

SUMMARY OF TESTIMONY
Of
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To the

Committee on Science, Space, and Technology
Subcommittee on Research and Technology
U. S. House of Representatives
September 18, 2013

This presentation discusses the history of methamphetamine abuse in the U.S. and its cyclical nature based on the use of precursor regulations to limit the use of various chemicals and methods to produce methamphetamine. Currently methamphetamine is more dominant in the Western U.S. but it is an increasing problem in other parts of the country. There are two sources of the drug: large-scale production in Mexico using the phenyl-2-propanone (P2P) method and the use of pseudoephedrine cold tablets to produce small amounts using the “shake and bake” method. DEA estimates that 85% of the methamphetamine consumed in the U.S. comes from Mexico, and the potency of the P2P methamphetamine has now reached 93%. Traditional demand indicators such as human exposure calls to poison centers, treatment admissions, and deaths, which dropped after the 2006 precursor ban, are now rising and the high potency is resulting in more psychosis and problems seen in users, as well as reports from the DEA Field Divisions in Texas about the increased availability and lower price.

There are a number of data sources which can inform public policy about changes in the spread of the drug, including surveys, data from poison control centers, emergency room cases, treatment admissions, forensic test results, price and purity, reports from DEA field divisions, studies of users, and reports from street outreach workers and other qualitative information. Techniques such as time series analysis and capture-recapture methods can be used, and there is a need to be able to access some of these data sources in a more timely manner and to post non-sensitive data on the web to encourage use of these data by researchers. It is suggested that the confidentiality requirements be re-examined to weigh the benefit of the proposed research against limiting access to certain variables when it would be virtually impossible to identify an individual because of lack of specific information in the dataset.

Lastly, additional treatment resources are needed for these more impaired users, including treatment resources in the rural and semi-rural areas as well as therapy for trauma, gender-focused counseling for sexual abuse, motivational enhancement, and social-cognitive training.

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Good morning, Chairman Bucshon, Ranking Member Lipiski, and members of the Subcommittee. Thank you for the opportunity to provide testimony on the methamphetamine problem in the US and the data sources that can inform public policy.

I am an epidemiologist studying trends in substance abuse and have been a member of the National Institute on Drug Abuse's Community Epidemiology Work Group of the National Institute on Drug Abuse for nearly 25 years. The Workgroup is composed of researchers from some 20 different areas around the U.S. who meet twice a year to present detailed information on the drug trends in their areas, and I will be presenting some of their findings.

In addition to my epidemiology work, I have recently completed a study funded by the National Institute on Drug Abuse on methamphetamine users who entered treatment facilities in the Central Texas area and found that these users were troubled on many issues, including high scores on the Severity of Dependence Scale and high rates of abuse and neglect experienced by both male and female patients as children and adults.¹ Given the expertise of the other witnesses, I will defer discussion on the findings of my project to their presentations and focus on how sound social science research can be used to understand the spread of methamphetamine and how it can inform public policy. As I go through my presentation I am going to show you some of the data that have been analyzed and then point out trends of concern.

First, methamphetamine can be characterized as a cyclical drug in terms of increases and decreases in both supply and demand over time. Supply means not only the quantity of the drug available and seized, but also purity, price, and formulation. Demand indicators are those which show the effects of using the drug, such as prevalence findings from surveys, emergency room episodes, treatment admissions, and deaths where a drug is involved.

¹ Maxwell, JC. (2013). A new survey of methamphetamine users in treatment: Who they are, why they like "meth," and why they need additional services. *Substance Use and Misuse*, in press.

The cyclical nature of the increases and decreases in use after various methamphetamine precursor bans is shown in Exhibit 1, which uses time series analysis to track changes in purity of methamphetamine after each precursor ban (shown as red vertical lines).² Notice that after a precursor ban occurs, the purity of methamphetamine drops but then rises again later.

Our problems with methamphetamine go back to when amphetamine tablets were available in the U.S. without a prescription until they were scheduled in 1970.³ After the scheduling, illicit manufacturers began making methamphetamine using phenyl-2-propanone (P2P). Motorcycle gangs and small-scale local producers dominated the manufacturing and distribution process. The term “crank” referred to the practice of transporting the methamphetamine in the crank cases of the motorcycles. After P2P became Schedule II in the U.S. in 1980, operators of clandestine laboratories shifted to using ephedrine and pseudoephedrine to make methamphetamine.

