%	18.7%	20.1%
Southwest Asia Price Per Milligram Pure	$1.10	$1.23	$1.06	$0.86	$0.96

Source: DEA

Fentanyl

Fentanyl is a schedule II narcotic controlled substance which is used as an analgesic and anesthetic. It is one of the most potent opioids available for human or veterinary use. Fentanyl is generally considered 50 to 100 times more potent than morphine and 30 to 50 times more potent than heroin. Fentanyl is potentially lethal at very low levels of ingestion. Although diversion and/or theft of fentanyl from legitimate supplies occurs, the vast majority of fentanyl encountered in the illicit market is clandestinely manufactured outside the United States or illegally smuggled into the United States from overseas suppliers.

In 2016, 158 HDMP exhibits were analyzed as containing fentanyl, fentanyl (trace), fentanyl (acetyl), fentanyl (not quantitated), furanyl fentanyl, 4-fluoroisobutyryl fentanyl, and valeryl fentanyl. These exhibits containing fentanyl were purchased in 17 of the 27 HDMP participating cities (see Figure 4) with the highest number of exhibits purchased in Boston (26), New York (24), Newark (15), Baltimore (14), and St. Louis (13).

SFL1 analysis further indicates that 2016 HDMP exhibits containing fentanyl also contained adulterants such as dipyrone, ketamine, methamphetamine, cocaine, tramadol, alpha-PVP, N-EthylMDCATH, mirtazapine, meprobamate, quetiapine, alprazolam, gabapentin, noscapine, and pyrilamine.

FIGURE 4. HDMP CITIES WITH FENTANYL EXHIBITS: 2016.

City	No. of Exhibits
Albuquerque	1
Baltimore	14
Boston	26
Chicago	6
Detroit	5
Miami	14
New Orleans	7
New York	24
Newark	15
Orlando	7
Philadelphia	7
Pittsburgh	4
Richmond	5
San Francisco	1
San Juan	3
St. Louis	13
Washington, DC	6

Source: DEA

The number of HDMP exhibits purchased in 2016 and analyzed as containing fentanyl was almost three times higher than in 2015 when fifty-three HDMP exhibits were analyzed as containing fentanyl, fentanyl (trace), fentanyl (acetyl), and fentanyl (not quantitated).

Heroin Adulterants and Diluents

Heroin (diacetylmorphine) is produced from morphine by a chemical process known as acetylation. The morphine is extracted from opium, which is derived from the opium poppy plant (*Papaver somniferum L*). Adulterants are pharmacologically active substances such as caffeine, procaine, and quinine, which are added subsequent to the heroin conversion process. Diluents are pharmacologically inactive substances (i.e. cutting agents) such as lactose, mannitol, starch, and sucrose, added to the heroin to increase bulk/quantity.

Analysis of 2016 HDMP exhibits indicates cutting patterns remain consistent for powder heroin with all the typical compounds such as caffeine, diphenhydramine, acetaminophen, quinine, procaine, lidocaine, lactose, mannitol, inositol, etc., in addition to opioids.

SA Heroin Adulterants and Diluents

- Analysis of 2016 HDMP exhibits identified caffeine as one of the most commonly used adulterants for SA heroin and was present in 79 percent of the HDMP SA heroin exhibits. SA heroin exhibits contained adulterants such as diltiazem (71 percent), and xylazine (43 percent). The most common diluent identified in SA heroin exhibits was lactose (identified in 36 percent of the exhibits), followed by mannitol (identified in 29 percent of the exhibits). Approximately 2 percent of SA heroin exhibits analyzed in 2016 contained no diluents.

Mexican-Origin Heroin Adulterants and Diluents

- Approximately 42 percent of Mexican-origin heroin exhibits analyzed under the HDMP in 2016 were unadulterated with other exhibits containing adulterants such as caffeine (19 percent), diphenhydramine (13 percent), lidocaine (11 percent), quinine (11 percent), xylazine (5 percent), and acetaminophen (5 percent). Cocaine was also identified in approximately 5 percent of Mexican-origin heroin exhibits. Fentanyl was identified in approximately 11 percent of Mexican-origin heroin exhibits.

- Lactose was identified as the most common diluent for Mexican-origin heroin and was noted in 28 percent of the exhibits. Mannitol was detected in 27 percent of the exhibits followed by inositol at 9 percent. Sucrose was discovered in less than 8 percent of the HDMP Mexican-origin heroin exhibits. No diluents were identified in approximately 18 percent of Mexican-origin HDMP heroin exhibits analyzed in 2016.

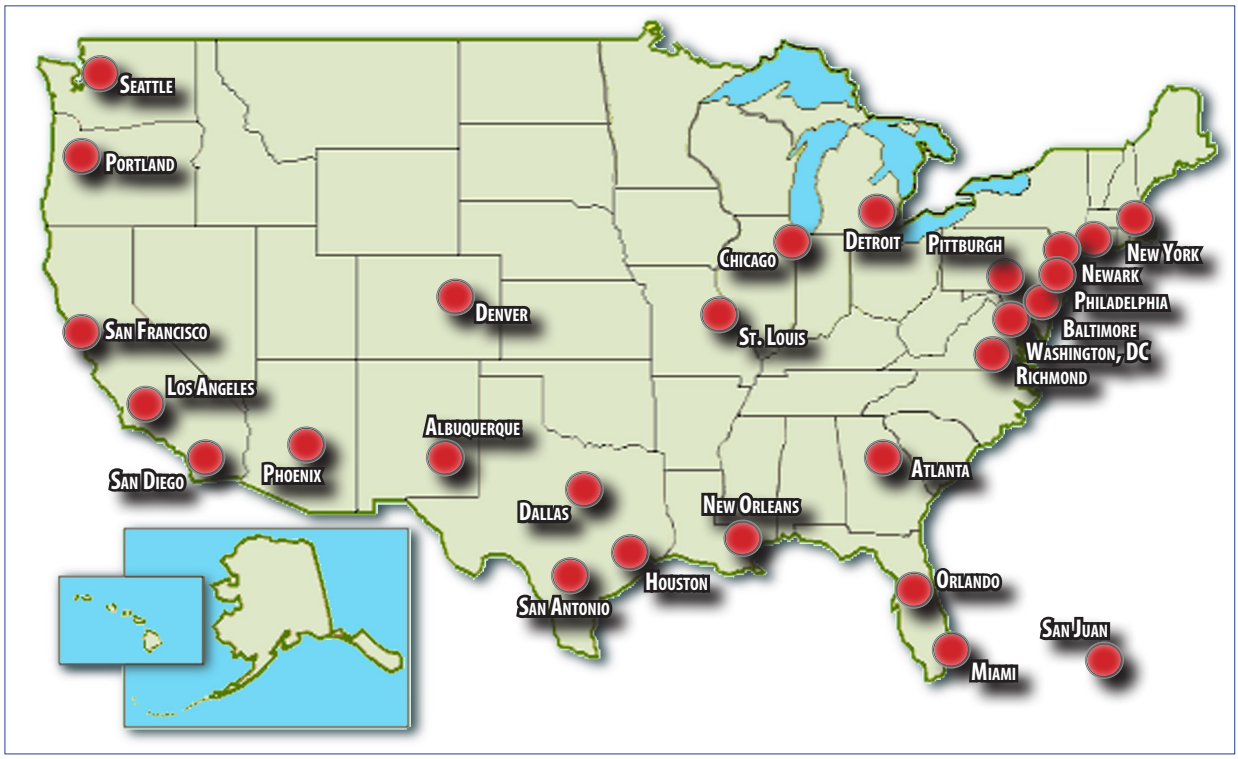
SWA Heroin Adulterants and Diluents

- Only four SWA heroin exhibits were purchased under the HDMP in 2016 and adulterants detected in these exhibits included caffeine, diphenhydramine, and methorphan while diluents identified in these same heroin exhibits included mannitol, lactose and inositol.

Regional

Analysis of 2016 HDMP data indicates that Mexican-origin heroin is the predominant heroin type available in retail markets throughout the United States. In 2016, 254 heroin exhibits classified as MEX-SA (white powder heroin) were purchased in retail markets east of the Mississippi River with another 24 MEX-SA exhibits purchased in markets west of the Mississippi. In addition, heroin classified as MEX/T, MEX/BP and MEX continued to dominate markets west of the Mississippi. In 2016, only 14 heroin exhibits classified as SA heroin were purchased under the HDMP, primarily in traditional East Coast white heroin retail markets. Of the 106 HDMP exhibits classified as INC-SA, 96 were purchased in Eastern and Midwestern cities that are considered traditional white heroin markets. The four SWA heroin exhibits purchased under the HDMP in 2016 were obtained in Miami, Florida, and Washington, DC.

