Research Overview: Methamphetamine Production, Precursor Chemicals, and Child Endangerment

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Executive Summary

- Methamphetamine is an addictive drug that can be destructive to the human body leading to severe neurological, behavioral, and psychological problems.

- The number of clandestine methamphetamine drug labs seized by law enforcement has been increasing yearly across the United States, including New Mexico.

- Clandestine drug laboratories where methamphetamine is manufactured produce large amounts of toxic waste that is hazardous to law enforcement officials, the community, and the environment.

- The precursor chemicals used to produce methamphetamine are relatively inexpensive, widely available, easy to transport, and difficult to regulate.

- Many states have enacted legislation aimed at controlling methamphetamine precursor chemicals by regulating the possession of products and chemicals that can be used to manufacture methamphetamine.

- The New Mexico State Police estimate that children are present at 30% of the methamphetamine labs that it investigates, and the number of children present at methamphetamine labs nationwide who test positive for toxic levels of chemicals in their systems has been increasing.

- The chemicals used for methamphetamine production are highly toxic, and pose the risk of severe short and long-term physical effects for children who are exposed to them.

- Children living in homes with methamphetamine labs are also at increased risk for neglect and physical and sexual abuse, and often face hazardous and unsanitary living conditions.

- Several states have passed laws that expand child abuse penalties for adults who place children in a location where a methamphetamine lab exists.

- Drug Endangered Children (DEC) programs have been created to form multidisciplinary response teams to address the health and safety of children who are present at seized methamphetamine labs.

Methamphetamine Overview

In 1998, General Barry R. McCaffrey, Director of the Office of National Drug Control Policy, stated that methamphetamine had become the United States' primary drug threat. Over the last five years, the production and abuse of methamphetamine has increased steadily in urban as well as rural areas across the U.S., as illustrated by a rise in the number of methamphetamine seizures, arrests, indictments and sentences. A National Institute on Drug Abuse report from 2002 stated that methamphetamine indicators were the highest in the West and Southwest regions of the country. The production and abuse of methamphetamine leaves in its wake severe health, social, and environmental problems. This report looks at two main issues related to methamphetamine production and abuse, the use of precursor drugs involved in the manufacture of methamphetamine, and the endangerment of children who are exposed to methamphetamine production and abuse.

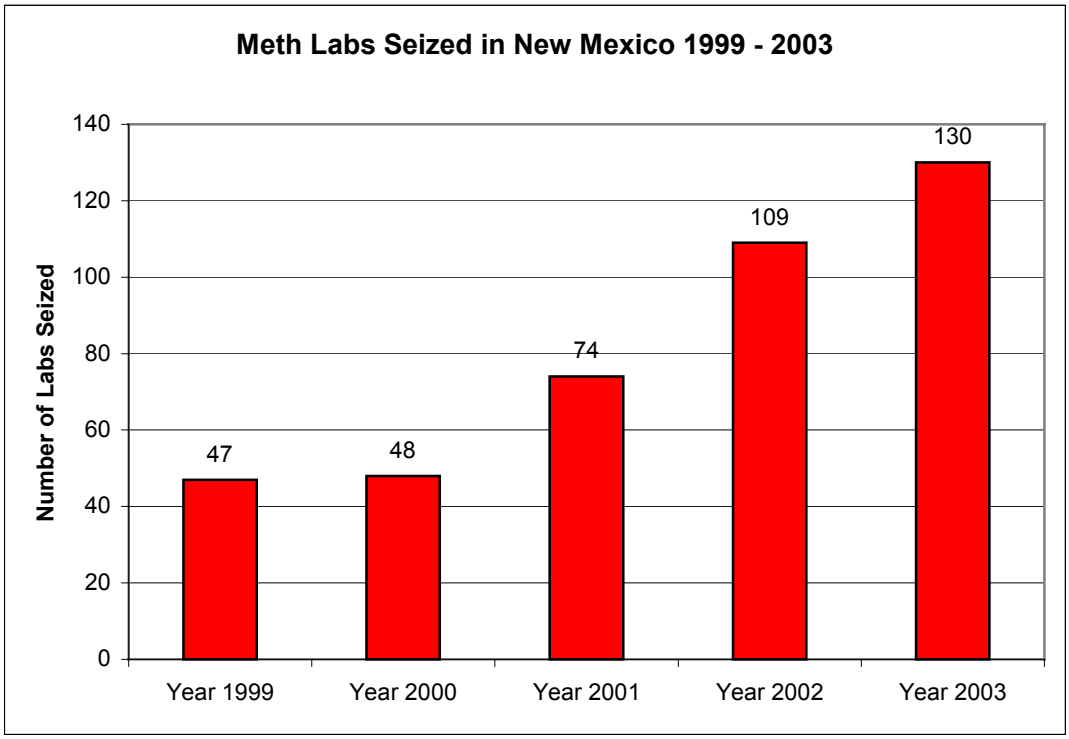
Methamphetamine is a derivative of amphetamine, and is a powerful stimulant that affects the brain and the central nervous system. Methamphetamine can be smoked, snorted, injected, or taken orally in a tablet form, and produces a rush that increases energy and alertness that can last for up to 12 hours. Side effects of methamphetamine use include convulsions, dangerously high body temperature, stroke, cardiac arrhythmia, stomach cramps, and uncontrollable shaking. Chronic use of methamphetamine can result in the user developing a high tolerance for the drug, which can lead to a "binge and crash" cycle as the user attempts to maintain his original high. Methamphetamine is classified as a Schedule II drug under the Controlled Substances Act of 1970, meaning that it has a high potential for abuse, is currently accepted for medical use in treatment in the U.S., and may lead to severe psychological or physical dependence. Approved medical uses include treatment for asthma, narcolepsy, attention deficit disorder, and obesity.