Large quantities of ephedrine and pseudoephedrine were then smuggled in from Mexico for use in super labs in the southern California desert. At the same time, a smokeable and highly pure form of d-methamphetamine hydrochloride, known as Ice, Crystal, or “Tina,” was imported from Far Eastern sources into Hawaii and then into the west coast of the US with a gradual movement eastward towards the end of the 1990s.

As methamphetamine use and the demand for it grew, there was a parallel increase in small-time local producers in the U.S. who used over-the-counter cold medications and readily available chemicals to produce methamphetamine using the so-called “Nazi” and “cold” methods.

Federal regulations targeting ephedrine and pseudoephedrine in forms used by large-scale producers in the U.S. were implemented in 1989, 1995, and 1997 and precursors in forms used by small-scale producers (e.g., over-the-counter medications) were implemented in 1996 and 2001. During 2004, in response to the increase in the number of local laboratories, various states began to limit access to over-the-counter pseudoephedrine products and in March, 2006, U.S. federal legislation (P. L. 109-177) imposed limits nationwide. The supply of pseudoephedrine also decreased after Mexico arrested the head of a commercial chemical company that was alleged to have illicitly imported over 60+ tons of pseudoephedrine. Mexico banned pseudoephedrine in 2008.

Exhibit 2 shows the impact of P. L. 109-177. The left side of the graph shows the situation just as the ban became effective in January 2007 with higher prices and lower purity. But by July-September 2008, the pattern had reversed as prices began dropping and purity began

² Cunningham JK, Liu L-M, Callaghan R. (2009). Impact of US and Canadian precursor regulation on methamphetamine purity in the United States. *Addiction*, 104, 441-453.

³ Maxwell, JC & Brecht ML. (2011). Methamphetamine: Here we go again? *Addictive Behaviors*, 36, 1168-1173.

increasing as methamphetamine “cooks” found ways to circumvent the legislation by shifting to other precursors. The primary precursor became phenyl-2-propanone (P2P), which while banned in the US, was still available in Mexico. The P2P method normally produces a methamphetamine which has a potency of 50%, but the Mexican chemists have continued to refine their methods and now are producing methamphetamine which is 93% potent as of July, 2013. At the same time, local cooks in the US are using the “shake and bake” or “one pot” method to produce small amounts of methamphetamine using packages of cold medicine.

Exhibit 3 combines two different datasets, DEA’s Methamphetamine Profiling Program and reports from DEA’s Methamphetamine Clandestine Laboratory Incidents. This exhibit compares the increases in the proportion of methamphetamine made using the P2P process (blue line) with the number of U.S. clandestine methamphetamine laboratory incidents reported (red line). Notice the decrease in methamphetamine laboratory incidents since 2010. This may be an indication that the Mexican P2P methamphetamine is spreading across the U.S. and replacing the product of the “one-pot” or “shake and bake” methods, but more data will be needed to verify this trend. Also note that the data showing the increase in P2P methamphetamine does not reflect all the source information because it does not include small seizures (less than 6 grams), and those smaller seizures are more likely to come from the “shake and bake” forms of methamphetamine, which Exhibit 3 shows are decreasing. However, DEA estimates that 85% of the methamphetamine consumed in the US is produced outside the US.

Exhibit 4 shows the impact of the 2006 ban on pseudoephedrine and the subsequent decrease and then increase in Texas of stimulant deaths, human exposure calls to poison control center calls, and treatment admissions.

Exhibit 5 shows the percentage of drug items identified as methamphetamine by forensic laboratories. This slide is based on 2010 data, and it shows methamphetamine is more prevalent in the Western U.S. The 2013 statistics report that of the top 25 drugs identified in the laboratories in each state, methamphetamine is the number 1 or number 2 drug in 22 states. In addition, most of my colleagues on the Community Epidemiology Work Group report increasing patterns in methamphetamine use as of June 2013, with no reports of decreasing use (Exhibit 6).