FIGURE 5: HEROIN DOMESTIC MONITOR PROGRAM PARTICIPATING CITIES.



Source: DEA

City by City

Albuquerque, New Mexico

In 2016, 14 qualified HDMP exhibits were purchased in the Albuquerque metropolitan area. These exhibits were classified as MEX-T and had an average purity of 14.8 percent with an average cost of $0.84 per milligram pure. Compared to 2015 HDMP data, the average purity of MEX/T heroin decreased 1.6 percentage points, while the price per milligram pure increased by $0.26.

Atlanta, Georgia

In 2016, 27 qualified heroin exhibits were purchased in the Atlanta metropolitan area. Twenty-two of these exhibits were classified as MEX-SA. The average purity of these exhibits was 50.5 percent with an average cost of $0.72 per milligram pure. Compared to 2015 HDMP data, average purity decreased by 13.1 percentage points, while the average price per milligram pure increased by $0.26.

Five exhibits purchased in Atlanta in 2016 were classified as INC-SA and were analyzed with an average purity of 53.3 percent and an average cost of $0.82 per milligram pure. Compared to 2015 HDMP data, the average purity of INC-SA heroin in Atlanta increased by 10.3 percentage points, while the average price per milligram pure decreased by $0.98.

In 2016, three heroin exhibits purchased in Atlanta was classified as UNK signature. These exhibits displayed an average purity of 22.8 percent with an average cost of $2.44 per milligram pure. This represents an increase in purity of 20.2 percentage points, and a decrease of $8.66 in price per milligram pure when compared to the UNK signature HDMP exhibits purchased in Atlanta in 2015.

Baltimore, Maryland

In 2016, 25 qualified heroin exhibits were purchased in Baltimore, Maryland. Twenty-two of these exhibits were classified as INC-SA. These exhibits reflected an average purity of 8.5 percent, with an average cost of $1.62 per milligram pure. Compared to 2015 HDMP data, the average purity of INC-SA exhibits purchased in Baltimore decreased by 8.1 percentage points, while the average price per milligram pure increased by $1.00.

Three exhibits purchased in Baltimore in 2016 were classified as MEX-SA. The average purity of these exhibits was 30.1 percent with an average cost of $0.20 per milligram pure. Compared to 2015 HDMP data, the average purity of MEX-SA exhibits increased in 2016 by 9 percentage points, while the average price per milligram pure decreased by $0.54.

Three other heroin exhibits purchased in Baltimore in 2016 were classified as an UNK signature. These exhibits had an average purity of 11.1 percent and cost an average of $0.60 per milligram pure. Compared to 2015 HDMP data, the average purity of UNK signature exhibits increased 1.8 percentage points, while the price per milligram pure decreased by $0.02.

Boston, Massachusetts

In 2016, a total of 25 qualified HDMP heroin exhibits were purchased in the Boston metropolitan area. Nineteen of these exhibits were classified as MEX-SA. These exhibits reflected an average purity of 17.2 percent and an average price of $1.28 per milligram pure. Compared to 2015 HDMP data, average purity of MEX-SA heroin increased by 3.8 percentage points, while the average price per milligram pure increased by $0.21.

Six other HDMP heroin exhibits purchased were classified as INC-SA and were analyzed with an average purity of 9.2 percent and an average cost of $1.73 per milligram pure. Compared to 2015 HDMP data, the average purity of INC-SA heroin available in Boston decreased by 0.4 percentage points, while the average price per milligram pure decreased by $0.87.

Chicago, Illinois

In 2016, 33 qualified HDMP exhibits were purchased in the Chicago metropolitan area. Twenty-seven of these exhibits were classified as MEX-SA with an average purity of 19.5 percent and an average price of $0.33 per milligram pure. Compared to 2015 HDMP data, the average purity of MEX-SA heroin in Chicago increased by 6 percentage points, while the average price per milligram pure decreased by $0.67.

Six other HDMP exhibits purchased in Chicago in 2016 were classified as INC-SA. The average purity of these heroin exhibits was 9.7 percent and the average price was $0.35 per milligram pure. Compared to 2015 HDMP data, the average purity of INC-SA heroin available in Chicago decreased by 2.4 percentage points, while the average price per milligram pure decreased by $0.52.

Dallas, Texas

In 2016, 32 qualified HDMP exhibits were purchased in the Dallas metropolitan area. Twenty-one of these exhibits were classified as MEX/T and were analyzed with an average purity of 24.7 percent and an average cost of $0.95 per milligram pure. Compared to 2015 HDMP data, the average purity of MEX/T heroin available in Dallas increased by 4.8 percentage points, while the average price per milligram pure decreased by $0.06.

Five HDMP exhibits purchased in Dallas in 2016 were classified as MEX/BP heroin. The average purity of these exhibits was 4.5 percent with an average cost of $1.51 per milligram pure. Compared to 2015 HDMP data, the average purity of MEX/BP heroin available in Dallas decreased by 4 percentage points, while the average price per milligram pure increased by $0.69.

Five other heroin exhibits purchased in Dallas were classified as MEX with an average purity of 5.7 percent and an average price of $1.43 per milligram pure. Compared to 2015 HDMP data, average purity of MEX heroin in Dallas decreased by 12.3 percentage points, while the average price per milligram pure decreased by $0.24.

Overall, Mexican-origin heroin exhibits purchased in Dallas had an average purity of 18.4 percent, while the average cost was $1.12 per milligram pure. Compared to 2015 HDMP data, the overall average purity of Mexican-origin heroin in Dallas increased 5.7 percentage points, while the price per milligram pure increased by $0.15.

One other HDMP exhibit purchased in Dallas in 2016 was classified as INC-SA and was analyzed at 3.9 percent pure, and cost $0.95 per milligram pure. This represents a decrease in purity of 3.7 percentage points, and an increase of $0.22 in price per milligram pure when compared to 2015 HDMP statistics.

Two other HDMP exhibits purchased in Dallas in 2016 were classified as an UNK signature. These exhibits were analyzed with an average purity of 16.6 percent and an average cost of $1.35 per milligram pure. This represents an increase in purity of 9 percentage points, and an increase of $0.98 in price per milligram pure when compared to the UNK signature exhibits analyzed in 2015.

Denver, Colorado

In 2016, 36 qualified HDMP exhibits were purchased in the Denver metropolitan area. Thirty-five of these exhibits were classified as MEX/T heroin with an average purity of 20.7 percent and an average cost of $0.47 per milligram pure. Compared to 2015 HDMP data, the average purity of MEX/T heroin purchased in Denver increased by 3.1 percentage points, while the average price per milligram pure decreased by $0.30.

One HDMP exhibit purchased in Denver in 2016 was classified as MEX/BP and was analyzed at 38.4 percent pure, and cost $0.47 per milligram pure. This represents an increase in purity of 26.3 percentage points, and an increase of $0.02 in price per milligram pure when compared to MEX/BP exhibits purchased under the HDMP in 2015.

Overall, Mexican-origin heroin exhibits purchased in Denver in 2016 averaged 21.2 percent pure, while the average cost was $0.47 per milligram pure. Compared to the 2015 HDMP data, the overall average purity of Mexican-origin heroin in Denver increased 4 percentage points, while the price per milligram pure decreased by $0.27.

Detroit, Michigan

In 2016, 31 qualified HDMP heroin exhibits were purchased in Detroit. Twenty-eight of these exhibits were classified as MEX-SA with an average purity of 44.2 percent and an average price of $0.57 per milligram pure. Compared to 2015 HDMP data, the average purity of MEX-SA heroin in Detroit decreased by 5.2 percentage points, while the average price per milligram pure increased by $0.17.

Two HDMP exhibits purchased in 2016 were classified as MEX heroin with an average purity of 25.8 percent and an average price of $0.65 per milligram pure. Compared to 2015 HDMP data, average purity of MEX heroin in Detroit increased by 20 percentage points, while the average price per milligram pure decreased by $3.38.