Methamphetamine can be easily produced in simple labs using readily available ingredients including over-the-counter drugs and household chemicals that are "cooked" to produce the drug. Methamphetamine precursor chemicals usually include pseudoephedrine and ephedrine drug products. Methamphetamine is primarily made in clandestine drug labs that are portable and are easy to set up and dismantle, which helps manufacturers to avoid law enforcement detection. Locations for methamphetamine production include homes and apartments, motel rooms, rented storage spaces, and cars or trucks. In 1996, 52% of the labs seized by the DEA were located in urban or suburban areas, while 38% were located in rural areas. The production of methamphetamine has severe effects on the environment. The production of one pound of the drug can produce five to seven pounds of toxic waste, which is usually dumped down drains, in fields or yards, or on rural roads by methamphetamine manufacturers, creating a dangerous and expensive clean up problem for the community.

The results from the U.S. Department of Health and Human Services 2002 study on drug use and health found that more than 12 million people over the age of 12 (5.3% of the U.S. population) reported methamphetamine use at least once in their lifetime.

According to the University of Michigan's 2002 Monitoring the Future study, annual methamphetamine use by secondary school students ranged from 2.2% among 8th graders, to 3.9% among 10th graders, and 3.6% among 12th graders. Methamphetamine trafficking and production has increased as drug trafficking organizations led by Mexican nationals have become the dominant manufacturers and distributors of the drug in the West. Combined with small independent clandestine drug labs, the Drug Enforcement Administration (DEA) reported a 640% increase in seizures of methamphetamine labs in the U.S. over the last five years. In 1999 alone, the DEA seized 1,948 drug labs and state and local law enforcement nationwide seized an additional 4,489 labs. The seizure of clandestine methamphetamine labs in New Mexico has also steadily increased over the last five years. According to the National Clandestine Laboratory Database, 47 methamphetamine labs were seized in New Mexico in 1999, 48 in 2000, 74 in 2001, 109 in 2002, and 130 in 2003 (Chart 1).