Lastly, I want to emphasize that my research is showing not only the spread of the drug, but the need for more treatment. With the increases in the more potent Mexican methamphetamine, the 2013 Texas Drug Trends reported more psychosis, more intense “highs,” more use of needles, mentions that methamphetamine is now more popular than alcohol or cocaine on the street, increased use among the homeless, as well as increased syphilis cases among those using crystal methamphetamine. At the same time, the DEA Field Divisions in Texas were reporting increases in methamphetamine availability and decreases in price, with multiple seizures of methamphetamine in excess of 100 pounds and the appearance of liquid

methamphetamine, which is easier to smuggle across the border before turning it into crystal methamphetamine.⁴

In response to your questions about data, please refer to Exhibit 7. There are a number of data sources which can inform public policy about changes in the spread of a drug and the treatment needs, and I would urge that attention be focused on getting these datasets out more quickly and making them available to researchers for immediate analysis rather than only releasing the data after the “official” reports are published in hard copy. Another change which could help policy analysis would be to place data sets which are not “sensitive” on the web so researchers can access them without having to file Freedom of Information requests. It would also be helpful if the confidentiality requirements for some datasets were revisited. We need to protect confidentiality, but some of the interpretations seem overly restrictive and prevent analysis of very important issues because key variables are not available to researchers. Perhaps the confidentiality restrictions should weigh the value of the proposed research against the need to prohibit the use of certain variables.⁵ And, yes, an interdisciplinary approach is necessary. Policy-makers should not only look at the datasets in their own agencies or in their own geographic areas, but should look at supply and demand data to determine trends across these data. The interdisciplinary approach can provide a broader and more accurate view than can be obtained from one data source.

Exhibit 7 also lists a few of the analytical techniques which have been very useful in analyzing drug trend data. Exhibit 1 has shown the value of using time-series techniques, and I have used capture-recapture methods which originated in wildlife biology to estimate the number of individuals in need of treatment. I applaud the Committee’s interest in encouraging use of such techniques.

In terms of interventions, I would cite this drug as an example of how rogue chemists have successfully worked around bans on various chemicals. In other research, Cunningham et al. analyzed clandestine laboratory data to study the impact of requiring prescriptions for pseudoephedrine and found that the impact of such a proposal was related to whether or not the state had a number of small laboratories. It resulted in a reduction of clandestine laboratory seizures in Mississippi, as compared to Oregon, but the effects of such regulations need to be

⁴ Maxwell, JC. Substance Abuse Trends in Texas, in *Epidemiologic Trends in Drug Abuse, Proceedings of the Community Epidemiology Work Group*. Rockville, MD: National Institute on Drug Abuse, 2013. On-line at <http://www.utexas.edu/research/cswr/gcattc/documents/CurrentTrendsJune2013.pdf>

⁵ The Center for Behavioral Health Statistics and Quality of the Substance Abuse and Mental Health Services Administration has attempted to solve this problem through a system through which qualified research organizations may apply for access to confidential data for important research and policy analyses while still conforming to Federal law and protecting identifiable data from disclosure.

considered in terms of other hardships for the population.⁶ So, again, the need to weigh supply vs. demand in terms of burdens and benefits. In addition, we know that rogue chemists are searching for other precursor chemicals in other regions of the world, so we should not limit our concerns to only controlling pseudoephedrine and phenyl-2-propanone.