Overall, Mexican-origin heroin exhibits purchased in Detroit averaged 43 percent pure, while the average cost was $0.58 per milligram pure. Compared to the 2015 HDMP data, the overall average purity of Mexican-origin heroin in Detroit decreased 2.3 percentage points, while the price per milligram pure of this heroin also decreased by $0.16.

One HDMP exhibit purchased in Detroit in 2016 was classified as INC-SA and was analyzed at 18.9 percent pure, and cost $0.43 per milligram pure. This represents a decrease in purity of 8.5 percentage points, and a decrease of $0.42 in price per milligram pure when compared to the 2015 INC-SA HDMP exhibits obtained in Detroit.

Houston, Texas

In 2016, five qualified HDMP exhibits were purchased in the Houston metropolitan area. Two of these exhibits were classified as MEX/T heroin and averaged 9.6 percent pure with an average cost per milligram pure of $10.86. Compared to the exhibits purchased in Houston in 2015, MEX/T purity decreased by 5 percentage points, while the price increased by $8.45 per milligram pure.

Two HDMP exhibits purchased in Houston in 2016 were classified as MEX-SA with an average purity of 19.9 percent and an average cost of $5.30 per milligram pure. Compared to the MEX-SA heroin exhibits purchased in 2015, purity increased by 1.8 percentage points, while the price increased by $1.85 per milligram pure.

One MEX/BP exhibit was purchased in Houston in 2016 and was analyzed at 18.9 percent pure and cost $5.57 per milligram pure. There were no MEX/BP exhibits purchased in Houston in 2015.

Overall, Mexican-origin heroin exhibits purchased in Houston averaged 15.6 percent pure, while the average cost was $7.58 per milligram pure. Compared to 2015 HDMP data, the overall average purity of Mexican-origin heroin in Houston decreased 0.3 percentage points, while the price per milligram pure of this heroin increased by $4.81.

Two other HDMP exhibits purchased in Houston in 2016 were classified as an UNK signature. These exhibits were analyzed at an average purity of 2.9 percent, while the average cost was $27.89 per milligram pure.

Los Angeles, California

In 2016, 32 qualified HDMP exhibits were purchased in Los Angeles; twenty-five of these exhibits were classified as MEX/T heroin with an average purity of 29.8 percent, and an average price of $0.76 per milligram pure. Compared to the MEX/T heroin exhibits purchased in Los Angeles in 2015, purity increased by 8.2 percentage points, while the price decreased by $0.04 per milligram pure.

Two HDMP exhibits purchased in Los Angeles in 2016 were classified as MEX heroin with an average purity of 15.4 percent, and an average cost of $0.88 per milligram pure. Compared to the MEX heroin exhibits purchased in Los Angeles in 2015, purity decreased by 15.5 percentage points, while the price increased by $0.30 per milligram pure.

Two HDMP exhibits purchased in Los Angeles in 2016 were classified as MEX-SA heroin with an average purity of 12.9 percent, and an average cost of $1.06 per milligram pure.

Three HDMP exhibits purchased in Los Angeles in 2016 were classified as MEX/BP heroin with an average purity of 20.8 percent and an average cost of $0.99 per milligram pure.

Overall, the purity of Mexican-origin heroin exhibits purchased in Los Angeles in 2016 averaged 27 percent, and the average cost was $0.80 per milligram pure. Compared to 2015 HDMP data, the overall average purity of Mexican-origin heroin exhibits in Los Angeles increased 4.9 percentage points, while the price per milligram pure of Mexican-origin heroin increased by $0.01.

Miami, Florida

In 2016, 16 qualified HDMP heroin exhibits were purchased in the Miami area; nine were classified as MEX-SA heroin. The average purity of these exhibits was 36 percent with an average cost of $1.10 per milligram pure. Compared to the MEX-SA heroin exhibits purchased in Miami in 2015, purity increased by 7.7 percentage points, while the price decreased by $0.11 per milligram pure.

One HDMP exhibit purchased in Miami in 2016 was classified as SWA heroin and was analyzed at 44 percent pure and cost $0.57 per milligram pure. There were no SWA exhibits purchased in Miami in 2015.

Six HDMP heroin exhibits purchased in Miami in 2016 were classified as INC-SA. These exhibits had an average purity of 9.6 percent and an average price of $3.56 per milligram pure. Compared to 2015 HDMP data, the average purity of INC-SA heroin in Miami decreased by 22.6 percentage points, while the average price per milligram pure increased by $2.46.

Newark, New Jersey

In 2016, 26 qualified HDMP exhibits were purchased in the Newark metropolitan area; twenty of these heroin exhibits were classified as MEX-SA with an average purity of 55.3 percent and an average cost of $0.72 per milligram pure. Compared to 2015 HDMP data, the average purity of MEX-SA heroin exhibits obtained in Newark decreased by 4.2 percentage points, while the average price per milligram pure increased by $0.05.

Six HDMP heroin exhibits purchased in Newark in 2016 were classified as INC-SA. These exhibits had an average purity of 38.7 percent and an average cost of $1.09 per milligram pure. Compared to 2015 HDMP data, the average purity of INC-SA heroin exhibits obtained in Newark decreased by 2.6 percentage points, while the average price per milligram pure decreased by $0.02.

New Orleans, Louisiana

In 2016, 26 qualified HDMP heroin exhibits were purchased in the New Orleans metropolitan area; twenty-five of these exhibits were classified as MEX-SA heroin with an average purity of 31.6 percent and an average cost of $0.76 per milligram pure. Compared to 2015 HDMP data, the average purity of MEX-SA heroin available in New Orleans in 2016 increased by 5 percentage points, while the average price per milligram pure decreased by $1.40.

One HDMP exhibit purchased in New Orleans in 2016 was classified as INC-SA heroin and was analyzed at 37.1 percent pure and cost $0.34 per milligram pure. This represents an increase in purity of 14.7 percentage points, and a decrease of $1.49 in price per milligram pure when compared to the INC-SA exhibits obtained in 2015.

New York, New York

New York City remains one of the most prominent heroin destination and distribution centers in the United States. Of the 46 qualified heroin exhibits purchased in New York City during 2016, thirty-two were classified as MEX-SA. The average purity of these exhibits was 45.8 percent with an average cost of $0.66 per milligram pure. Compared to 2015 HDMP data, the average purity of the MEX-SA heroin obtained in New York City in 2016 decreased by 2.8 percentage points, while the average price per milligram pure increased by $0.14.

Fourteen heroin exhibits purchased in New York in 2016 were classified as INC-SA. These exhibits had an average purity of 33.3 percent and an average price of $1.36 per milligram pure. Compared to 2015 HDMP data, the average purity of INC-SA obtained in New York in 2016 increased by 3.1 percentage points, while the average price per milligram pure also increased by $0.14.

Two HDMP exhibits purchased in New York in 2016 were classified as an UNK signature with an average purity of 14.3 percent and an average cost of $1.50 per milligram pure. Compared to 2015 HDMP data, the average purity of UNK signature exhibits obtained in New York in 2016 decreased by 15.5 percentage points, and the price per milligram pure decreased by $0.12.

Orlando, Florida

Twelve qualified HDMP exhibits were purchased in Orlando in 2016 and nine of these heroin exhibits were classified as MEX-SA with an average purity of 38.4 percent and an average cost of $0.73 per milligram pure. Compared to 2015 HDMP data, the average purity of MEX-SA heroin obtained in Orlando decreased by 0.5 percentage points, while the average price per milligram pure decreased by $0.05.

One MEX/BP HDMP exhibit was purchased in Orlando in 2016 and was analyzed at 38 percent pure and cost $0.53 per milligram pure.

Overall, Mexican-origin heroin exhibits purchased in Orlando in 2016 averaged 38.4 percent pure, while the average cost was $0.71 per milligram pure.

Two HDMP exhibits purchased in Orlando in 2016 were classified as INC-SA with an average purity of 25.9 percent and an average cost of $1.44 per milligram pure. Compared to 2015 HDMP data, the average purity of INC-SA heroin obtained in Orlando in 2016 decreased by 9.2 percentage points, while the average price per milligram pure increased by $0.91.