Chart 1



Source: National Clandestine Laboratory Database

Methamphetamine Production and the Use of Precursor Chemicals

With the exception of cannabis, every illicit drug requires chemicals to be refined or synthesized into its final, usable form. Methamphetamine can be produced using a number of different chemicals in a variety of ways, the most popular being the ephedrine reduction method. Of the 32 chemicals that can be used to make methamphetamine, one-third of them are extremely hazardous and almost all can be easily obtained through commercial sources. Ephedrine, which is either derived from the ephedra plant or made synthetically, is the most important ingredient in the ephedrine-reduction method because it is just one step away from the final product. Ephedrine is chemically identical to methamphetamine already except for the presence of one extra atom of oxygen, which is

removed by combining ephedrine with hydriodic acid. In addition, pseudoephedrine, which is contained in over-the-counter cold medicines, can be used as a substitute for ephedrine. Methylsulfonylmethane (MSM) is also used in methamphetamine manufacturing to "cut" methamphetamine and increase the amount of the drug that is produced. MSM is a legitimate dietary supplement used for horses and humans, and is available at feed and livestock stores and in health and nutrition stores.

In the first phase of methamphetamine production, ephedrine is combined with red phosphorous and hydriodic acid. Red phosphorous is obtained from computer chips, flares, matchsticks, and fireworks, and is considered to be one of the most dangerous chemicals used in methamphetamine production. When red phosphorous burns, it turns into phosphine gas, a nerve agent used in World War I. During the second stage of production, sodium hydroxide is added to convert the acidic mixture into a basic one, and the air conditioning chemical Freon is used to extract the methamphetamine from the mixture in a liquid form. The liquid is then treated with hydrogen chloride gas, converting it into a white crystalline powder form of methamphetamine.

Another method of methamphetamine production is called the "dry cook" or "Nazi method." This technique uses ephedrine or pseudoephendrine, sodium or lithium, and anhydrous ammonia. This method has become increasingly popular because it is quick and inexpensive, requires less set up time and equipment, and produces a high yield of methamphetamine.

The production and distribution of ephedrine is currently controlled by federal regulations, and individuals must register to sell it, maintain records of all sales and report "suspicious" purchases. International regulations are not as strict however, and methamphetamine producers have been known to establish front businesses (such as auto body and paint shops or swimming pool service companies) that require large amounts of the precursor chemicals and may then import them from other countries. Drug traffickers also divert chemicals by mislabeling containers, forging sales documents, and smuggling the chemicals across international borders, primarily from Canada and Mexico. In 2001, 74 kilograms of psuedoephedrine were seized in New Mexico, with labels that indicated a Canadian origin. Other sources of supply for precursor chemicals in the U.S. include convenience stores, liquor stores, gas stations, pharmacies, grocery stores, discount department stores, and other retailers that sell over-the-counter drugs that contain ephedrine, pseudoephedrine, or phenylpropanolamine. Increasingly, mail order distributors that take orders via the Internet are sending pseudoephedrine tablets to individuals at their residences. As the popularity of the Internet increases, the risk of precursor chemical diversion is expected to grow.

Laws Controlling Methamphetamine Precursor Chemicals

The chemicals that are used to produce methamphetamine are controlled by a variety of federal, state, and local laws and ordinances. At the federal level, the Methamphetamine Control Act of 1996 was passed by Congress to broaden the controls on listed chemicals used in the production of methamphetamine. The Methamphetamine Penalty Enhancement Act of 1998 lowered certain quantity thresholds for mandatory minimum

trafficking penalties, and the Methamphetamine Anti-Proliferation Act of 2000 enhanced the federal sentencing guidelines for this drug.

Many states have passed legislation aimed at controlling methamphetamine precursor chemicals. The following is a sampling of various state laws:

- In 1992, Utah passed the Drug Precursor Act and the Clandestine Drug Lab Act to regulate precursor chemicals used to manufacture methamphetamine. In 1998, the Controlled Substances Precursor Amendments were passed, which added crystal iodine as a precursor and limited its possession to 2 ounces, and limited the possession of ephedrine and pseudoephedrine to 12 grams.

- In 2003, Colorado established a Class C felony penalty for the sale of a precursor substance if the seller knows that it will be used to manufacture methamphetamine.

- In Indiana, the Reporting Sale of Methamphetamine Precursors law authorizes state police to establish retailer education programs regarding illicit methamphetamine production, and provides civil immunity for a retailer or retail employee who makes a good faith report of the suspicious sale of methamphetamine precursor products. Indiana also passed laws making the possession of more than 10 grams of ephedrine, pseudoephedrine, or phenlypropanolamine a Class D felony, and requiring a person convicted of certain methamphetamine offenses to provide restitution for the costs of environmental cleanup.

