U.S. Department of Justice
Office of Community Oriented Policing Services

Problem-Oriented Guides for Police Series

No. 16

Clandestine Drug Labs

by
Michael S. Scott

www.cops.usdoj.gov

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This project was supported by cooperative agreement #99-CK-WX-K004 by the Office of Community Oriented Policing Services, U.S. Department of Justice. The opinions contained herein are those of the author(s) and do not necessarily represent the official position of the U.S. Department of Justice.

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About the Guide Series

The *Problem-Oriented Guides for Police* summarize knowledge about how police can reduce the harm caused by specific crime and disorder problems. They are guides to prevention and to improving the overall response to incidents, not to investigating offenses or handling specific incidents. The guides are written for police–of whatever rank or assignment–who must address the specific problem the guides cover. The guides will be most useful to officers who

- Understand basic problem-oriented policing principles and methods. The guides are not primers in problem-oriented policing. They deal only briefly with the initial decision to focus on a particular problem, methods to analyze the problem, and means to assess the results of a problem-oriented policing project. They are designed to help police decide how best to analyze and address a problem they have already identified. (An assessment guide has been produced as a companion to this series and the COPS Office has also published an introductory guide to problem analysis. For those who want to learn more about the principles and methods of problem-oriented policing, the assessment and analysis guides, along with other recommended readings, are listed at the back of this guide.)

- Can look at a problem in depth. Depending on the complexity of the problem, you should be prepared to spend perhaps weeks, or even months, analyzing and responding to it. Carefully studying a problem before responding helps you design the right strategy, one that is most likely to work in your community. You should not blindly adopt the responses others have used; you must decide whether they are appropriate to your local

situation. What is true in one place may not be true elsewhere; what works in one place may not work everywhere.

- Are willing to consider new ways of doing police business. The guides describe responses that other police departments have used or that researchers have tested. While not all of these responses will be appropriate to your particular problem, they should help give a broader view of the kinds of things you could do. You may think you cannot implement some of these responses in your jurisdiction, but perhaps you can. In many places, when police have discovered a more effective response, they have succeeded in having laws and policies changed, improving the response to the problem.

- Understand the value and the limits of research knowledge. For some types of problems, a lot of useful research is available to the police; for other problems, little is available. Accordingly, some guides in this series summarize existing research whereas other guides illustrate the need for more research on that particular problem. Regardless, research has not provided definitive answers to all the questions you might have about the problem. The research may help get you started in designing your own responses, but it cannot tell you exactly what to do. This will depend greatly on the particular nature of your local problem. In the interest of keeping the guides readable, not every piece of relevant research has been cited, nor has every point been attributed to its sources. To have done so would have overwhelmed and distracted the reader. The references listed at the end of each guide are those drawn on most heavily; they are not a complete bibliography of research on the subject.

- Are willing to work with other community agencies to find effective solutions to the problem. The police alone cannot implement many of the responses discussed in the guides. They must frequently implement them in partnership with other responsible private and public entities. An effective problem-solver must know how to forge genuine partnerships with others and be prepared to invest considerable effort in making these partnerships work.

These guides have drawn on research findings and police practices in the United States, the United Kingdom, Canada, Australia, New Zealand, the Netherlands, and Scandinavia. Even though laws, customs and police practices vary from country to country, it is apparent that the police everywhere experience common problems. In a world that is becoming increasingly interconnected, it is important that police be aware of research and successful practices beyond the borders of their own countries.

The COPS Office and the authors encourage you to provide feedback on this guide and to report on your own agency's experiences dealing with a similar problem. Your agency may have effectively addressed a problem using responses not considered in these guides and your experiences and knowledge could benefit others. This information will be used to update the guides. If you wish to provide feedback and share your experiences it should be sent via e-mail to **cops_pubs@usdoj.gov**.

Acknowledgments

The *Problem-Oriented Guides for Police* series is very much a collaborative effort. While each guide has a primary author, other project team members, COPS Office staff and anonymous peer reviewers contributed to each guide by proposing text, recommending research and offering suggestions on matters of format and style.

The principal project team developing the guide series comprised Herman Goldstein, professor emeritus, University of Wisconsin Law School; Ronald V. Clarke, professor of criminal justice, Rutgers University; John E. Eck, associate professor of criminal justice, University of Cincinnati; Michael S. Scott, police consultant, Savannah, Ga.; Rana Sampson, police consultant, San Diego; and Deborah Lamm Weisel, director of police research, North Carolina State University.

Karin Schmerler, Rita Varano and Nancy Leach oversaw the project for the COPS Office. Megan Tate Murphy coordinated the peer reviews for the COPS Office. Suzanne Fregly edited the guides. Research for the guides was conducted at the Criminal Justice Library at Rutgers University under the direction of Phyllis Schultze by Gisela Bichler-Robertson, Rob Guerette and Laura Wyckoff.

The project team also wishes to acknowledge the members of the San Diego, National City and Savannah police departments who provided feedback on the guides' format and style in the early stages of the project, as well as the line police officers, police executives and researchers who peer reviewed each guide.

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The Problem of Clandestine Drug Labs

This guide addresses the problem of clandestine drug labs. Offenders manufacture a variety of illicit drugs in such labs, including methamphetamine,[†] amphetamines, MDMA (ecstasy), methcathinone, PCP, LSD, and fentanyl, although methamphetamine accounts for 80 to 90 percent of the labs' total drug production.[1] Accordingly, the problem of clandestine drug labs is closely tied with the problems associated with methamphetamine abuse.

† The drug commonly referred to as "ice" is a smokable form of crystal methamphetamine.

Dealing with clandestine drug labs requires an extraordinarily high level of technical expertise. Responders must understand illicit drug chemistry; how to neutralize the risks of explosions, fires, chemical burns, and toxic fumes; how to handle, store and dispose of hazardous materials; and how to treat medical conditions caused by chemical exposure. They must also have a detailed knowledge of the numerous federal, state and local laws governing chemical manufacturing and distribution, hazardous materials, occupational safety, environmental protection, and child protection. Police agencies cannot be expected to have all this expertise in-house. They must collaborate with fire officials, hazardous materials experts, chemists, public health officials, social service providers, and environmental protection officials. Local police agencies must learn how to deal with clandestine drug labs because, in many areas of the United States, the Drug Enforcement Administration's (DEA's) resources to help local police respond to the problem have been exhausted.[2]

†† See Bureau of Justice Assistance (1998) and Sevick (1993) for more technical guidance.

This guide does not provide technical details on all the aspects of clandestine drug labs.[††] Rather, it provides a general overview of the problem and of responses to it. It begins by describing the problem and reviewing factors that increase the risks of it. It then identifies a series of questions to help you analyze your local problem. Finally, it reviews responses to the problem and what is known about them from evaluative research and practice.

[†] For comprehensive discussions of pharmacological effects, use patterns, user characteristics, legal status, appearance, ingestion methods, availability, production, and methamphetamine trafficking patterns, see U.S. Office of National Drug Control Policy (1999), Pennell et al. (1999) and Eng (1999).

Related Problems

Clandestine drug labs are but one aspect of the larger set of problems related to illegal drug manufacturing, trafficking, abuse, and associated crime, and a coherent strategy, whether at the international, national, regional, state, or local level, should address all aspects of these problems.[†] This guide is limited to addressing the particular harms created by clandestine drug labs. Related problems not directly addressed in this guide include:

- violent offenses (such as domestic violence and child abuse) committed by drug users, and property offenses to get money to buy drugs or the chemicals to produce them;
- sale and distribution of drugs manufactured in clandestine drug labs;
- abuse of drugs manufactured in clandestine drug labs;
- marijuana grow houses; and
- rave parties.