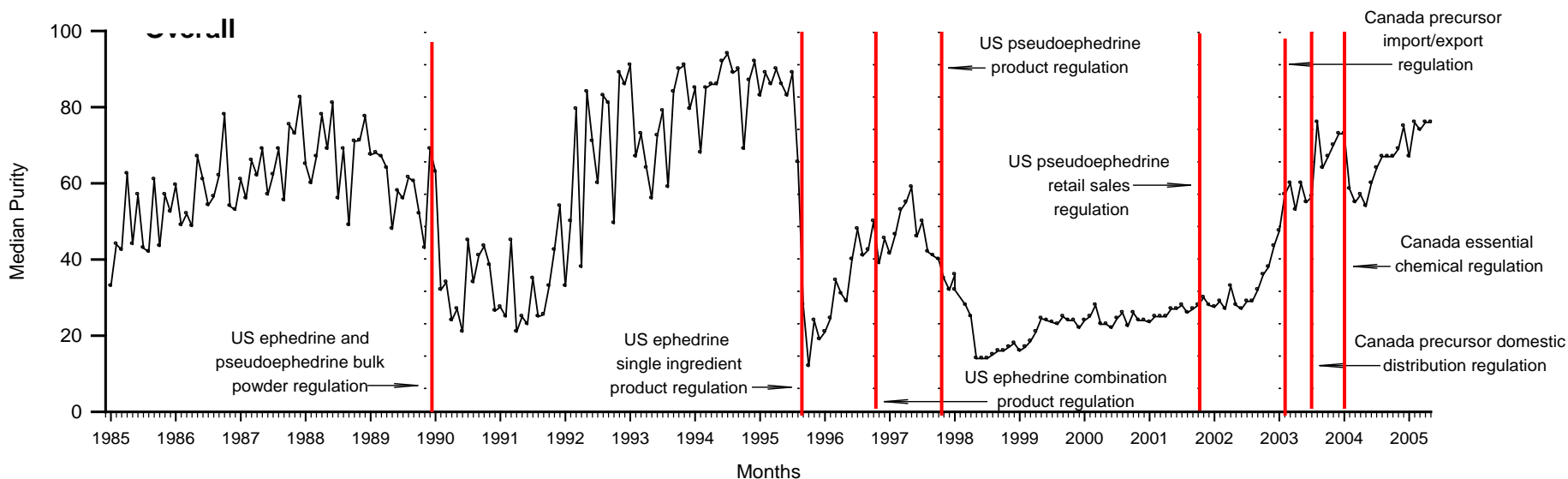
In closing, methamphetamine is a serious problem that continues to wreck our lives and communities and we need intensive treatment to heal not only the bodies, but also the minds of the users. Before the 2006 intervention limiting the sales of pseudoephedrine, there was an initiative to provide more treatment, but some of this effort was diminished because of the erroneous belief that the 2006 ban had “cured” the problem. Unfortunately, the methamphetamine problem has not been solved; the numbers are increasing and we need many more treatment programs. We need treatment in areas with both the more potent Mexican product and also in the rural and semi-rural areas. There is also a need for training for counselors who may have not developed the skill sets needed to successfully work with methamphetamine users who may still be cognitively impaired from their methamphetamine use. Many of these methamphetamine abusers need trauma therapy, gender-focused counseling for sexual abuse, motivational enhancement therapy, and social-cognitive skills training

Together, we have a lot of work to do on this problem. Thank you for your attention.

⁶ Cunningham, JK, Callaghan, RC, Tong, D., Liu, L-M, Li, H-Y, Lattyak, WJ. (2012). Changing over-the-counter ephedrine and pseudoephedrine products to prescription only: Impacts on methamphetamine clandestine laboratory seizures. *Drug and Alcohol Dependence* 126: 55-64.

Exhibits for the Testimony of
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Exhibit 1. Median Methamphetamine Purity in the Continental United States (1985-2005)



Source: Cunningham JK, Liu L-M, Callaghan R. Impact of US and Canadian precursor regulation on methamphetamine purity in the United States. (2009) *Addiction*; 104, 441-453.



Exhibit 2. All Methamphetamine Purchases Domestic STRIDE Data January 2007 – June 2012

** STRIDE is a database of drug exhibits sent to DEA laboratories from the DEA, FBI, CBP, ICE, USCG, and Washington MPD. STRIDE is not a representative sample of drugs available in the United States, but reflects all evidence submitted to DEA laboratories for analysis. STRIDE data are not collected to reflect national market trends. Nonetheless, STRIDE data reflect the best information currently available on changes in methamphetamine price and purity.