Philadelphia, Pennsylvania

In 2016, 30 qualified HDMP heroin exhibits were purchased in Philadelphia; twenty-nine of these heroin exhibits were classified as MEX-SA and had an average purity of 64.7 percent and an average cost of $0.45 per milligram pure. Compared to 2015 HDMP data, the average purity of MEX-SA obtained in Philadelphia in 2016 decreased by 11.4 percentage points, while the average price per milligram pure increased by $0.16.

One heroin exhibit purchased in Philadelphia in 2016 was classified as INC-SA and was analyzed at 40.6 percent pure and cost $0.40 per milligram pure. This represents a decrease in purity of 19 percentage points, and a decrease of $0.18 in price per milligram pure when compared to the INC-SA exhibits obtained in Philadelphia in 2015.

Phoenix, Arizona

In 2016, 35 qualified HDMP exhibits were purchased in Phoenix; twenty-seven of these exhibits were classified as MEX/T heroin with an average purity of 22.9 percent and an average cost of $0.40 per milligram pure. Compared to 2015 HDMP data, the average purity of MEX/T heroin obtained in Phoenix in 2016 increased by 2.7 percentage points, while the average price per milligram pure increased by $0.07.

One heroin exhibit purchased in Phoenix in 2016 was classified as MEX/BP and was analyzed at 31.1 percent pure and cost $0.16 per milligram pure. This represents an increase in purity of 7.1 percentage points, and a decrease of $1.64 in price per milligram pure when compared to the 2015 MEX/BP exhibits obtained in Phoenix.

Two heroin exhibits purchased in Phoenix in 2016 were classified as MEX with an average purity of 20 percent, and an average cost of $0.50 per milligram pure. Compared to 2015 HDMP data, the average purity of MEX heroin obtained in Phoenix in 2016 increased by 4.1 percentage point, while the average price per milligram pure increased by $0.20.

Overall, Mexican-origin heroin exhibits purchased in Phoenix in 2016 averaged 23 percent pure, while the average cost was $0.40 per milligram pure. Compared to the 2015 HDMP data, the overall average purity of Mexican-origin heroin in Phoenix increased 3.1 percentage points, while the price per milligram pure of this heroin remained at $0.40.

Two heroin exhibits purchased in Phoenix in 2016 were classified as SA and had an average purity of 27 percent and an average cost of $0.46 per milligram pure.

Three other heroin exhibits were classified as INC-SA with an average purity of 23.8 percent, and an average cost was $0.49 per milligram pure.

Pittsburgh, Pennsylvania

In 2016, a total of six qualified HDMP heroin exhibits were purchased in Pittsburgh; three of these exhibits were classified as MEX-SA heroin and had an average purity of 50.7 percent and an average cost of $0.69 per milligram pure. Compared to 2015 HDMP data, the average purity of MEX-SA heroin obtained in Pittsburgh increased by 1.9 percentage points, while the average price per milligram pure decreased by $0.48.

Three HDMP heroin exhibits purchased in Pittsburgh in 2016 were classified as INC-SA. These exhibits had an average purity of 9.2 percent and an average price of $3.80 per milligram pure. Compared to 2015 HDMP data, the average purity of INC-SA heroin obtained in Pittsburgh decreased by 53 percentage points, while the average price per milligram pure increased by $2.83.

One other HDMP exhibit purchased in Pittsburgh in 2016 was classified as an UNK signature and was analyzed at 19 percent pure, and cost $0.86 per milligram pure.

Portland, Oregon

In 2016, 13 qualified HDMP exhibits were purchased in Portland and all were classified as MEX/T heroin. These exhibits had an average purity of 42.5 percent and an average price of $0.39 per milligram pure. Compared to 2015 HDMP data, the average purity of MEX/T heroin obtained in Portland increased by 17.1 percentage points and the average price decreased by $0.28 per milligram pure.

Richmond, Virginia

A total of 13 qualified HDMP heroin exhibits were purchased in Richmond in 2016. Nine heroin exhibits purchased in Richmond in 2016 were classified as MEX-SA and had an average purity of 25.8 percent and an average cost of $0.81 per milligram pure. Compared to 2015 HDMP data, the average purity of MEX-SA heroin in Richmond decreased by 5.2 percentage points, while the average price per milligram pure decreased by $0.38.

Four other HDMP exhibits purchased in Richmond in 2016 were classified as INC-SA with an average purity of 17.7 percent and an average price of $1.54 per milligram pure. The average purity of the INC-SA heroin obtained in Richmond in 2016 increased by 5.2 percentage points, while the average price per milligram pure decreased by $0.82 when compared to 2015.

San Antonio, Texas

In 2016, 13 qualified HDMP exhibits were purchased in the San Antonio area; nine of these exhibits were classified as MEX/T heroin. The average purity of the MEX/T exhibits was 9.5 percent with an average cost of $1.13 per milligram pure. Compared to 2015 HDMP data, average purity of MEX/T heroin increased by 3.6 percentage points, while the average price per milligram pure decreased by $0.52.

Two HDMP exhibits purchased in the San Antonio area in 2016 were classified as MEX/BP heroin. The average purity of these exhibits was 5.1 percent, while the average cost was $1.43 per milligram pure. Compared to 2015 HDMP data, the average purity of MEX/BP heroin available in San Antonio increased by 0.1 percentage points, while the average price per milligram pure decreased by $0.08.

Two other HDMP exhibits purchased in San Antonio in 2016 were classified as MEX heroin with an average purity of 5.9 percent and an average cost of $0.51 per milligram pure. Compared to 2015 HDMP data, the average purity of MEX heroin in San Antonio increased by 1.3 percentage points, while the average price per milligram pure decreased by $0.44.

Overall, the average purity of Mexican-origin heroin in San Antonio was 8.3 percent, while the average cost was $1.08 per milligram pure. Compared to the 2015 HDMP data, the overall average purity of Mexican-origin heroin in San Antonio increased 1.4 percentage points, while the price per milligram pure of Mexican-origin heroin decreased by $0.40.

San Diego, California

In 2016, 28 qualified HDMP exhibits were purchased in the San Diego metropolitan area. Twenty-seven of these exhibits were classified as MEX/T heroin with an average purity of 35.8 percent and an average cost of $0.33 per milligram pure. Compared to 2015 HDMP data, the average purity of MEX/T heroin in San Diego increased by 2.1 percentage points, while the average price per milligram pure decreased by $0.04.

One HDMP exhibit purchased in San Diego in 2016 was classified as MEX-SA and was analyzed at 94.5 percent pure and cost $0.04 per milligram pure.

Overall, the average purity of Mexican-origin heroin in San Diego was 37.9 percent, while the average cost was $0.32 per milligram pure. Compared to the 2015 HDMP data, the overall average purity of Mexican-origin heroin in San Diego increased 3.3 percentage points, while the price per milligram pure of Mexican-origin heroin decreased by $0.02.

San Francisco, California

In 2016, 29 qualified HDMP exhibits were purchased in the San Francisco metropolitan area; twenty-five were classified as MEX/T heroin with an average purity of 8.7 percent and an average cost of $1.72

per milligram pure. Compared to 2015 HDMP data, average purity of MEX/T heroin available in San Francisco decreased by 0.3 percentage points, while the average price per milligram pure increased by $0.37.

Two HDMP heroin exhibits obtained in San Francisco in 2016 were classified as MEX/BP with an average purity of 6.6 percent and an average cost of $0.63 per milligram pure. Compared to 2015 HDMP data, the average purity of MEX/BP heroin decreased by 0.5 percentage points, while the average price per milligram pure increased by $0.04.

Two HDMP exhibits purchased in San Francisco in 2016 were classified as MEX heroin with an average purity of 6.9 percent and an average cost of $0.60 per milligram pure. Compared to 2015 HDMP data, the average purity of MEX heroin available in San Francisco increased by 3.4 percentage points, while the average price per milligram pure decreased by $0.64.

Overall, Mexican-origin HDMP heroin exhibits obtained in San Francisco in 2016 averaged 8.4 percent pure, with an average cost of $1.57 per milligram pure. Compared to 2015 HDMP data, overall average purity of Mexican-origin heroin increased by 1.2 percentage points, while the average price per milligram pure increased by $0.40.

San Juan, Puerto Rico

In 2016, 31 qualified exhibits were purchased in San Juan under the HDMP; ten of these exhibits were classified as SA heroin with an average purity of 20.4 percent and an average cost of $1.32 per milligram pure. Compared to 2015 HDMP data, the purity of SA heroin available in San Juan decreased by 18.2 percentage points and the average price per milligram pure decreased by $0.51.