Factors Contributing to Clandestine Drug Labs

Understanding the factors that contribute to your problem will help you frame your own local analysis questions, determine good effectiveness measures, recognize key

intervention points, identify key stakeholders, and select appropriate responses.

Harms Caused by Clandestine Drug Labs

Clandestine drug labs cause three main types of harm: (1) physical injury from explosions, fires, chemical burns, and toxic fumes; (2) environmental hazards; and (3) child endangerment.

Physical injury from explosions, fires, chemical burns, and toxic fumes. Mixing chemicals in clandestine drug labs creates substantial risks of explosions, fires, chemical burns, and toxic fume inhalation.[3] Those who mix the chemicals (known as "cooks" or "cookers") and their assistants, emergency responders, hazardous material cleanup crews, neighbors, and future property occupants are all at risk from chemical exposure. The long-term health risks such exposure poses are not yet fully known, but one must assume they are significant.

Salt Lake City Police Department

Chemicals in clandestine drug labs can burn the skin, as happened to this meth lab cook.

Many lab cooks do not take basic lab safety precautions. Using heat to process chemicals poses a higher risk of explosion, although indirect heat in the processing area–such as from smoking, electrical switches or even equipment-generated friction–can also trigger explosions. In addition, police forced entry into labs can cause explosions–some accidental, and some triggered by booby traps set by lab operators.[4] (The published literature commonly reports that lab operators are often well-armed, but how many shootings occur during lab seizures is unknown.) Poor lab ventilation increases the risks both of explosions and of toxic fume inhalation. On the other hand, good ventilation spreads toxic fumes outside, where they put other people at risk. Heating the chemical red phosphorous can create phosphine, a deadly gas.

About three to six people working in clandestine U.S. drug labs die each year from explosions, fires or toxic fumes.[5] One out of every five or six labs discovered is found because of an explosion or fire.[6]

Environmental hazards. Each pound of manufactured methamphetamine produces about 5 to 6 pounds of hazardous waste.[7] Clandestine drug lab operators commonly dump this waste into the ground, sewers, or streams and rivers.[8] The water used to put out lab fires can also wash toxic chemicals into sewers. More research is needed to understand this toxic dumping's long-term environmental effects.[9] Residual contamination of the ground, water supplies, buildings, and furniture may last for years.

Child endangerment. Many jurisdictions are now finding that children are commonly exposed to the hazards of clandestine drug labs.[10] Some children have dangerous chemicals or traces of illicit drugs in their systems. Others suffer burns to their lungs or skin from chemicals or fire. Some have died in explosions and fires. Many are badly neglected or abused by parents suffering from drug abuse's effects. (Senior citizens whose caretakers are lab operators are similarly vulnerable. Pets, including guard dogs, can also be harmed.) When police agencies start targeting labs for investigation and seizure, social service agencies and family courts should be prepared for increased workloads, as well.[11]

† For readers not of the MTV generation, Beavis and Butthead are portrayed as two moronic teenage television cartoon characters. The characters are not connected to illicit drug manufacturing in the program. Their personalities simply remind some drug enforcement officials of the personality profiles of clandestine drug lab operators and illicit drug users.

Types of Clandestine Drug Labs

There are two general types of clandestine drug labs. One is the "super" lab–a large, highly organized lab that can manufacture 10 or more pounds of methamphetamine per production cycle. To date, super labs are concentrated in southern California and Mexico.[12] The other type is smaller labs, often referred to as "mom and pop" or "Beavis and Butthead"† labs. These labs can manufacture only 1 to 4 ounces of methamphetamine per production cycle. Their operators typically produce enough drugs for their own and close associates' use, and just enough extra to sell to others to finance the purchase of production chemicals.

Salt Lake City Police Department

Smaller labs can be set up with basic lab equipment and household appliances.

Generally speaking, the two lab types present different challenges for police. The super labs account for up to 80 percent of all methamphetamine produced.[13] So, from a supply control perspective, they are of far greater concern. However, the small labs account for far more explosions, fires, uncontrolled hazardous waste dumping, and child endangerment. This is largely because less-skilled cooks operate the small labs, using more primitive equipment and facilities. Many small-lab cooks are parents and methamphetamine abusers themselves, and their drug dependency leads them to neglect their children's welfare. So, if the challenge is to reduce explosions, fires, environmental damage, and child endangerment, then the small labs are of greater concern.

Emergence and Spread of Clandestine Drug Labs

Clandestine labs have manufactured illicit drugs since at least the 1960s, but the problem has become much more widespread in the past 10 years or so, largely because of methamphetamine's growing popularity.[14] Perhaps the main reason methamphetamine has become so popular is that it

is now simpler to produce: detailed instructions for doing so are readily accessible on the Internet, and new manufacturing methods allow production from an assortment of reasonably easy-to-acquire chemicals.[15] Consequently, an increasing number of people have set up labs to produce methamphetamine for their own use. Because methamphetamine is very addictive, the more people who experiment with it, the more people who become dependent on it, and the more demand there is.

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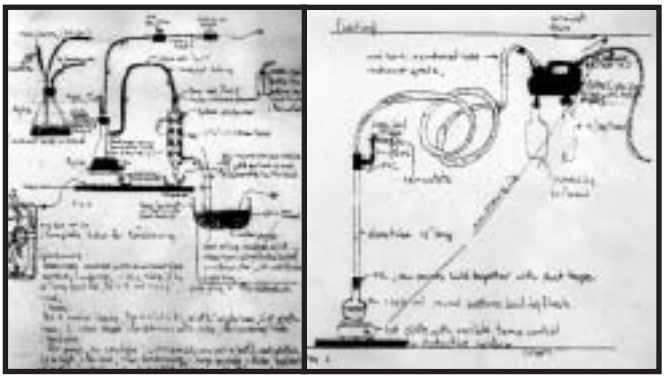

Instructions for manufacturing illegal drugs are now readily accessible on the Internet.

Methamphetamine production in clandestine drug labs was prevalent in California, and in and around Philadelphia, in the 1980s.[16] Southern California remains the predominant manufacturing region, but production has since spread to many other areas in the United States. Both Mexico and California have super labs. Some drug organizations prefer to manufacture methamphetamine in California because they then have to smuggle only the production chemicals across the border, rather than the finished product (the penalties for smuggling methamphetamine are more

severe).[17] Methamphetamine manufacturing and abuse are now considered serious problems in Arizona, Utah, Colorado, Wyoming, Texas, Oklahoma, Washington, Oregon, Missouri, Kansas, Iowa, and Arkansas. As of this writing, methamphetamine is not yet popular in the Northeast, other than around Philadelphia.[†] Law enforcement agencies have now seized labs in all 50 states.[18] The National Clandestine Drug Laboratory Database was established in 1999 to monitor lab-related trends.[19,††]

† Other countries, including Thailand and the Philippines, are facing similar methamphetamine-abuse problems. Japan, where methamphetamine was first produced in 1919, experienced a serious abuse problem after World War II because methamphetamine was used to stimulate military factory workers (Willow Springs Police Department n.d.).

†† The El Paso (Texas) Intelligence Center houses the database, which can be accessed by federal, state and local police agencies.

Labs are now routinely found in all sorts of environments–from rural farms and fields to suburbs, to urban centers.[20] Operators often set up labs in rental property, including farmhouses, apartments, hotels and motels, and self-storage units. Thus, they can move quickly, avoid the risk of losing property to asset forfeiture, and avoid the risk of being held liable for hazardous material cleanup costs.[21] Small labs are even found in vehicles. Small labs are highly mobile; operators can set up and dismantle them with relative ease.