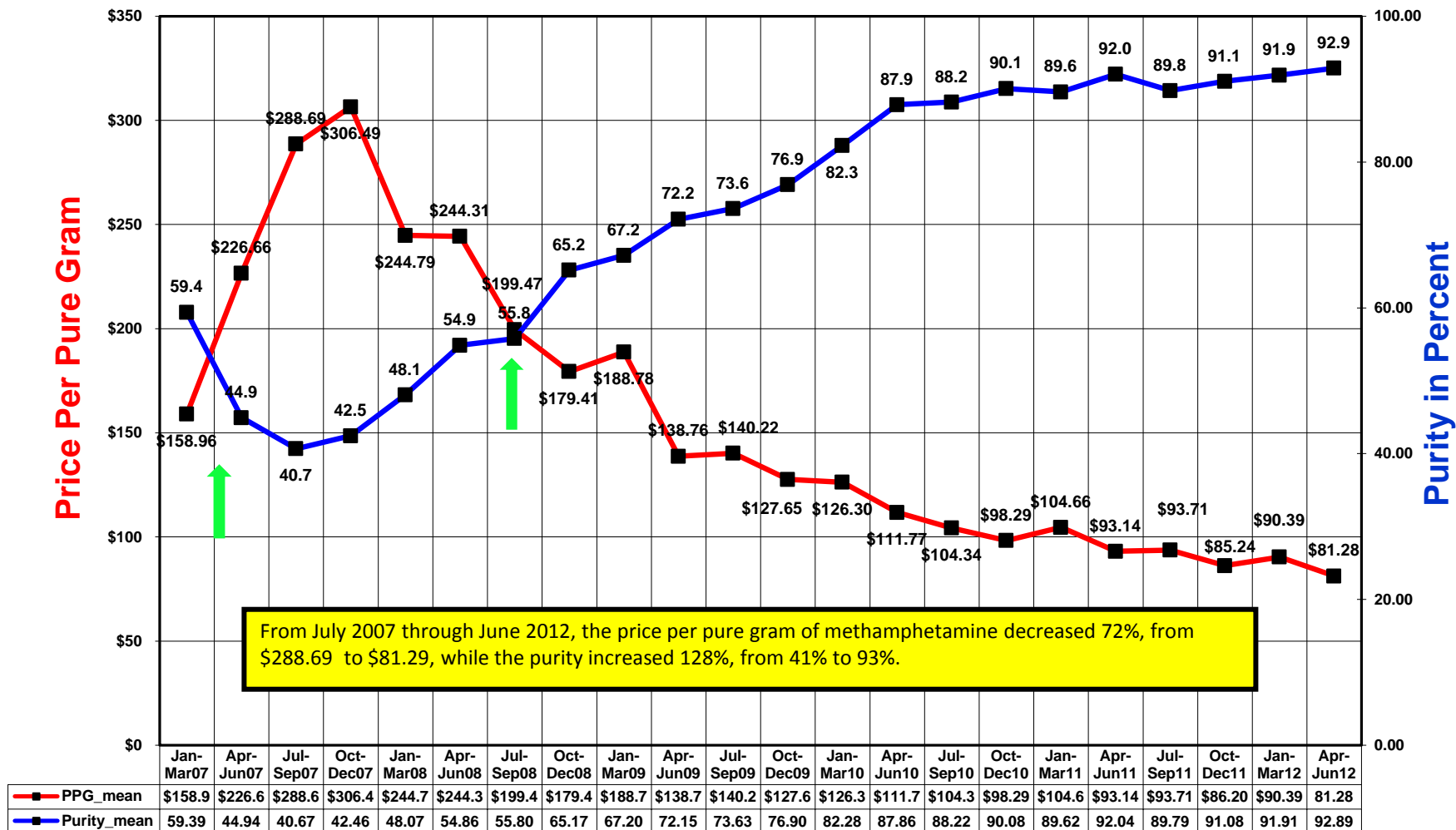
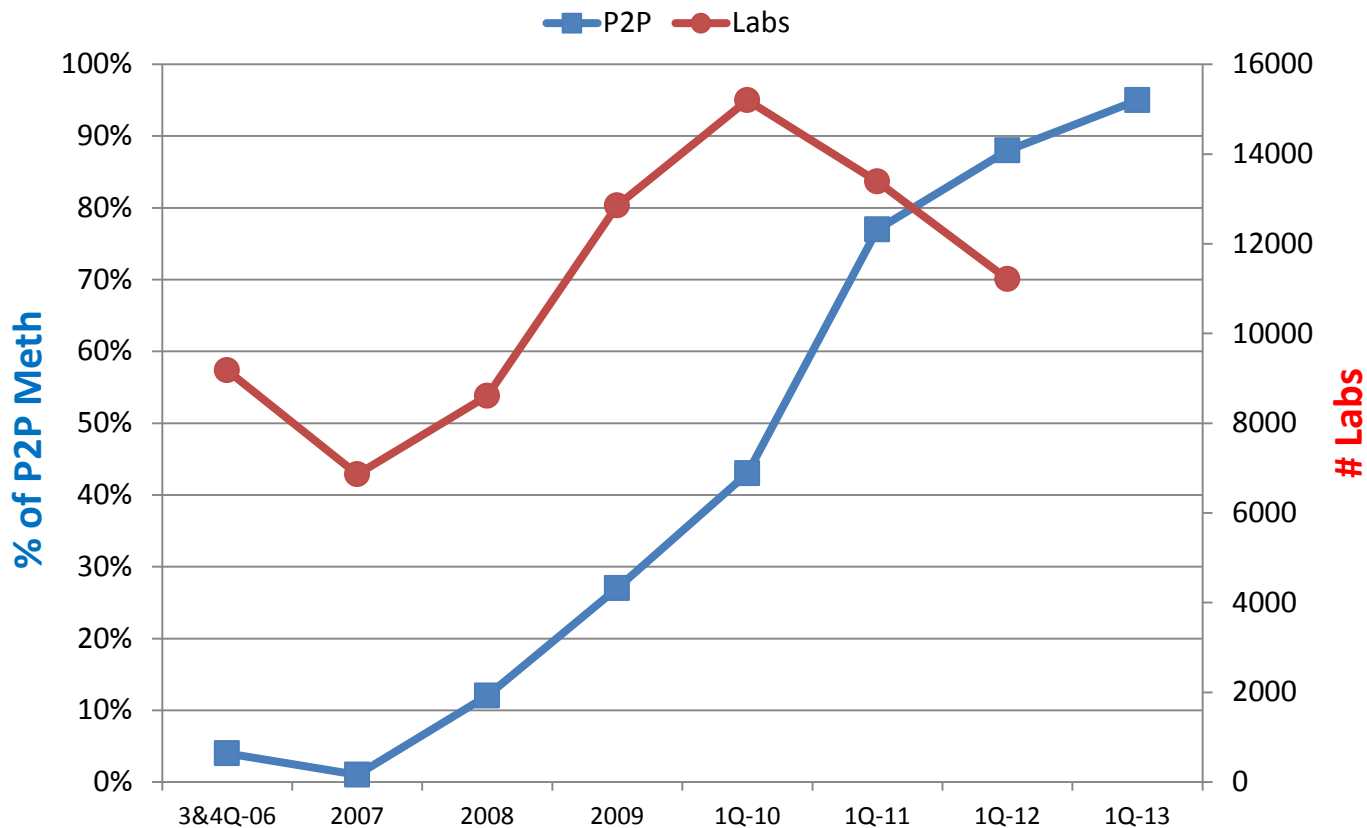