Twelve HDMP heroin exhibits purchased in San Juan in 2016 were classified as INC-SA. These exhibits had an average purity of 11.8 percent and an average price of $3.05 per milligram pure. Compared to 2015 HDMP data, average purity of INC-SA heroin in San Juan decreased by 10 percentage points, while the average price per milligram pure increased by $2.02.

Six HDMP exhibits purchased in San Juan in 2016 were classified as MEX/BP with an average purity of 5.7 percent, and an average cost of $3.73 per milligram pure. Three exhibits purchased in San Juan in 2016 were classified as MEX with an average purity of 5.6 percent, and an average cost of $4.00 per milligram pure.

Overall, the purity of Mexican-origin heroin exhibits purchased in San Juan in 2016 averaged 5.7 percent, and the average cost was $3.82 per milligram pure. Compared to 2015 HDMP data, the overall average purity of Mexican-origin heroin exhibits in San Juan decreased 19.5 percentage points, while the price per milligram pure increased by $1.64.

One other HDMP exhibit purchased in San Juan in 2016 was classified as an UNK signature and was analyzed at 9.1 percent pure, and cost $0.92 per milligram pure. This represents an increase in purity of 3.9 percentage points, and a decrease of $3.99 in price per milligram pure when compared to 2015 HDMP statistics.

Seattle, Washington

In 2016, 25 qualified exhibits were purchased in Seattle under the HDMP and all were classified as MEX/T heroin. These exhibits had an average purity of 36.2 percent and cost an average of $0.46 per milligram pure. Compared to 2015 HDMP data, the average purity of MEX/T heroin available in Seattle increased by 2.6 percentage points, while the average price per milligram pure decreased by $0.11.

St. Louis, Missouri

A total of 27 qualified HDMP heroin exhibits were purchased in St. Louis in 2016; nineteen of which were classified as MEX-SA heroin with an average purity of 37.3 percent and an average cost of $0.86 per milligram pure. Compared to 2015 HDMP data, average purity of MEX-SA heroin in St. Louis increased by 0.8 percentage points, while the average price per milligram pure decreased by $0.28.

One HDMP exhibit purchased in St. Louis in 2016 was classified as MEX/BP heroin and was analyzed at 12.5 percent pure and cost $1.04 per milligram pure.

One HDMP exhibit purchased in St. Louis in 2016 was classified as MEX/T and was analyzed at 28.9 percent pure and cost $1.87 per milligram pure.

Overall, the purity of Mexican-origin heroin exhibits purchased in St. Louis in 2016 averaged 35.7 percent, and the average cost was $0.92 per milligram pure.

Six additional HDMP exhibits purchased in St. Louis in 2016 were classified as INC-SA. These exhibits had an average purity of 27.9 percent and an average price of $2.02 per milligram pure. Compared to 2015 HDMP data, the average purity of INC-SA heroin available in St. Louis increased by 11.9 percentage points, while the average price per milligram pure decreased by $0.48.

One other HDMP exhibit purchased in St. Louis in 2016 was classified as an UNK signature and was analyzed at 16.2 percent pure, and cost $1.08 per milligram pure. This represents a decrease in purity of 3.8 percentage points, and a decrease of $2.42 in price per milligram pure when compared to the 2015 HDMP UNK signature heroin exhibits obtained in St. Louis.

Washington, DC

In 2016, 31 qualified HDMP exhibits were purchased in Washington, DC; nineteen of these heroin exhibits were classified as MEX-SA with an average purity of 31.2 percent and an average cost of $0.96 per milligram pure. Compared to 2015 HDMP data, the average purity of MEX-SA heroin available in Washington, DC decreased by 0.1 percentage points, while the average price per milligram pure remained stable at $0.96.

Two HDMP exhibits purchased in Washington, DC in 2016 were classified as SA heroin with an average purity of 51.1 percent and an average price of $0.54 per milligram pure. This represents an increase in purity of 10.5 percentage points, and an increase of $0.19 in price per milligram pure when compared to the SA heroin exhibits purchased in Washington, DC in 2015 under the HDMP.

2016 HEROIN DOMESTIC MONITOR PROGRAM

Three HDMP exhibits purchased in Washington, DC in 2016 were classified as SWA heroin with an average purity of 12.1 percent and an average price of $1.09 per milligram pure. There were no SWA exhibits purchased in Washington, DC in 2015.

Seven heroin exhibits purchased in Washington, DC in 2016 were classified as INC-SA with an average purity of 25.8 percent pure, and an average price of $1.08 per milligram pure. Compared to 2015 data, the average purity of HDMP heroin exhibits obtained in Washington, DC and classified as INC-SA increased by 1.7 percentage points, while the average price per milligram pure increased by $0.51.

FIGURE 6: 2016 HEROIN COUNTS, PURITIES, PRICES, ORIGIN, AND CITY BY GEOGRAPHIC REGION: MEXICAN ORIGIN HEROIN.

Mexican Origin Heroin												
	MEX			MEX/T			MEX/BP			MEX-SA		
East	Number of Exhibits	Purity	Price	Number of Exhibits	Purity	Price	Number of Exhibits	Purity	Price	Number of Exhibits	Purity	Price
Atlanta										22	50.5%	$0.72
Baltimore										3	30.1	0.20
Boston										19	17.2	1.28
Chicago										27	19.5	0.33
Detroit	2	25.8%	$0.65							28	44.2	0.57
Miami										9	36	1.10
New Orleans										25	31.6	0.76
New York										32	45.8	0.66
Newark										20	55.3	0.72
Orlando							1	38%	$0.53	9	38.4	0.73
Philadelphia										29	64.7	0.45
Pittsburgh										3	50.7	0.69
Richmond										9	25.8	0.81
San Juan	3	5.6	4.00				6	5.7	3.73			
Washington, DC										19	31.2	0.96
	MEX			MEX/T			MEX/BP			MEX-SA		
West	Number of Exhibits	Purity	Price	Number of Exhibits	Purity	Price	Number of Exhibits	Purity	Price	Number of Exhibits	Purity	Price
Albuquerque				14	14.8%	$0.84						
Dallas	5	5.7%	$1.43	21	24.7	0.95	5	4.5%	$1.51			
Denver				35	20.7	0.47	1	38.4	0.47			
Houston				2	9.6	10.86	1	18.9	5.57	2	19.9%	$5.30
Los Angeles	2	15.4	0.88	25	29.8	0.76	3	20.8	0.99	2	12.9	1.06
Phoenix	2	20	0.50	27	22.9	0.40	1	31.1	0.16			
Portland				13	42.5	0.39						
San Antonio	2	5.9	0.51	9	9.5	1.13	2	5.1	1.43			
San Diego				27	35.8	0.33				1	94.5	0.04
San Francisco	2	6.9	0.60	25	8.7	1.72	2	6.6	0.63			
Seattle				25	36.2	0.46						
St. Louis				1	28.9	1.87	1	12.5	1.04	19	37.3	0.86
Total	18	10.7%	$1.42	224	25%	$0.80	23	12.2%	$1.95	278	39.7%	$0.74

Report Parameters: Only qualified exhibits are shown. January 1 to December 31, 2016
Price Unit: Per milligram pure.

Source: DEA

FIGURE 7: 2016 HEROIN COUNTS, PURITIES, PRICES, ORIGIN, AND CITY BY GEOGRAPHIC REGION.