Outlaw motorcycle gangs dominated methamphetamine production until Mexican drug trafficking organizations began to use their cocaine and marijuana production, smuggling and distribution networks to expand into the methamphetamine trade.[22] Although some motorcycle gangs still produce methamphetamine, many others now serve as distributors for the Mexican organizations. These organizations can acquire some of the production chemicals–notably, ephedrine and pseudoephedrine–in bulk quantities on the international market because Mexico does not control the importation of these chemicals, unlike the United States and many other countries.[23]

Offenders

Although many people can learn to produce small batches of methamphetamine, relatively few develop the skills necessary to manufacture large, high-quality batches. Few clandestine drug lab cooks have much, if any, formal chemistry training.[24] Most learn from other offenders, including family members, or by following instructions obtained from underground sources.[25] Some lab operators do their own cooking; others hire cooks. Some cooks hire themselves out to several drug trafficking organizations, getting paid in either cash or a portion of the drugs they produce. Most cooks are male.[26] Methamphetamine users who also produce or sell the drug are likely to seriously abuse it.[27]

In addition to the lab operators and cooks, other people may be employed to buy and store chemicals, lease property, procure and set up equipment, and perform other production tasks. The four main lab roles are those of the operator (or foreman), the cook, the workers who perform many of the menial and dangerous tasks, and the security staff.[28] Operators commonly target low-income people, often immigrants, to lease their property for temporary use as a lab or to work in a lab.[29] Some loose, informal networking exists among lab operators and cooks, who share information and employees.[30]

Chemicals and Cooking Methods Commonly Used in Clandestine Drug Labs

Drugs manufactured in clandestine labs are the product of mixing chemicals. Lab operators must either procure or manufacture those chemicals–be they essential or

precursor.† An estimated 34 different chemicals can be used to produce methamphetamine.†† Among the most common are ephedrine, pseudoephedrine, phenylpropanolamine, red phosphorous, iodine, hydrochloric acid, ether, hydriodic acid, and anhydrous ammonia. Some of these chemicals are also used to produce other illicit drugs. The United States does not manufacture ephedrine, pseudoephedrine and phenylpropanolamine; all supplies of these chemicals originate in other countries.†††

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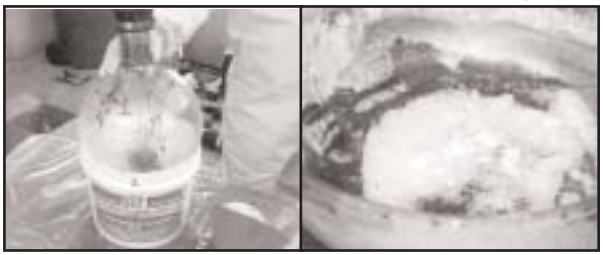

A variety of chemicals such as red phosphorous, seen here on the left, can be used to produce the methamphetamine, seen here on the right.

The essential and precursor chemicals can be diverted into the illicit drug market in various ways, among which are the following:

- stealing the chemicals;
- smuggling the chemicals across international borders;
- labeling chemicals fraudulently;
- bribing or coercing government officials, chemical manufacturers and distributors, or deliverers;
- creating complex transaction chains that make it difficult to track the chemicals;
- buying the chemicals from legitimate chemical suppliers who, for various reasons, sell indiscriminately;

† Essential chemicals do not remain part of the final product's chemical structure, whereas precursor chemicals do (Sevick 1993).

†† See Sevick (1993) for a comprehensive list of essential and precursor chemicals, and Bureau of Justice Assistance (1998) for descriptions of the chemicals' toxic effects. See Manning (1999) for detailed descriptions of the stages of the methamphetamine production process, the chemicals required, the chemical processes, and the respective hazards of each chemical and process.

††† Germany is the largest producer of ephedrine; China and India are major exporters of ephedrine and pseudoephedrine; and Taiwan and Japan are major exporters of phenylpropanolamine. Most of the ephedrine smuggled into the United States comes through Mexico (U.S. Office of National Drug Control Policy 1998).

- setting up front companies to disguise illicit chemical purchases as legitimate ones;
- buying chemicals through undocumented cash transactions;
- converting similar, unregulated chemicals into the desired, regulated chemicals;
- storing chemicals in warehouses long enough for police and regulators to give up trying to track them; and
- trading in amounts just below the thresholds that trigger reporting and recordkeeping requirements (a practice known to regulators as "smurfing").[31]

Police and other regulators should be alert to suspicious business practices that might indicate attempts to divert chemicals to clandestine drug labs.[†] Chemical manufacturers, wholesale and retail distributors, freight handlers, agents, and brokers are all potential sources from which chemicals can be diverted. They can be diverted from factories, import and export points, transportation systems, and disposal and recycling plants.

Lab cooks can derive some of the chemicals needed to produce methamphetamine from materials available for purchase without regulation at retail outlets. Among these materials are cold and allergy medications,[††] lye, rock salt, battery acid, lithium batteries, pool acid, iodine,[†††] lighter fluid, matches, fireworks, road flares, antifreeze, propane, paint thinner, and drain cleaner. (Commonly used equipment includes mason jars, rubber tubing, sports drink bottles, coffee filters, gasoline cans, hotplates, and pillow cases.)

† See Sevick (1993) for a description of some indicators.

†† Some jurisdictions are starting to impose-and some vendors are voluntarily adopting-quantity restrictions on purchases of these medications (see response 6 below).

††† Iodine solution is commonly used in the shoeing of horses.

Salt Lake City Police Department

Some of the chemicals needed to produce methamphetamine can be derived from products available for purchase without regulation at retail outlets.

There are three main cooking methods for producing methamphetamine:

- the phenyl-2-propanone (or P2P) method,
- the red phosphorous (or red P) method,[†] and
- the Nazi dope[††] (or lithium or sodium reduction) method.

The phenyl-2-propanone method is less common today, largely because its main precursor chemical, phenyl acetic acid, has been strictly regulated and is hard to obtain; it takes longer to produce methamphetamine;[†††] and it produces a less pure and less potent form of the drug, a form with worse side effects.[32] Most methamphetamine cooks now use the latter two methods, in which ephedrine or pseudoephedrine is the main precursor chemical.[33] Ephedrine and pseudoephedrine are comparatively easier to obtain: they are commonly found in cold and allergy medications. The red phosphorous method also uses iodine. The Nazi dope method also uses lithium or sodium metal strips and anhydrous ammonia, an agricultural fertilizer, to synthesize the ephedrine or pseudoephedrine.

† The red phosphorous method used to be termed the "cold cook" method, but this can be misleading: cooks may or may not use heat to speed up the cooking process.

†† This reference is to the use of ephedrine and pseudoephedrine to stimulate German troops in World War II (Snell 2001).

††† Lab cooks using ephedrine or pseudoephedrine can make a batch of methamphetamine in anywhere from two to 12 hours (depending on the batch's size and whether the cooks use heat to speed up the process); it takes about twice as long using phenyl-2-propanone (Institute for Law and Justice and 21st Century Solutions 2000; Campbell Resources Inc. n.d.).

Thefts of anhydrous ammonia from farmers' storage tanks are almost always connected to methamphetamine production.[34] The terms for these various methods can be confusing: they are sometimes confused even in the published literature. You will need in-depth training in the chemical processes to fully understand the different ways methamphetamine is produced.

Profitability of Clandestine Drug Labs

By most accounts, clandestine drug labs that manufacture methamphetamine can be highly profitable.[35] A modest investment in chemicals, equipment and labor can yield substantial profits in wholesale or retail methamphetamine sales, although profit estimates vary considerably.[36] Some of this variation depends on the availability of chemicals, the purity of the methamphetamine, the regions of the country where the drug is manufactured and sold, and the size and sophistication of the lab.