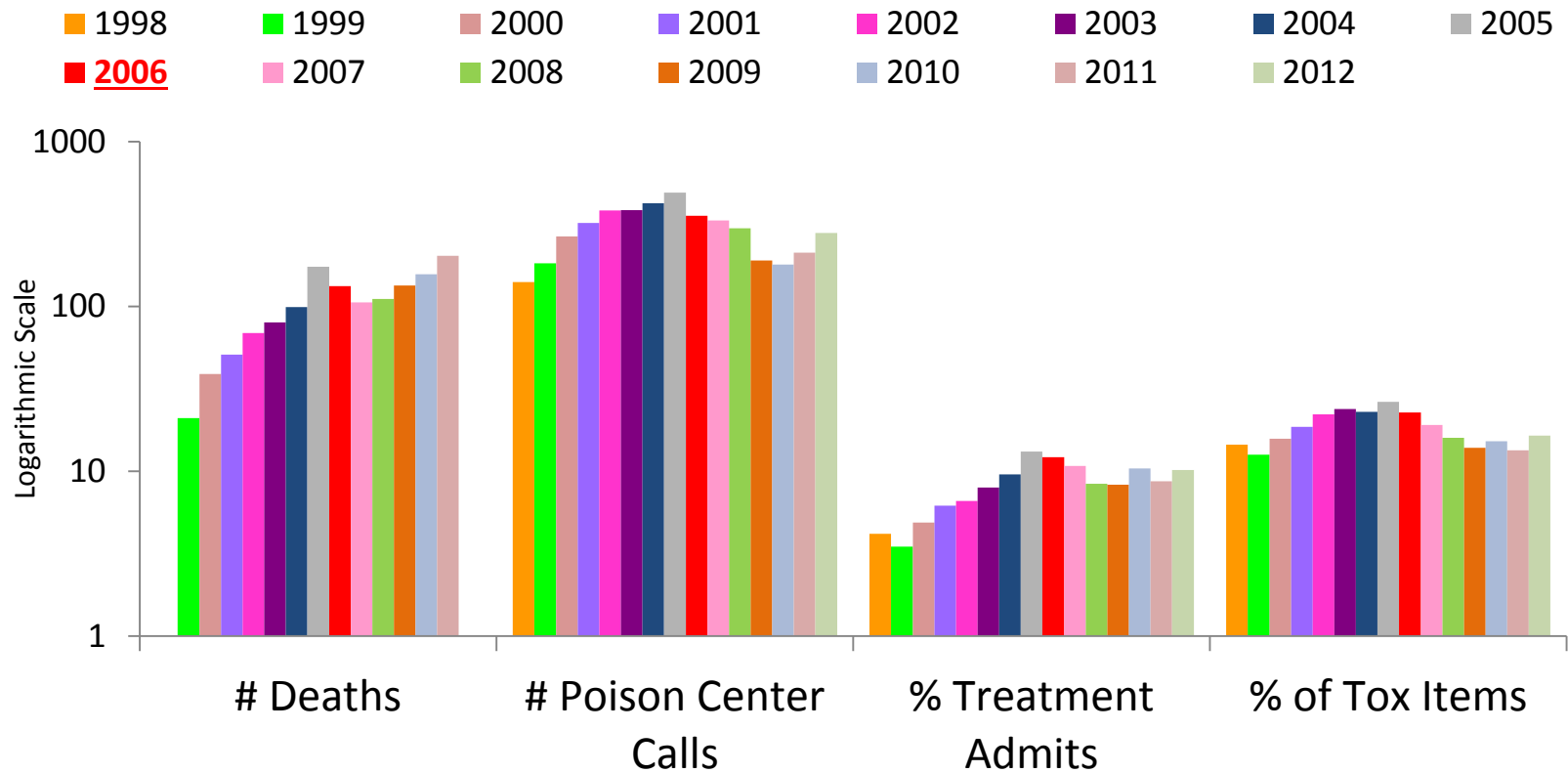
Exhibit 3: Production of P2P Methamphetamine* and Clandestine Methamphetamine Lab Incidents in the US: DEA