- Kentucky's Methamphetamine Precursor law makes possession of more than 24 grams of ephedrine, pseudoephedrine, or phenlypropanolamine prima facie evidence of the intent to use the materials as precursors to methamphetamine.

- Missouri amended existing laws to prohibit the sale of more than 2 packages or 6 grams of any over-the-counter drug having a sole active ingredient of ephedrine, pseudoephedrine, or phenlypropanolamine, and prohibit the sale of more than 3 packages or 9 grams of any combination drug containing ephedrine, pseudoephedrine, or phenlypropanolamine. Retailers are required to place these products behind the counter, or no more than 10 feet from the view of a cashier unless anti-theft devices are used. Missouri also created a Class B felony penalty for the unlawful release of anhydrous ammonia into the atmosphere by a person who is not a lawful possessor of anhydrous ammonia.

- Also in 2003, North Dakota enacted legislation to limit the sale of products containing precursor chemicals to no more than 2 packages and prohibits the sale to minors, with proof of age required for anyone under the age of 25. North Dakota also provided liability exemption to retailers who institute an employee training program regarding the sale of these products.

In California, a number of cities and counties have passed their own local ordinances controlling the sale of non-prescription products that contain ephedrine and pseudoephedrine, a model that has been followed by several cities in New Mexico. However, according to the HIDTA Tri-State Precursor Committee, while local ordinances can be effective, they also drive illicit drug manufacturers to other parts to the state where there are no controls.

Endangerment of Children Present at Clandestine Methamphetamine Labs

Children represent a growing percentage of the innocent victims of methamphetamine production and use. The New Mexico State Police indicate that children are present in as many as 30% of its methamphetamine investigations. These children were at risk by being exposed to the drug before birth, and they remained at risk by inhaling, ingesting, or coming into physical contact with toxic chemicals used in the production of methamphetamine in the homes where they live. Additionally, these children suffer from neglect and abuse by their parent or caregiver who is using or exposing them to methamphetamine.

The chemicals used to make methamphetamine are highly volatile and toxic, creating a potential risk for contamination, fire and explosion. When ephedrine, hydriodic acid, and red phosphorous are cooked dry, highly unstable phosphine gas, a poisonous nerve agent, is generated. Red phosphorous itself is highly flammable, emits toxic fumes, and may auto-ignite when combined with water or air and a nearby flame or friction. Hydriodic acids will eat through most commercial containers used to store the chemical. These toxic substances, as well as vaporized methamphetamine created during the production process, are deposited on walls, carpets, countertops, clothing, and food. A child living in a methamphetamine lab may inhale or swallow toxic substances, receive an injection or accidental skin prick from discarded needles or other drug paraphernalia, or absorb methamphetamine or toxic substances through his skin following contact with contaminated surfaces. According to the DEA El Paso Intelligence Center, the number of children present at seized methamphetamine labs who tested positive for toxic levels of chemicals has increased (Table 1).

Table 1: Children at Methamphetamine Laboratories

Year	Present at Seized Labs	Tested Positive for Toxic Levels of Chemicals
1999	950	150
2000	1,748	340
2001	2,028	700

Source: DEA EPIC National Clandestine Laboratory Seizure System

Children may face short and long-term physical effects from exposure to the toxic chemicals present in methamphetamine labs. Ingesting toxic chemicals or methamphetamine may cause fatal poisoning, internal or external chemical burns, and damage to organ function (Table 2). Long-term risks to children exposed to toxic chemicals include the development of acute or chronic diseases such as cancer, as well as emotional, behavioral, and developmental problems.