Methamphetamine's wholesale and retail costs likewise vary, with official estimates as follows:

- $40 to $150 for 1 gram;
- $60 to $150 for one-eighth of an ounce;
- $500 to $2,700 for 1 ounce;
- $4,500 to $20,000 for 1 pound; and
- $18,000 for 1 kilogram.[37]

Cleaning Up Clandestine Drug Labs

Cleaning up clandestine drug labs is an enormously complex, time-consuming and costly undertaking. Seizing a lab potentially makes a police agency liable for some of the costs of cleaning up on-site hazardous materials.[38] If the lab is in operation when police find it, it must first be safely neutralized so that it does not explode or chemically contaminate the environment. Then, the immediate and apparent hazardous materials must be cleaned up and safely disposed of. Police usually contract with certified hazardous material disposal companies for this task. Seizing even a small lab can take four or more hours. Storing evidence and conducting laboratory analysis of chemicals are similarly time-consuming and costly. Many jurisdictions are finding that the demands of processing evidence are straining their forensic laboratory resources.[39] Finally, there is the question of a more permanent cleanup (or remediation) of the site to eliminate the long-term hazards posed by residual chemicals. Much is still unknown about such hazards, so we do not fully know how serious the risks of exposure to contamination are. Consequently, many issues regarding the costs and responsibility for cleanup remain unsettled. There are few, if any, established standards for acceptable contamination levels.[40] Complete remediation is seldom done because of the cost, and owners abandon some property rather than undertake that task.[41] Public health and environmental officials, rather than police, will likely have to take the lead on remediation. New legislation or regulations may be required to establish and enforce remediation standards.

All emergency responders to clandestine drug labs, police included, must be properly trained and equipped.† The costs of training and equipment are substantial. Many police agencies remain ill-prepared to seize the labs.

Salt Lake City Police Department

Disposing of chemicals at clandestine drug labs requires special training and equipment.

† In the United States, the Occupational Safety and Health Administration has established guidelines and requirements that govern exposure to clandestine drug labs (see the Code of Federal Regulations at 29 C.F.R. 1910.120). The Drug Enforcement Administration, Environmental Protection Agency and Coast Guard have jointly published a document titled *Guidelines for the Cleanup of Clandestine Drug Laboratories*, available to police agencies.

The average cost of cleaning up the immediate and apparent hazardous materials in an average-sized clandestine drug lab ranges from $2,500 to $10,000.[42] It can cost up to $150,000 to clean up hazardous materials in the larger super labs. Thorough decontamination of even an average-sized site has been estimated to cost around $50,000.[43] Some statutes allow prosecutors to try to recover the cleanup costs from convicted defendants.[44] Federal and state funding that might be available to help local jurisdictions with immediate cleanup costs typically does not cover long-term remediation costs.

Understanding Your Local Problem

The information provided above is only a generalized description of clandestine drug labs. You must combine the basic facts with a more specific understanding of your local problem. Analyzing the local problem carefully will help you design a more effective response strategy.

Asking the Right Questions

The following are some critical questions you should ask in analyzing your particular problem of clandestine drug labs, even if the answers are not always readily available. Your answers to these and other questions will help you choose the most appropriate set of responses later on.

Characteristics of Clandestine Drug Labs

- Which type of clandestine drug lab is the major concern in your jurisdiction: super labs or small labs? What quantity of drugs do the labs manufacture per production cycle? What is the overall production quantity?
- Which drugs do the labs produce?
- How many labs have been booby-trapped?
- Are weapons commonly found at the labs? Have lab workers used any weapons against responders?
- How have the labs been located? Through fire officials responding to explosions and fires? Through citizen informants detecting suspicious indicators? Through confidential criminal informants? Through routine patrol activities?
- What chemical production methods are lab workers using?

- How sophisticated or primitive are the labs?
- What, specifically, is causing lab explosions, fires and the release of toxic fumes?
- How profitable do the labs appear to be?
- Where have the labs been located? Rural, suburban, urban locations?
- On or in what types of property are the labs being located? Open fields, houses, apartments, self-storage units, farm buildings, hotels/motels, vehicles?
- Are the drugs sold near where they are produced, or are they sold and produced at separate locations?

Victims

- How many people have been injured or killed by explosions, fires, chemical burns, or toxic fumes at clandestine drug labs in your jurisdiction? How many operators, cooks or other lab employees? How many first responders? How many innocent third parties?
- How many children have been found at the labs? What harms have they suffered? Chemical exposure? Neglect? Physical abuse?
- How much environmental contamination has been documented from the labs?

Offenders †

- In your jurisdiction, do clandestine drug lab operators cook, or do they hire cooks?
- How many people are involved in each lab operation? What specific roles do they play?
- What is known about the people involved in lab operations? Residence? Immigrant status? Regular employment status? Drug use? Criminal history?

† See Pennell et al. (1999) for the protocol used to interview methamphetamine arrestees.

- How sophisticated and well-trained are the lab cooks?
- Do the labs produce drugs primarily for the operators' and their associates' personal use, or for wider distribution?
- Are the labs being run by independent operators or by drug organizations?

Chemical Supplies

- What essential and precursor chemicals are being used to supply clandestine drug labs in your jurisdiction?
- From where are lab operators obtaining the chemicals?
- What is the level of awareness and cooperation among chemical suppliers and law enforcement agencies?
- What education and training programs have been developed for chemical suppliers?
- What chemical reporting requirements apply? Are they adequately enforced?

Current Responses

- Is there an organized partnership of responders to clandestine drug labs in your jurisdiction? If so, which agencies participate? Are any agencies missing from the collaboration?
- Have the responsibilities of the various responders been determined? Are the responders meeting their responsibilities?
- What responses have been implemented to address the labs? Which do you believe have been productive? Which have not, and why?
- What is the level of public awareness and concern about the labs?

- Have responders been adequately trained to recognize and deal with the labs?
- Are lab sites being adequately cleaned up? Who is incurring the cleanup costs?
- How, if at all, do neighboring jurisdictions' responses affect your jurisdiction's lab problem? (For example, do weaker laws and enforcement in neighboring jurisdictions tend to displace the problem *away* from your jurisdiction, or do stronger laws and enforcement in neighboring jurisdictions tend *to* displace the problem to your jurisdiction?)

Measuring Your Effectiveness

Measurement allows you to determine to what degree your efforts have succeeded, and suggests how you might modify your responses if they are not producing the intended results. You should take measures of your problem *before* you implement responses, to determine how serious the problem is, and *after* you implement them, to determine whether they have been effective. All measures should be taken in both the target area and the surrounding area. (For more detailed guidance on measuring effectiveness, see the companion guide to this series, *Assessing Responses to Problems: An Introductory Guide for Police Problem-Solvers*.)

The following are potentially useful measures of the effectiveness of responses to clandestine drug labs:

- Reduced number of labs. Admittedly, this measure is nearly impossible to determine with any accuracy, but it remains a primary goal. If detection and enforcement levels are constant over time, and the number of labs found and seized declines, this could suggest that the actual number of labs is, in fact, declining. In most jurisdictions, though, increased numbers of labs detected and seized correspond to increased levels of training, awareness campaigns and enforcement resources; that is, up to a point, the more effort you put into finding the labs, the more labs you are likely to find. Counting the number of labs seized can be misleading. You learn little about the quantity of drugs being manufactured because most labs produce only small quantities.[45]
- Reduced number of explosions and fires at labs.
- Reduced number and/or severity of injuries suffered at labs.
- Absence of displacement of labs from one area to another.
- Reduced purity of drugs. This is an indicator that chemicals are harder to obtain, as lab operators seek to maximize their profits from the limited supply of drugs they can produce.
- Increased price of drugs. This is an indicator that chemicals are harder to obtain or that the risk of apprehension has increased.

Responses to the Problem of Clandestine Drug Labs

Your analysis of your local problem should give you a better understanding of the factors contributing to it. Once you have analyzed your local problem and established a baseline for measuring effectiveness, you should consider possible responses to address the problem.