*Only P2P samples over 6g reported here

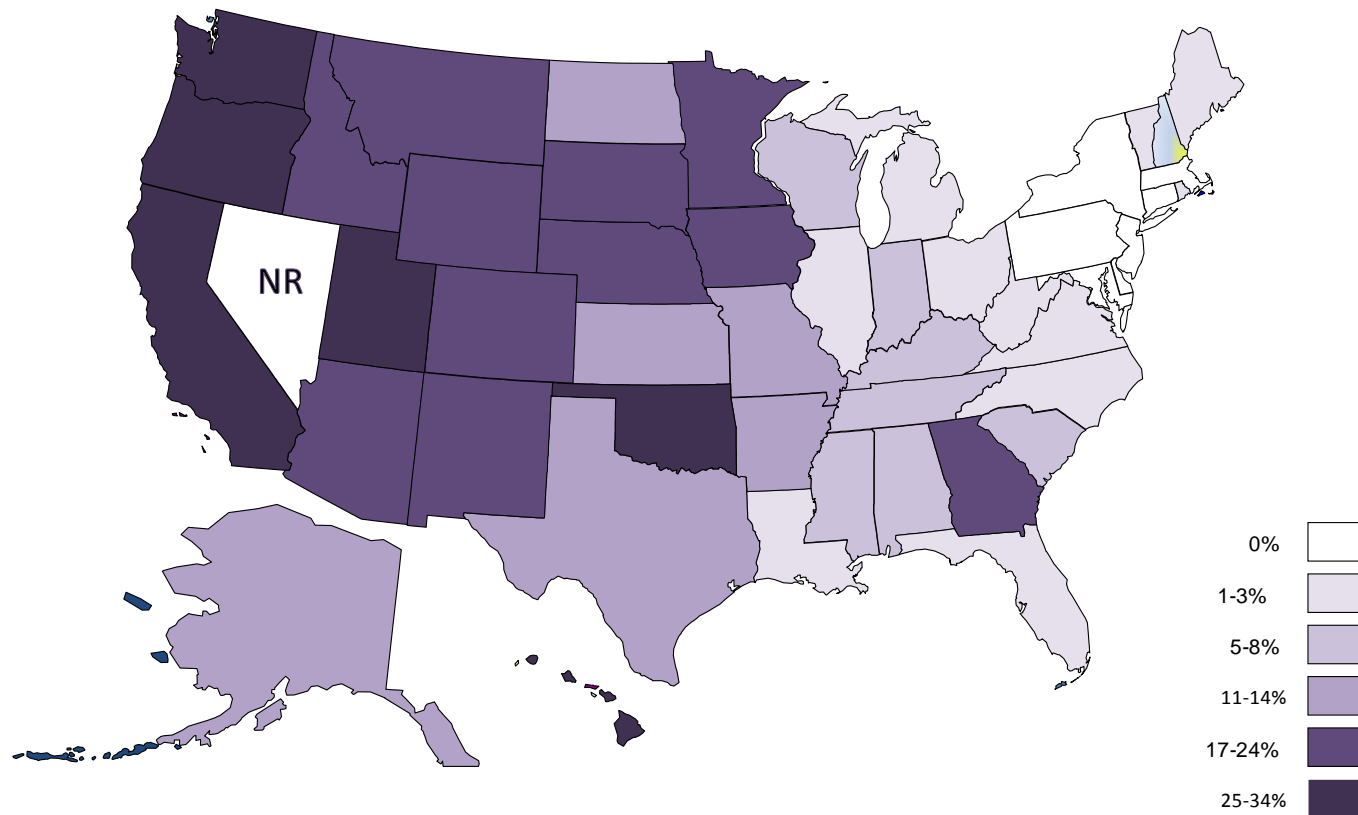
Source: National Forensic Laboratory Information System and DEA's Methamphetamine Clandestine Laboratory Incidents