	Southwest Asian Heroin			South American Heroin			Inconclusive Origin-South American Processing		
East	**Number of Exhibits**	**Purity**	**Price**	**Number of Exhibits**	**Purity**	**Price**	**Number of Exhibits**	**Purity**	**Price**
Atlanta							5	53.3%	$0.82
Baltimore							22	8.5	1.62
Boston							6	9.2	1.73
Chicago							6	9.7	0.35
Detroit							1	18.9	0.43
Miami	1	44%	$0.57				6	9.6	3.56
New Orleans							1	37.1	0.34
New York							14	33.3	1.36
Newark							6	38.7	1.09
Orlando							2	25.9	1.44
Philadelphia							1	40.6	0.40
Pittsburgh							3	9.2	3.80
Richmond							4	17.7	1.54
San Juan				10	20.4%	$1.32	12	11.8	3.05
Washington, DC	3	12.1	1.09	2	51.1	0.54	7	25.8	1.08
	Southwest Asian Heroin			**South American Heroin**			**Inconclusive Origin-South American Processing**		
West	**Number of Exhibits**	**Purity**	**Price**	**Number of Exhibits**	**Purity**	**Price**	**Number of Exhibits**	**Purity**	**Price**
Albuquerque									
Dallas							1	3.9%	$0.95
Denver									
Houston									
Los Angeles									
Phoenix				2	27%	$0.46	3	23.8	0.49
Portland									
San Antonio									
San Diego									
San Francisco									
Seattle									
St. Louis							6	27.9	2.02
Total	4	20.1%	$0.96	14	25.8%	$1.09	106	20.1%	$1.69

Report Parameters: Only qualified exhibits are shown. January 1 to December 31, 2016
Price Unit: Per milligram pure.

Source: DEA

Geo-Probes: Views from Additional Cities

Since 2001, DEA has sponsored an initiative in the HDMP known as Geographical Probes, or Geo-Probes. The goal of the Geo-Probes is to gain additional information about existing and emerging heroin markets in areas outside of the 27 designated HDMP cities. In order to accomplish this, DEA provides funds for additional heroin exhibit purchases in selected cities across the United States.

Geo-Probe data, while important to identify emerging threats and market trends, are not compared against program-wide HDMP exhibits.

In 2016, under the Geo-Probe Initiative, heroin purchases were made in the following areas: Sacramento, California; Indianapolis, Indiana; Flint, Michigan; Rochester, New York; Cleveland, Ohio; and Columbus, Ohio.

- In February and March 2016, a Geo-Probe in Columbus, Ohio resulted in the purchase of five heroin exhibits classified as MEX-T. These exhibits averaged 24 percent pure with a cost of $0.85 per milligram pure.

- A Geo-Probe conducted in Sacramento, California in May 2016 resulted in the purchase of four heroin exhibits classified as MEX-T. These exhibits averaged 8.1 percent pure with a cost of $0.95 per milligram pure.

- Geo-Probes conducted in West Cuyahoga Falls and Euclid, Ohio, in May and June 2016 resulted in the purchase of two heroin exhibits classified as INC-SA. These exhibits averaged 1.4 percent pure with a cost of $9.94 per milligram pure. Both INC-SA exhibits were analyzed as containing fentanyl with purities of 1.1 percent pure and 2.2 percent pure, respectively. One geo-probe purchase made in Cleveland in June 2016 was classified as MEX-SA with a purity of 37 percent and a cost of $0.61 per milligram pure. One additional geo-probe purchase made in Ashtabula, Ohio in May 2016 was analyzed as fentanyl, with a purity of 2.6 percent.

- In August 2016, a Geo-Probe in Flint, Michigan, resulted in the purchase of four heroin exhibits; three were classified as MEX-SA and one was classified as INC-SA. The MEX-SA exhibits averaged 42.4 percent pure with a cost of $0.44 per milligram pure while the INC-SA exhibit was analyzed at 49.4 percent pure with a cost of $0.54 per milligram pure.

- Geo-Probes conducted in Rochester, New York, in August and September 2016 resulted in the purchase of three heroin exhibits classified as MEX-SA and two heroin exhibits classified as INC-SA. The MEX-SA exhibits averaged 18.1 percent pure with a cost of $2.26 per milligram pure. The INC-SA exhibits averaged 19.2 percent pure with a cost of $3.14 per milligram pure. Of the five Geo-Probe purchases made in Rochester in 2016, three of the exhibits were analyzed as containing fentanyl, fentanyl trace, and furanyl fentanyl trace.

- Geo-Probes conducted in Indianapolis, Indiana, in November and December 2016 resulted in the purchase of three heroin exhibits classified as MEX-SA and one heroin exhibit classified as UNK. The MEX-SA exhibits averaged 21.8 percent pure with a cost of $1.35 per milligram pure while the UNK exhibit was analyzed at 5.6 percent pure with a cost of $3.57 per milligram pure.

2016 Summary of Findings

2016 HDMP data indicates that Mexican-origin heroin was the predominant type of heroin available in U.S. retail drug markets. MEX-SA heroin availability has significantly increased in Eastern white powder markets historically supplied by Colombian traffickers since the mid-1990s, while MEX/T, MEX/BP, and MEX heroin continue to dominate markets west of the Mississippi.

HDMP data also revealed that in 2016 heroin classified as INC-SA and SA were identified as the secondary types of heroin available primarily in U.S. retail markets east of the Mississippi River. SWA heroin availability at the retail-level remains extremely limited and for the eleventh consecutive year, no SEA heroin exhibits were purchased under the HDMP during 2016.

MEX-SA heroin (Mexican white powder heroin) with an average purity of 39.7 percent maintains the highest overall average retail purity of all the geo-sourced heroin analyzed under the HDMP in 2016, followed by SA heroin with an average retail purity of 25.8 percent.

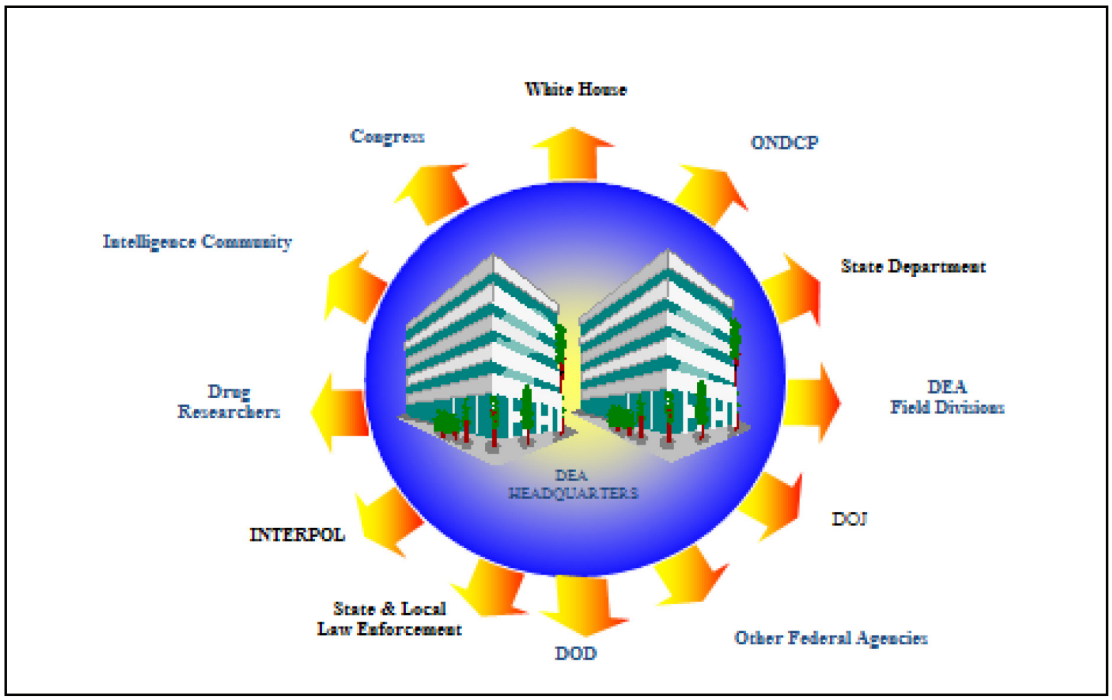
Among the participating HDMP cities, Philadelphia had the highest average MEX-SA heroin purity in 2016 at 64.7 percent followed by Newark at 55.3 percent, Pittsburgh at 50.7 percent and Atlanta at 50.5 percent. While only one Mexican white heroin exhibit was purchased in San Diego in 2016 under the HDMP, SFL1 analysis of this particular exhibit revealed an exceedingly high purity level of 94.5 percent.