† The Bureau of Justice Assistance (1998) has published a guide to establishing clandestine drug lab enforcement programs that addresses many organizational, planning and resource issues.

The following response strategies provide a foundation of ideas for addressing your particular problem. These strategies are drawn from a variety of research studies and police reports. (To date, there are no known evaluation studies of responses to the clandestine drug lab problem; there are only practitioner experiences and impressions.) Several of these strategies may apply to your community's problem. It is critical that you tailor responses to local circumstances, and that you can justify each response based on reliable analysis. In most cases, an effective strategy will involve implementing several different responses. Law enforcement responses alone are seldom effective in reducing or solving the problem. Do not limit yourself to considering what police can do: give careful consideration to who else in your community shares responsibility for the problem and can help police better respond to it. Comprehensive, multiagency approaches are generally recommended.†

Enforcing Laws Prohibiting Clandestine Drug Lab Operations

1. Finding and seizing clandestine drug labs. There is an obvious and understandable tendency among police agencies to focus much of their resources on finding and

seizing clandestine drug labs. But it is not yet clear whether this is, in the long run, the most effective or efficient strategy for dealing with the problem. The labs, especially the smaller ones, are so easy to set up that it seems nearly impossible to find and seize all or even most of them. And because seizing the labs is so time-consuming and costly, police agencies run the risk of exhausting most or all of their resources on this single response, leaving little or no resources for other responses.[46] That said, a good enforcement effort requires considerable resources and planning. Some police agencies conduct "knock and talk" campaigns whereby officers ask for consent to search properties for evidence of the labs.[47] As surprising as it might seem, this response does occasionally yield results.

2. Arresting and prosecuting clandestine drug lab operators and cooks. Federal or state organized crime and racketeering statutes can prove useful toward dismantling more sophisticated clandestine drug lab syndicates. Many lab operators are on conditional release (either probation or parole) and, consequently, are liable to having their homes and vehicles searched regularly for evidence that they have resumed operating a lab.[48] Searches of discarded trash often yield evidence sufficient to obtain a search warrant for a particular premise. Wholesale and retail chemical and lab equipment suppliers might be willing to identify suspicious customers; police might then serve search warrants on, and build criminal cases against, those customers. Because methamphetamine markets tend to be closed (dealers sell only to people they know), undercover infiltration of production and distribution organizations is difficult. The use of criminal informants, covert surveillance and wiretaps is often necessary to make good criminal cases against organized methamphetamine production organizations.[49]

Criminal statutes that provide penalty enhancements for distributing large amounts of illicit drugs are not likely to be as effective in responding to the methamphetamine problem as they might be for addressing the marijuana, cocaine and heroin problems, as methamphetamine is so easily manufactured in small batches for personal use.[50] There appear to be relatively few drug kingpins in the methamphetamine trade.

Similarly, arresting and prosecuting methamphetamine cooks has limited potential to effectively address the problem. Because methamphetamine is relatively easy to produce, the supply of potential cooks seems nearly inexhaustible. Enough methamphetamine abusers are eager to learn to cook, if only to ensure their own drug supply.[†] Methamphetamine abusers who cook are almost certain to resume cooking given any opportunity to do so, including while on bail pending trial for drug charges.[51]

3. Seizing and filing for forfeiture of clandestine drug lab operators' assets. Federal and state asset forfeiture laws can be applied to the problem of clandestine drug labs.[52] While this response might prove effective in controlling some of the larger drug organizations, it is unlikely to prove very effective at controlling the smaller labs. Small-lab operators often have few valuable assets to forfeit.[53] Again, the seizing agency may incur significant liability for cleaning up the property.

4. Enforcing environmental protection laws against clandestine drug lab operators. Federal[††] and state environmental protection laws will often be applicable to the hazards created by clandestine drug labs.[54] The burden of proof under these environmental laws is typically less than that required for criminal convictions. You should

[†] Nearly 10 percent of one sample of arrested methamphetamine users said they cooked methamphetamine for themselves (Pennell et al. 1999).

[††] Among the most relevant federal statutes are the Resource Conservation and Recovery Act of 1980, and the Comprehensive Environmental Response, Compensation and Liability Act (also known as the Superfund Act). The Clean Air Act; Water Pollution Control Act; Ocean Dumping Act; Safe Drinking Water Act; Federal Insecticide, Fungicide and Rodenticide Act; Toxic Substances and Control Act; and National Environmental Policy Act may also apply in certain circumstances.

consult with federal or state environmental attorneys to proceed under these laws.

5. Filing civil actions against properties used for clandestine drug labs. Police and prosecutors can initiate asset forfeiture proceedings against property owners who knowingly allow their properties to be used as clandestine drug labs.[55] Police can also encourage owners to file eviction actions against tenants who use their property to house such labs. Nuisance abatement actions can be filed against properties recurrently used as labs,[56] but since smaller labs are so mobile, and since lab operators are typically only lessees, not owners, this response would most likely have only limited effectiveness.

Monitoring Chemicals

6. Controlling the sale and distribution of essential and precursor chemicals used in clandestine drug labs. Controlling the sale and distribution of essential and precursor chemicals is widely considered one of the most effective responses to clandestine drug labs and drug trafficking.[57] Doing so requires effort at the local, state, national, and international levels.[†] Because the chemicals also have many legal uses, government regulators must balance the need to thwart their diversion for illicit use with the need to permit legitimate trade in them.

Educating police, chemical manufacturers and distributors, deliverers, and other regulators about the potential for and methods of chemical diversion can help prevent it, as can improved recordkeeping, container labeling and customer identification practices.[58]

† See Sevick (1993) for a description of some international efforts to control chemical sales and distribution. In the United States, the Chemical Diversion and Trafficking Act of 1988, the Chemical Diversion Control Act of 1993, and the Methamphetamine Control Act of 1996 govern chemical transactions. See Doane and Marshall (1998) for a description of the Methamphetamine Control Act's major provisions.

Federal and parallel state laws play an important role in controlling chemical diversion.[59] States with weak chemical diversion laws are susceptible to trafficking in illicit synthetic drugs.[60,†] Targeting rogue chemical companies for investigation and prosecution for diverting chemicals for illicit drug production is a key component of the federal law enforcement strategy.[61,††] Police and prosecutors might develop criminal conspiracy cases against chemical and lab equipment companies that have knowingly supplied clandestine drug lab operators.[62] Federal law now provides for civil fines up to $250,000 for illegal chemical diversion or lab equipment sales for illicit drug production.[63,†††] The DEA recently obtained a high civil fine and lifetime ban on chemical and equipment distribution against one chemical company.[64] First responders to labs are well advised to save all chemical packages and containers to help investigators identify the chemical manufacturers and suppliers.

Controlling pseudoephedrine diversion from over-the-counter sales and wholesale mail-order sales is also an important objective. Some jurisdictions have lowered the maximum amount of over-the-counter pseudoephedrine that people can buy per transaction.[65,††††] The DEA has obtained the cooperation of several large retailers, including Wal-Mart, in developing programs to detect and control sales of large amounts of certain chemicals contained in products regularly sold.[66] Large retailers can help by programming their cash registers to detect suspicious purchases or alert clerks to theft attempts, by installing software that tracks purchases and automatically faxes threshold variances to authorities, by displaying signs warning against illegal purchases, and by reducing the available chemical stock (employees sometimes steal

† The National Institute of Justice and the Drug Enforcement Administration developed the Model State Chemical Control Act, which includes provisions for the following: state authority to regulate chemicals, registration and permitting systems, reporting requirements, purchaser identification requirements, permit suspension and revocation and applicant screening, investigatory and enforcement powers, and legitimate commerce protection (Sevick 1993).