Exhibit 4. Methamphetamine Indicators in Texas: 1997-2012



Source: Deaths, Poison Calls and Treatment Admissions from the Texas Department of State Health Services and Toxicology Items from National Forensic Laboratory Information System.

Exhibit 5. Percentage of Drug Items Identified as Methamphetamine by Forensics Labs: NFLIS 2010



Source: National Forensic Laboratory Information System

Exhibit 6

Indicators of Methamphetamine Abuse 2012 vs. 2013					
Increasing		Mixed Indicators		Stable	
<u>High Level</u>	<u>Low Level</u>	<u>High Level</u>	<u>Low Level</u>	<u>High level</u>	<u>Low Level</u>
Los Angeles	Maine	San Diego		San Francisco	Boston
Albuquerque	Atlanta	Honolulu			New York City
Seattle	South Florida	Phoenix			Philadelphia
Texas	Cincinnati				Washington DC
St. Louis					Detroit
Minneapolis / St.Paul					Chicago

Source: Hall, JN. Meeting Notes from the June 12-14, 2013 Community Epidemiology Work Group (CEWG) of the National Institute on Drug Abuse.

Exhibit 7. Available Data Sources for Policy Analysis (Federal, State, Local) and Analytical Techniques

DATA SOURCES

- Surveys: National Household Survey on Drug Use and Health (NSDUH), Youth Risk Behavior Survey (YRBS), Monitoring the Future (MTF)
- Poison control centers
- Emergency room data (formerly Drug Abuse Warning Network) — will be consolidated into Centers for Disease Control and Prevention's National Center for Health Statistics (NCHS)
- Treatment Admissions & Discharges (TEDS)
- Forensic tests of seized drugs – National Forensic Laboratory Information System (NFLIS)
- Price and purity – System to Retrieve Information from Drug Evidence (STRIDE)
- Semi-annual Trends in Trafficking reports from DEA Field Divisions
- Automation of Reports and Consolidated Orders System (ARCOS) –sales of scheduled pharmaceuticals
- Sexually Transmitted Diseases, Hepatitis, HIV and AIDS data
- Studies of users
- Reports from street outreach workers and others who work with users in homeless shelters, drop-in centers, health care settings, syringe exchange programs, etc.

ESTIMATION TECHNIQUES

- Graph changes in drugs over the long-term (10-15 years)
- Compare different datasets to see changes in characteristics of users or to compare trends.
- Studies that merge different datasets
- Time series analysis of STRIDE or other longitudinal datasets.
- Capture-Recapture to estimate number of users.

NEEDS

- Quicker release of federal datasets, even if they are incomplete (title them as preliminary and release them).
- More access to federal data without having to file Freedom of Information requests when the data are not sensitive.
- Revisit confidentiality requirements to see if there are ways to protect confidentiality but make needed data elements accessible to qualified researchers.
- Training for counselors in trauma therapy, gender-focused counseling, motivational therapy, and social-cognitive skills training.
- **Additional treatment programs, including those in rural and semi-rural areas.**