Table 2: Hazardous Chemicals Used in Methamphetamine Production

Chemical	Hazardous Effect
Pseudoephedrine	Ingestion of doses greater than 240mg causes hypertension, arrhythmia, anxiety and vomiting. Doses greater than 600mg can lead to renal failure and seizures.
Acetone/Ethyl Alcohol	Extremely flammable, posing fire risk. Inhalation or ingestion can cause severe gastric irritation, narcosis, or coma.
Freon	Inhalation can cause sudden cardiac death or severe lung damage. It is corrosive if ingested.
Anhydrous Ammonia	Colorless gas with a pungent, suffocating odor. Inhalation causes edema of the respiratory tract and asphyxia. Contact with vapors damages eyes and mucous membrane.
Red Phosphorous	May explode on contact or friction. Vapor from ignited phosphorous severely irritates nose, throat, lungs, and eyes.
Hypophosphorous Acid	Dangerous substitute for red phosphorous. If overheated, deadly phosphine gas is released. Poses fire and explosion hazard.
Lithium Metal	Extremely caustic to all body tissue. Reacts violently with water and poses a fire or explosion hazard.
Hydriodic Acid	A corrosive acid with vapors that are irritating to the respiratory system, eyes, and skin. If ingested, causes severe internal damage.
Iodine Crystals	Give off vapor that is irritating to the respiratory system and eyes. If ingested, causes severe internal damage.
Phenylpropanolamine	Ingestion of doses greater than 75mg causes hypertension, arrhythmia, anxiety and vomiting. Doses greater than 300mg can lead to renal failure and seizures.

Source: DEA Office of Diversion Control

Children living in methamphetamine labs are also at increased risk for neglect and physical and sexual abuse by members of their own families and other known individuals with access to the site. Children whose parents or guardians produce or use methamphetamine typically lack proper immunizations, medical and dental care, and basic necessities such as food, water, and a safe place to sleep.

Overall, children living in methamphetamine labs face hazardous living conditions due to methamphetamine production and use. Methamphetamine lab homes often are extremely unsanitary, and lack heating and cooling, running water, and refrigeration. Often, living areas are infested with rodents and insects with rotten food and garbage strewn on the floors and countertops. Loaded guns and other weapons are usually present, and some methamphetamine lab homes have been found with explosives and booby traps.

Methamphetamine Lab-Related Child Endangerment Laws and Programs

Several states have passed legislation aimed at addressing issues related to children found at clandestine methamphetamine labs. In July 2000, the Arizona child abuse law (A.R.S. §13-3623) was expanded to add a provision that provides a presumption of endangerment when children or vulnerable adults are found at methamphetamine lab sites, creating strict liability when a person places a child in a location where a methamphetamine lab exists. In July 2003, A.R.S. §12-1000 became effective, making it unlawful for anyone

other than the property owner or manager to enter a property where dangerous drugs were being manufactured until it is cleaned by a state-approved site remediation firm. This ensures that Child Protective Services will not return a child to a residence that operated as a methamphetamine lab until it is determined to be safe by strict standards.

In Washington State, House Bill 2610 was passed in 2002, establishing a felony for endangerment of a child by exposure to methamphetamine or its precursor chemicals. Washington also passed legislation requiring investigating law enforcement officers to contact the Department of Social and Health Services immediately if a child is found at a methamphetamine lab, and the law provides guidelines related to taking an endangered child into custody.

In 2003, North Dakota passed House Bill 1351, the Controlled Substance Exposure of Children or Vulnerable Adult act that makes it a felony to expose children or vulnerable adults to a controlled substance, chemical precursor, or drug paraphernalia.

California drug laws also address the possession of precursor chemicals with the intent to manufacture methamphetamine and provide for enhanced penalties when these elements are found in a structure where a child under the age of 16 is present.

California has also created Drug Endangered Children (DEC) response teams that are operating in over 20 counties. The DEC program has two main goals: 1) to break the cycle of child abuse, neglect, and endangerment by those who manufacture, use, and sell methamphetamine; and 2) to create a collaborative and multidisciplinary response to help children exposed to clandestine methamphetamine labs. DEC team members include members of law enforcement, child protective services, district attorney's offices, and medical personnel, as well as mental health, drug treatment, public health, and environmental services professionals. The California program has been a model for other states including Arizona, Idaho, and Washington that have created their own DEC programs and multi-agency response teams to address the health and safety of children who are present at seized methamphetamine labs.

According to Dr. John Martyny, a researcher at the National Jewish Medical and Research Center and who has conducted studies on the toxic substances created during methamphetamine production, "Children living at these labs might as well be taking the drug directly." Collaboration among federal, state, and local agencies is important to ensure the adequate protection and care for children who are endangered by methamphetamine production and use.

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