†† Some chemical companies reportedly derive up to half their revenue from diverting chemicals for illicit drug production (Saleem 1996).

††† The Methamphetamine Control Act of 1996 establishes a "reckless disregard" standard of proof for a civil action, which is easier to meet than the more stringent intent standard for a criminal prosecution.

†††† It requires thousands of common pseudoephedrine or ephedrine tablets to produce a single pound of methamphetamine.

products for diversion).[67] In addition, wholesalers can review their sales for suspicious purchases, and notify retailers of large shipments of products that contain chemicals to prevent theft.

† The transfer of anhydrous ammonia from one storage container to another leaves a telltale blue coloring on the valves.

There have been proposals to fund research on rendering certain precursor chemicals, such as anhydrous ammonia, useless for methamphetamine production; the chemicals would still be useful for their licit purposes.[68] Much of the anhydrous ammonia used in methamphetamine production is stolen from farmers' storage tanks; mechanical devices can be installed on storage tanks to make theft more difficult, and some jurisdictions have enacted laws requiring that anhydrous ammonia be stored and transported only in approved containers.[69,†]

An unintended consequence of restricting sales of large amounts of chemicals is that it promotes the operation of smaller clandestine drug labs that require smaller amounts of chemicals to produce small batches of drugs.[70] As chemicals for methamphetamine production become harder to obtain, some lab operators may shift production to other drugs, like amphetamines.[71]

Controlling chemical sales and distribution requires vigilance because clandestine drug lab operators are constantly looking to circumvent and exploit loopholes in the various laws and regulations, and adapt by using alternative supply sources, chemicals or production processes.[72]

Providing Training

7. Training citizens to report suspected clandestine

drug labs. Many citizens are unfamiliar with the indicators of clandestine drug labs, yet with some training, can learn these indicators and be encouraged to report suspected labs to authorities. Some jurisdictions have initiated billboard, poster, hotline, website, and other publicity campaigns to encourage reporting.[73] Workers who routinely approach private residences, such as postal carriers, garbage collectors and utility personnel, are well positioned to notice suspicious odors,[†] items or activity indicative of labs.[74] Hotel and motel employees, especially desk attendants and maids, can be trained to look for suspicious indicators of labs set up in rooms.[††] Rental property managers are also a key group to target for training.[75] Others who routinely enter people's homes, such as maintenance and repair workers, might also benefit from training.

8. Training sales clerks to detect and report suspicious chemical and equipment purchases. Clerks at certain types of wholesale and retail businesses (for example, chemical supply companies, pharmacies and home supply stores) can be trained to detect and report purchases of unusual amounts of materials commonly used to manufacture illicit drugs, such as cold and allergy medications containing ephedrine or pseudoephedrine. In some jurisdictions, printed information is posted at cash registers to remind clerks what to look for.[76] Customers with the appearance of a methamphetamine addict (with rotting teeth and open sores, emitting chemical odors) might also raise suspicions.

9. Training police and other responders to identify potential clandestine drug labs. Police, firefighters, emergency medical personnel, probation and parole

† Various chemicals that are used in or are by-products of methamphetamine production, such as phosphine, ether, ammonia, battery acid, and acetone, have distinctive smells. For example, phosphine smells like garlic, sulfur smells like rotten eggs, ammonia smells like cat urine, and acetone smells like nail polish remover.

†† The Portland (Ore.) Police Bureau, in collaboration with Campbell Resources Inc., produced a tip booklet for hotel and motel operators on preventing their property from being used as a clandestine drug lab, and decontaminating property used as such (Campbell Resources Inc. n.d.). Sandy City, Utah, police similarly trained hotel and motel managers and employees in the common suspicious indicators that people may be using rooms as labs (Thompson 1999).

officers, and other personnel who routinely enter private property should be trained to recognize indicators of clandestine drug labs so enforcement action can be initiated.[77] This response is especially important in communities not currently experiencing a high number of labs, as early recognition of and response to the problem is critical to preventing it from becoming entrenched. You should not assume that all police officers and other responders will recognize lab indicators without some specialized education.

Protecting Those Exposed to Clandestine Drug Labs

10. Providing child protective services to children exposed to clandestine drug labs. Too often, police find children on the site of clandestine drug labs, but because their resources are consumed seizing and processing the lab, they may not attend to the children's long-term needs, especially if child protection workers cannot respond immediately. Placing the children with the arrestees' friends, family or neighbors usually just results in the children's returning to the hazardous environment. The family reunification rates for children of parents addicted to methamphetamine are low.[78]

Several jurisdictions have created special protocols and programs to address the needs of children exposed to clandestine drug labs.[79] Child endangerment protocols and programs require cooperation and collaboration among police, prosecutors and social workers. These protocols and programs typically involve medical screening of the children for toxicity and malnourishment, emergency and

long-term foster care, and psychological treatment. Parents are prosecuted for child endangerment, if appropriate. Some states have enacted penalty enhancements for operating the labs with children present. (Similar protocols might be warranted for treating elderly or infirm people, or pets exposed to the labs).

Treating Drug Addiction

11. Providing adequate resources to treat illicit drug addiction. Although this guide is primarily concerned with clandestine drug labs, and not with illicit drug abuse, it is important to acknowledge that treating addiction–and thereby reducing the demand for drugs manufactured in the labs–is an important aspect of a comprehensive strategy to address the problem. The state of Wyoming reportedly has dramatically shifted resources toward treatment as a primary means of addressing its methamphetamine problem, of which the labs are a part.[80]

Appendix: Summary of Responses to Clandestine Drug Labs

The table below summarizes the responses to clandestine drug labs, the mechanism by which they are intended to work, the conditions under which they ought to work best, and some factors you should consider before implementing a particular response. It is critical that you tailor responses to local circumstances, and that you can justify each response based on reliable analysis. In most cases, an effective strategy will involve implementing several different responses. Law enforcement responses alone are seldom effective in reducing or solving the problem.

Response No.	Page No.	Response	How It Works	Works Best If…	Considerations
Enforcing Laws Prohibiting Clandestine Drug Lab Operations					
1.	23	Finding and seizing clandestine drug labs	Removes labs, thereby reducing the harms they cause	…there are a limited number of labs and/or labs are difficult to replace	Seizing labs is costly and time-consuming, drawing resources away from other response strategies; small labs are highly mobile and difficult to detect; the costs of setting up small labs are low, so they are easy to replace; requires a lot of planning, coordination and resources

Response No.	Page No.	Response	How It Works	Works Best If…	Considerations
2.	24	Arresting and prosecuting clandestine drug lab operators and cooks	Deters offenders through the threat of fines and imprisonment	…the risk of apprehension is sufficiently high	Many offenders are subject to conditional release restrictions, making surveillance of their activities relatively easy; there are many potential replacement offenders; offenders who are drug abusers are extremely difficult to deter from reoffending
3.	25	Seizing and filing for forfeiture of clandestine drug lab operators' assets	Deters offenders through the potential loss of assets	…offenders have sufficient assets they want to avoid losing	Many offenders have few assets worth seizing
4.	25	Enforcing environmental protection laws against clandestine drug lab operators	Deters offenders through the threat of fines and other civil sanctions; potentially shifts the costs of cleaning up labs to the offenders	…offenders have sufficient assets to pay fines and costs	Many offenders have too few assets to pay large fines or cleanup costs; the standard of proof under environmental laws is usually less than that for criminal offenses
5.	26	Filing civil actions against properties used for clandestine drug labs	Closes, forfeits or restricts the use of properties on which labs have been set up	…labs are operating at least semipermanently at targeted locations	Most labs are small and highly mobile; property owners often are unaware of illicit activity
Monitoring Chemicals					
6.	26	Controlling the sale and distribution of essential and precursor chemicals used in clandestine drug labs	Makes getting the necessary chemicals more difficult, thereby driving up drug production costs and potentially reducing demand	…enough of the avenues through which offenders obtain chemicals can be restricted or closed	Requires international, federal, state, and sometimes local legislation and enforcement; must balance restrictions with legitimate commerce needs;