The number of HDMP exhibits purchased in 2016 and analyzed as containing fentanyl, and/or fentanyl related compounds increased almost threefold from 53 exhibits in 2015 to 158 exhibits in 2016. This increase is a clear indicator of the increased availability and expanding domestic market for fentanyl and fentanyl-related compounds. SFL1 advises that numerous adulterants present in HDMP heroin exhibits hinder the new signature protocols established by SFL1 in May 2015 therefore an origin determination could not be made for 16 percent of the 2016 exhibits. 2016 HDMP results reflect that the average purity of INC-SA heroin was only 20.1 percent. Extremely adulterated and diluted (low purity) heroin, such as that purchased at the retail level, is more likely to generate this classification. SFL1 reports that the overlapping presence of common adulterants in SA, MEX-SA and INC-SA heroin types indicates an elaborate but consistent cutting pattern for heroin distributed in Eastern and Midwestern retail markets. Regardless of origin (Mexico or South America), powder HDMP exhibits continue to identify an overwhelming use of other chemical compounds with heroin.

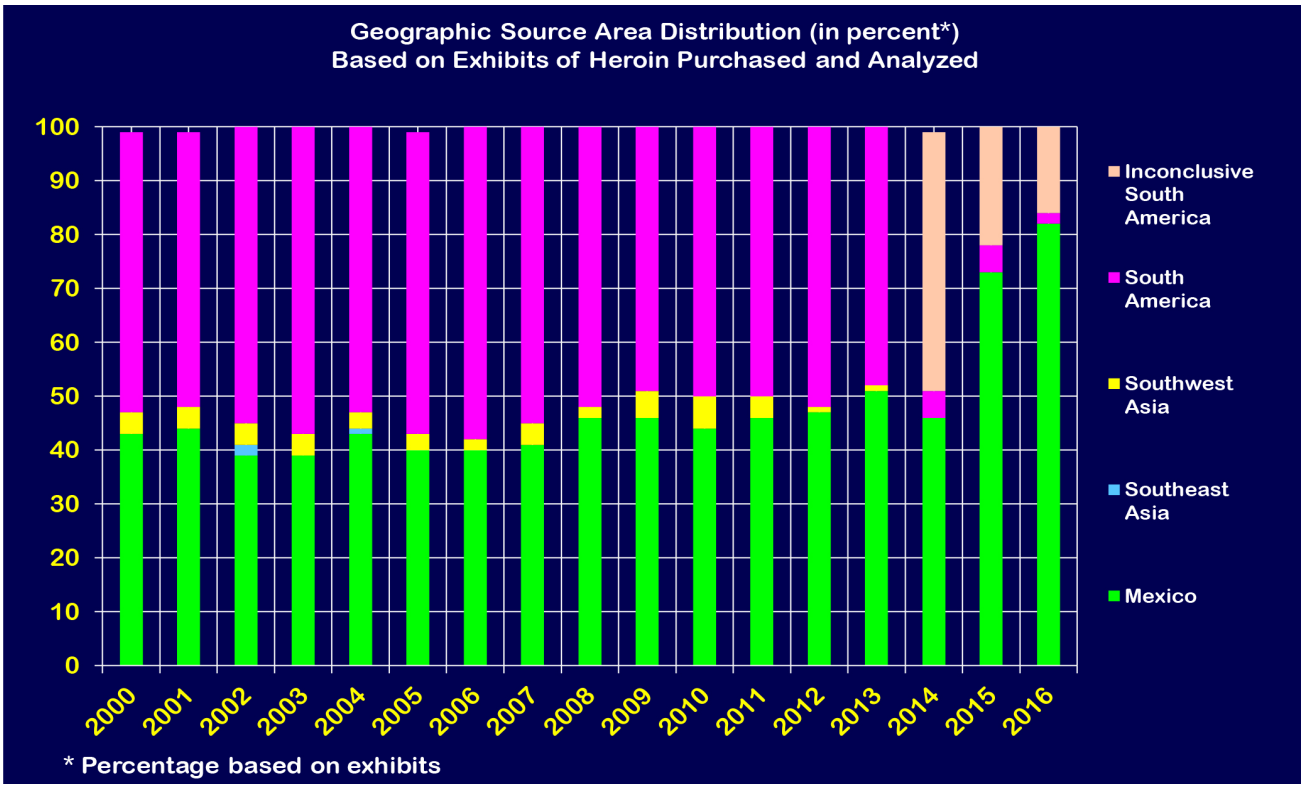
HDMP Consumers

The HDMP is the sole U.S. Government source of data on the origin, price, and purity of heroin available on the streets of the United States and, as such, is an important assessment and trending tool for DEA, other federal, state, and local law enforcement agencies, drug policymakers, and drug abuse researchers throughout the nation. The HDMP results are frequently included in intelligence and investigative reports designed to corroborate trends and inform DEA, other government agencies, Congress, and the White House Office of National Drug Control Policy (ONDCP) about the U.S. drug situation. The HDMP remains a valuable indicator of trends in the retail market, and when used in conjunction with other information, provides DEA with an overall, long-term assessment of retail-level heroin trafficking in the United States.

FIGURE 8: HEROIN DOMESTIC MONITOR PROGRAM CLIENTS.



APPENDIX A: HEROIN SOURCE AREA DISTRIBUTION: 2000-2016.



Source: DEA

APPENDICES

APPENDIX B: 2015 HEROIN, PURITIES, ORIGIN, AND CITY BY GEOGRAPHIC REGION: MEXICAN ORIGIN HEROIN.

	MEX			MEX/T			MEX/BP			MEX-SA		
EAST	Number of Exhibits	Purity	Price	Number of Exhibits	Purity	Price	Number of Exhibits	Purity	Price	Number of Exhibits	Purity	Price
ATLANTA										23	63.6%	$0.46
BALTIMORE										3	21.1	0.74
BOSTON										23	13.4	1.07
CHICAGO										11	13.5	1.00
DETROIT	2	5.8%	$4.03							19	49.4	0.40
MIAMI							4	9.4%	$3.13	14	28.3	1.21
NEW ORLEANS										18	26.6	2.16
NEW YORK							1	6.2	1.65	30	48.6	0.52
NEWARK										20	59.5	0.77
ORLANDO										11	38.9	0.68
PHILADELPHIA										25	76.1	0.29
PITTSBURGH										11	48.8	1.17
RICHMOND							1	12	13.89	4	31	1.19
SAN JUAN										9	25.2	2.18
WASHINGTON, DC										19	31.3	0.96

	MEX			MEX/T			MEX/BP			MEX-SA		
WEST	Number of Exhibits	Purity	Price	Number of Exhibits	Purity	Price	Number of Exhibits	Purity	Price	Number of Exhibits	Purity	Price
ALBUQUERQUE				15	16.4%	$0.58	2	16.6	$0.47			
DALLAS	5	18%	$1.67	10	19.9	1.01	23	8.5	0.82	1	9.8%	$0.49
DENVER	2	13.6	0.55	36	17.6	0.77	2	12.1	0.45			
HOUSTON				13	14.6	2.41				7	18.1	3.45
LOS ANGELES	2	30.9	0.58	38	21.6	0.80						
PHOENIX	5	15.9	0.30	33	20.2	0.33	2	24	1.80			
PORTLAND				16	25.4	0.67						
SAN ANTONIO	2	4.6	0.95	9	5.9	1.65	4	5	1.51	4	12.3	1.36
SAN DIEGO	2	42.9	0.20	29	33.7	0.37	2	39.4	0.17			
SAN FRANCISCO	10	3.5	1.24	21	9	1.35	8	7.1	0.59			
SEATTLE	2	37	0.15	32	33.6	0.57						
ST. LOUIS										15	36.5	1.14
TOTAL	32	14.8%	$1.10	252	27.7%	$0.80	49	10.2%	$1.29	267	41.2%	$0.97

Report Parameters: Only qualified exhibits are shown. January 1 to December 31, 2015
Price Unit: Per milligram pure

Source: DEA

APPENDICES

APPENDIX B: 2015 HEROIN COUNTS, PURITIES, ORIGIN, AND CITY BY GEOGRAPHIC REGION.