Response No.	Page No.	Response	How It Works	Works Best If…	Considerations
6.(cont'd)					the cooperation of wholesale and retail chemical distributors is essential; restrictions on large amounts of chemicals may inadvertently promote small labs that require smaller amounts; requires constant attention to react to offenders' adaptations to restrictions
Providing Training					
7.	29	Training citizens to report suspected clandestine drug labs	Increases the probability that labs will be detected	…labs are operating in places subject to routine natural surveillance	Small labs are highly mobile, so reporting and enforcement must be quick
8.	29	Training sales clerks to detect and report suspicious chemical and equipment purchases	Increases the probability that offenders will be prevented from procuring chemicals and equipment	…sales clerks' employers put a high priority on preventing illicit sales	Some rogue wholesale and retail companies make a lot of money from illicit sales, and may not cooperate fully
9.	30	Training police and other responders to identify potential clandestine drug labs	Increases the probability that labs will be detected	…labs are being operated in places subject to responders' routine surveillance	Requires specialized education

Response No.	Page No.	Response	How It Works	Works Best If…	Considerations
Protecting Those Exposed to Clandestine Drug Labs					
10.	30	Providing child protective services to children exposed to clandestine drug labs	Removes endangered children from the hazards of labs	…there are adequate child protective services in the jurisdiction, and established protocols to coordinate responses	Requires interagency cooperation and collaboration; may substantially increase the workload of child protection services agencies and strain resources
Treating Drug Addiction					
11.	31	Providing adequate resources to treat illicit drug addiction	Reduces the demand for illicit drugs, thereby potentially reducing the output and/or number of clandestine drug labs	…effective treatment programs can be identified or implemented	Requires a lot of resources to make adequate treatment readily available

Endnotes

[1] U.S. Senate (1999a); Sevick (1993); U.S. Drug Enforcement Administration (2000); Eng (1999); Hargreaves (2000).

[2] Personal communication with David Barton, director of the Midwest High-Intensity Drug Trafficking Area, July 18, 2001.

[3] Jenkins (1999); Sevick (1993); Bureau of Justice Assistance (1998); U.S. Drug Enforcement Administration (1996); Pennell et al. (1999); Indiana State Police (1997); U.S. Office of National Drug Control Policy (1998).

[4] Hermann (1990); U.S. Drug Enforcement Administration (1996); U.S. Senate (1998); Pennell et al. (1999).

[5] U.S. Drug Enforcement Administration (2000); U.S. Senate (1999a); Hargreaves (2000).

[6] U.S. Office of National Drug Control Policy (1998); Snell (2001); Pennell et al. (1999); Eng (1999).

[7] Bureau of Justice Assistance (1998); Pennell et al. (1999); U.S. Office of National Drug Control Policy (1998); U.S. Drug Enforcement Administration (2000).

[8] Bureau of Justice Assistance (1998); Pennell et al. (1999); U.S. Drug Enforcement Administration (1996).

[9] U.S. Senate (1998); Bureau of Justice Assistance (1998).

[10] Bureau of Justice Assistance (1998); Institute for Law and Justice and 21st Century Solutions (2000); U.S. Drug Enforcement Administration (2000); U.S. Senate (1999a); U.S. House (2000); U.S. Office of National Drug Control Policy (1998); Eng (1999); Manning (1999); Doane and Marshall (1996); Indiana State Police (1997).

[11] U.S. Methamphetamine Interagency Task Force (2000).

[12] U.S. Drug Enforcement Administration (2001).

[13] Institute for Law and Justice and 21st Century Solutions (2000); U.S. Drug Enforcement Administration (2000, 1996); U.S. Senate (1999a); U.S. Methamphetamine Interagency Task Force (2000).

[14] Jenkins (1999).

[15] Jenkins (1999); Sevick (1993); Singh (2001); U.S. Drug Enforcement Administration (2000); U.S. Senate (1998); U.S. Senate (1999b).

[16] Jenkins (1999); U.S. Drug Enforcement Administration (1996).

[17] U.S. Senate (1999a).

[18] U.S. Senate (1999a).

[19] U.S. Drug Enforcement Administration (2000).
[20] Sevick (1993); Bureau of Justice Assistance (1998).
[21] Sevick (1993).
[22] Institute for Law and Justice and 21st Century Solutions (2000); U.S. Drug Enforcement Administration (2001, 2000, 1996); Bureau of Justice Assistance (1998); U.S. Senate (1999a, 1998); Hargreaves (2000).
[23] U.S. Drug Enforcement Administration (2001, 1996); U.S. Senate (1999a); U.S. Office of National Drug Control Policy (1998).
[24] U.S. Drug Enforcement Administration (2000, 1996).
[25] Pennell et al. (1999); U.S. Drug Enforcement Administration (1996).
[26] Institute for Law and Justice and 21st Century Solutions (2000).
[27] Pennell et al. (1999).
[28] U.S. Office of National Drug Control Policy (1998); Nieves (2001).
[29] Nieves (2001); U.S. Drug Enforcement Administration (1996).
[30] U.S. Senate (1999b); U.S. Drug Enforcement Administration (1996).
[31] Sevick (1993); U.S. Drug Enforcement Administration (1996).
[32] U.S. Drug Enforcement Administration (1996); Jenkins (1999); Pennell et al. (1999); U.S. Office of National Drug Control Policy (1998); U.S. Senate (1999a); Singh (2001); Willow Springs Police Department (n.d.); Institute for Law and Justice and 21st Century Solutions (2000).
[33] Institute for Law and Justice and 21st Century Solutions (2000); U.S. Drug Enforcement Administration (2000, 1996); U.S. Senate (1999a, 1999b); Pennell et al. (1999); U.S. Office of National Drug Control Policy (1998); Willow Springs Police Department (n.d.).
[34] U.S. Senate (1999a); Willow Springs Police Department (n.d.).
[35] Jenkins (1999).
[36] Sevick (1993); Institute for Law and Justice and 21st Century Solutions (2000); U.S. Senate (1998); U.S. Drug Enforcement Administration (2000); U.S. Office of National Drug Control Policy (1998); Perlman (2000).
[37] Institute for Law and Justice and 21st Century Solutions (2000); U.S. Drug Enforcement Administration (2000, 1996); Pennell et al. (1999); U.S. Office of National Drug Control Policy (1998).
[38] Sevick (1993).
[39] U.S. Senate (1999b).
[40] U.S. Senate (1999b); U.S. Office of National Drug Control Policy (1998).
[41] U.S. Senate (1999a); Nieves (2001); Snell (2001).

[42] Institute for Law and Justice and 21st Century Solutions (2000); Bureau of Justice Assistance (1998); U.S. Drug Enforcement Administration (2000, 1996); U.S. Senate (1999a, 1999b, 1998); U.S. Office of National Drug Control Policy (1998); Snell (2001); Perlman (2000); Hargreaves (2000); Doane and Marshall (1996).

[43] U.S. Office of National Drug Control Policy (1998).

[44] Bureau of Justice Assistance (1998).

[45] U.S. Drug Enforcement Administration (2000); Jenkins (1999); Idaho State Police (2000).

[46] U.S. Senate (1999b).

[47] Institute for Law and Justice and 21st Century Solutions (2000).

[48] Indiana State Police (1997).