	Southwest Asian Heroin			South American Heroin			InconclusiveOrigin-South American Processing		
EAST	Number of Exhibits	Purity	Price	Number of Exhibits	Purity	Price	Number of Exhibits	Purity	Price
ATLANTA				7	58.2%	$0.72	6	43%	$1.80
BALTIMORE	1	9%	$0.65	3	9.6	0.68	23	16.6	0.62
BOSTON				1	4.2	3.09	7	9.6	2.60
CHICAGO				3	11.6	0.46	19	12.1	0.87
DETROIT				1	19.5	0.64	11	27.4	0.85
MIAMI				2	34.4	0.66	4	32.2	1.10
NEW ORLEANS							10	22.4	1.83
NEW YORK	2	23.6	0.97	6	42.5	1.12	16	29.9	1.22
NEWARK				2	47.7	0.83	16	41.3	1.11
ORLANDO							1	35.1	0.53
PHILADELPHIA							15	59.6	0.58
PITTSBURGH							6	62.2	0.97
RICHMOND				2	16.5	2.21	8	12.5	2.36
SAN JUAN				7	38.6	1.83	17	21.8	1.03
WASHINGTON, DC				1	40.6	0.35	12	24.1	1.35

	Southwest Asian Heroin			South American Heroin			InconclusiveOrigin-South American Processing		
EAST	Number of Exhibits	Purity	Price	Number of Exhibits	Purity	Price	Number of Exhibits	Purity	Price
ALBUQUERQUE									
DALLAS							1	7.6%	$0.73
DENVER									
HOUSTON									
LOS ANGELES									
PHOENIX									
PORTLAND									
SAN ANTONIO									
SAN DIEGO									
SAN FRANCISCO									
SEATTLE									
ST. LOUIS				7	54.8%	$0.64	6	16	2.50
TOTAL	3	18.7%	$0.86	42	39.1%	$1.05	178	27.5%	$1.19

Report Parameters: Only qualified exhibits are shown. January 1 to December 31, 2015
Price Unit: Per milligram pure

Source: DEA

APPENDICES

APPENDIX C: 2014 HEROIN COUNTS, PURITIES, ORIGIN, AND CITY BY GEOGRAPHIC REGION: MEXICAN ORIGIN HEROIN.

	Mexican Heroin			Mexican Tar Heroin			Mexican Brown Powder Heroin			MEX-SA Heroin		
EAST	Number of Samples	Purity	Price	Number of Samples	Purity	Price	Number of Samples	Purity	Price	Number of Samples	Purity	Price
ATLANTA												
BALTIMORE												
BOSTON												
CHICAGO												
DETROIT							1	5.7%	$1.43			
MIAMI	1	1.9%	$11.96				2	6	6.42			
NEW ORLEANS	2	1.3	13.61				1	8.1	1.06			
NEW YORK												
NEWARK										1	57.2%	$0.36
ORLANDO												
PHILADELPHIA												
PITTSBURGH												
RICHMOND												
SAN JUAN												
WASHINGTON, DC							1	8.7	1.04			

	Mexican Heroin			Mexican Tar Heroin			Mexican Brown Powder Heroin			MEX-SA Heroin		
WEST	Number of Samples	Purity	Price	Number of Samples	Purity	Price	Number of Samples	Purity	Price	Number of Samples	Purity	Price
ALBUQUERQUE				18	19.1%	$0.48	2	17.1%	$0.36			
DALLAS				20	25.1	1.80	6	7.3	0.56			
DENVER				27	20.8	1.34	5	13.1	1.16			
HOUSTON				17	12.6	3.04						
LOS ANGELES				22	26.8	0.71	6	30.7	0.24			
PHOENIX				29	26.8	0.56	1	21.6	0.37			
PORTLAND				19	24.8	1.36						
SAN ANTONIO				7	7.8	0.68	12	7	1.16			
SAN DIEGO				29	32.9	0.25	3	38.8	0.28			
SAN FRANCISCO	1			17	7.2	1.25	9	8.3	0.53			
SEATTLE				28	26.5	0.68						
ST. LOUIS												
TOTAL	4	1.6%	$9.98	233	22.9%	$1.04	49	13.5%	$0.97	1	57.2%	$0.36

Report Parameters: Only qualified exhibits are shown. January 1 to December 31, 2014
Price Unit: Per milligram pure

Source: DEA

APPENDICES

APPENDIX C: 2014 HEROIN COUNTS, PURITIES, PRICES, ORIGIN, AND CITY BY GEOGRAPHIC REGION.

	Southwest Asian Heroin			South American Heroin			InconclusiveOrigin-South American Processing		
EAST	Number of Exhibits	Purity	Price	Number of Exhibits	Purity	Price	Number of Exhibits	Purity	Price
ATLANTA							14	42.6%	$1.81
BALTIMORE							24	12.9	0.67
BOSTON							19	19.5	1.12
CHICAGO							14	11	0.48
DETROIT							18	44.5	0.37
MIAMI				4	33.3%	$0.90	19	35.1	1.82
NEW ORLEANS							18	24.2	2.06
NEW YORK				10	38.5	0.79	40	53.9	0.72
NEWARK				4	41.3	1.22	24	57	0.75
ORLANDO				1	40.2	0.62	10	22	3.19
PHILADELPHIA				2	65.3	0.46	22	67	0.43
PITTSBURGH							10	55.1	1.06
RICHMOND				1	10.9	1.58	11	14.9	2.44
SAN JUAN				12	15.9	1.30	16	21.2	1.53
WASHINGTON, DC	1	16.2%	$1.06				19	36.5	0.78
	Southwest Asian Heroin			South American Heroin			InconclusiveOrigin-South American Processing		
EAST	Number of Exhibits	Purity	Price	Number of Exhibits	Purity	Price	Number of Exhibits	Purity	Price
ALBUQUERQUE									
DALLAS									
DENVER									
HOUSTON									
LOS ANGELES							1	87.9%	0.10
PHOENIX									
PORTLAND									
SAN ANTONIO									
SAN DIEGO									
SAN FRANCISCO									
SEATTLE									
ST. LOUIS							24	46.5	0.53
TOTAL	1	16%	$1.06	34	31.1%	$1.03	303	38%	$1.07

Report Parameters: Only qualified exhibits are shown. January 1 to December 31, 2014
Price Unit: Per milligram pure

Source: DEA

APPENDICES

APPENDIX D: DEFINITIONS

***Adulterant*:** A pharmacologically active substance that is added to heroin to enhance or mimic the effect of heroin. Adulterants can be added to heroin shipments immediately after production, in transit, or prior to distribution. While dextromethorphan for Southwest Asian heroin and diltiazem for South American heroin are examples of adulterants that are added immediately after production, xylazine for Puerto Rico and quinine for Washington, DC-Baltimore are examples for city-specific adulteration prior to distribution.

***Diluent*:** An inert ingredient (pharmacologically inactive compound) used to increase the bulk of a finished product. Typical diluents are sugars, starches, and inorganic salts.

***Heroin Signature Analysis*:** A program developed by DEA to identify the geographic source area of a heroin exhibit. Heroin signature analysis is based on an exhaustive chemical profile of authentic exhibits acquired from each of the four major heroin source areas: South America, Mexico, Southeast Asia, and Southwest Asia.

***Heroin Signature Classification*:** The result of heroin signature analysis. Origin classifications currently defined include Mexican (MEX), Mexican Tar (MEX/T), Mexican Brown Powder (MEX/BP), Mexican South American (MEX-SA), South America (SA), Inconclusive South America (INC-SA where Mexico or South America could be the origin), Southeast Asia (SEA), and Southwest Asian (SWA) heroin. Exhibits meeting these classifications are referred to as “qualified exhibits.”

***Insufficient Weight*:** An exhibit of heroin that is too small for signature analysis. Generally, an exhibit should weigh at least 1 gram net, including diluents and adulterants. This amount ensures at least 150 milligrams of pure heroin are available for signature analysis.

***Net Weight*:** The total weight of the heroin exhibit, including diluents and adulterants, excluding its packaging.

***Price per milligram pure*:** The price of the exhibit divided by the pure weight, expressed in milligrams. Price per milligram pure provides a constant in prices of exhibits of differing weights and purity can be compared.

Pure Weight: The weight of pure heroin is determined by multiplying the purity of an exhibit by its net weight.

***Purity*:** The amount of heroin present in the exhibit compared to all other substances. Purity is expressed as a percent.

***Qualified Exhibit*:** A heroin exhibit for which price, purity and geographic source data can be determined.

Unknown: A heroin exhibit analyzed by SFL1, but for which the results of the analysis do not match with authentic profiles of any known source region (refer to Heroin Signature Classification).

PRB 09-18-18-42

(U) This product was prepared by the DEA Indicator Programs Section. Comments and questions may be addressed to the Chief, Analysis and Production Section at DEA.IntelligenceProducts@usdoj.gov. For media/press inquiries call (202) 307-7977.