[49] Bureau of Justice Assistance (1998); U.S. Senate (1999b); Institute for Law and Justice and 21st Century Solutions (2000); Pennell et al. (1999); U.S. Office of National Drug Control Policy (1998); Idaho State Police (2000).

[50] U.S. Senate (1999b).

[51] U.S. Senate (1999b).

[52] Indiana State Police (1997).

[53] U.S. Senate (1998).

[54] Saleem (1996).

[55] Campbell (2000); Cadwalader, Wickersham and Taft (1993); Mazerolle and Roehl (1998).

[56] Institute for Law and Justice and 21st Century Solutions (2000); Saleem (1996).

[57] U.S. Drug Enforcement Administration (1996); U.S. House (2000); U.S. Methamphetamine Interagency Task Force (2000); Pennell et al. (1999); U.S. Office of National Drug Control Policy (1998).

[58] Sevick (1993); U.S. Office of National Drug Control Policy (1998).

[59] Bureau of Justice Assistance (1998); U.S. Drug Enforcement Administration (1996).

[60] Sevick (1993); Bureau of Justice Assistance (1998).

[61] U.S. House (2000); U.S. Drug Enforcement Administration (1996); U.S. Office of National Drug Control Policy (1998); Pennell et al. (1999).

[62] Indiana State Police (1997); Institute for Law and Justice and 21st Century Solutions (2000).

[63] Pennell et al. (1999); U.S. Office of National Drug Control Policy (1998); Saleem (1996); Doane and Marshall (1998).

[64] U.S. House (2000).

[65] U.S. Senate (1999a); Pennell et al. (1999); Perlman (2000).

[66] U.S. Senate (1999a); U.S. Office of National Drug Control Policy (1998).

[67] U.S. Office of National Drug Control Policy (1998).

[68] U.S. Senate (1999a).

[69] Perlman (2000).

[70] U.S. Senate (1999a).

[71] U.S. Senate (1999a).

[72] U.S. Drug Enforcement Administration (1996); U.S. Office of National Drug Control Policy (1998).

[73] Institute for Law and Justice and 21st Century Solutions (2000); Indiana State Police (1997); Eng (1999); Idaho State Police (2000).

[74] Institute for Law and Justice and 21st Century Solutions (2000).

[75] See Campbell (2000).

[76] Institute for Law and Justice and 21st Century Solutions (2000).

[77] Institute for Law and Justice and 21st Century Solutions (2000).

[78] U.S. House (2000).

[79] U.S. House (2000); U.S. Methamphetamine Interagency Task Force (2000); Pennell et al. (1999); Copple (2001); Manning (1999); Indiana State Police (1997).

[80] Singh (2001).

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About the Author

Michael S. Scott

Michael S. Scott is an independent police consultant based in Savannah, Ga. He was formerly chief of police in Lauderhill, Fla.; served in various civilian administrative positions in the St. Louis Metropolitan, Ft. Pierce, Fla., and New York City police departments; and was a police officer in the Madison, Wis., Police Department. Scott developed training programs in problem-oriented policing at the Police Executive Research Forum (PERF), and is a judge for PERF's Herman Goldstein Award for Excellence in Problem-Oriented Policing. He is the author of *Problem-Oriented Policing: Reflections on the First 20 Years*, and coauthor (with Rana Sampson) of T*ackling Crime and Other Public-Safety Problems: Case Studies in Problem-Solving*. Scott holds a law degree from Harvard Law School and a bachelor's degree from the University of Wisconsin-Madison.

Recommended Readings

- ***A Police Guide to Surveying Citizens and Their Environments***, Bureau of Justice Assistance, 1993. This guide offers a practical introduction for police practitioners to two types of surveys that police find useful: surveying public opinion and surveying the physical environment. It provides guidance on whether and how to conduct cost-effective surveys.

- ***Assessing Responses to Problems: An Introductory Guide for Police Problem-Solvers***, by John E. Eck (U.S. Department of Justice, Office of Community Oriented Policing Services, 2001). This guide is a companion to the *Problem-Oriented Guides for Police* series. It provides basic guidance to measuring and assessing problem-oriented policing efforts.

- ***Conducting Community Surveys***, by Deborah Weisel (Bureau of Justice Statistics and Office of Community Oriented Policing Services, 1999). This guide, along with accompanying computer software, provides practical, basic pointers for police in conducting community surveys. The document is also available at www.ojp.usdoj.gov/bjs.

- ***Crime Prevention Studies***, edited by Ronald V. Clarke (Criminal Justice Press, 1993, et seq.). This is a series of volumes of applied and theoretical research on reducing opportunities for crime. Many chapters are evaluations of initiatives to reduce specific crime and disorder problems.

- ***Excellence in Problem-Oriented Policing: The 1999 Herman Goldstein Award Winners.*** This document produced by the National Institute of Justice in collaboration with the Office of Community Oriented Policing Services and the Police Executive Research Forum provides detailed reports of the best submissions to the annual award program that recognizes exemplary problem-oriented responses to various community problems. A similar publication is available for the award winners from subsequent years. The documents are also available at www.ojp.usdoj.gov/nij.

- ***Not Rocket Science? Problem-Solving and Crime Reduction***, by Tim Read and Nick Tilley (Home Office Crime Reduction Research Series, 2000). Identifies and describes the factors that make problem-solving effective or ineffective as it is being practiced in police forces in England and Wales.

- ***Opportunity Makes the Thief: Practical Theory for Crime Prevention***, by Marcus Felson and Ronald V. Clarke (Home Office Police Research Series, Paper No. 98, 1998). Explains how crime theories such as routine activity theory, rational choice theory and crime pattern theory have practical implications for the police in their efforts to prevent crime.

- ***Problem-Oriented Policing***, by Herman Goldstein (McGraw-Hill, 1990, and Temple University Press, 1990). Explains the principles and methods of problem-oriented policing, provides examples of it in practice, and discusses how a police agency can implement the concept.

- ***Problem-Oriented Policing: Reflections on the First 20 Years***, by Michael S. Scott (U.S. Department of Justice, Office of Community Oriented Policing Services, 2000). Describes how the most critical elements of Herman Goldstein's problem-oriented policing model have developed in practice over its 20-year history, and proposes future directions for problem-oriented policing. The report is also available at www.cops.usdoj.gov.

- ***Problem-Solving: Problem-Oriented Policing in Newport News,*** by John E. Eck and William Spelman (Police Executive Research Forum, 1987). Explains the rationale behind problem-oriented policing and the problem-solving process, and provides examples of effective problem-solving in one agency.

- ***Problem-Solving Tips: A Guide to Reducing Crime and Disorder Through Problem-Solving Partnerships*** by Karin Schmerler, Matt Perkins, Scott Phillips, Tammy Rinehart and Meg Townsend. (U.S. Department of Justice, Office of Community Oriented Policing Services, 1998) (also available at www.cops.usdoj.gov). Provides a brief introduction to problem-solving, basic information on the SARA model and detailed suggestions about the problem-solving process.

- ***Situational Crime Prevention: Successful Case Studies***, Second Edition, edited by Ronald V. Clarke (Harrow and Heston, 1997). Explains the principles and methods of situational crime prevention, and presents over 20 case studies of effective crime prevention initiatives.

- ***Tackling Crime and Other Public-Safety Problems: Case Studies in Problem-Solving***, by Rana Sampson and Michael S. Scott (U.S. Department of Justice, Office of Community Oriented Policing Services, 2000) (also available at www.cops.usdoj.gov). Presents case studies of effective police problem-solving on 18 types of crime and disorder problems.

- ***Using Analysis for Problem-Solving: A Guidebook for Law Enforcement***, by Timothy S. Bynum (U.S. Department of Justice, Office of Community Oriented Policing Services, 2001). Provides an introduction for police to analyzing problems within the context of problem-oriented policing.

- ***Using Research: A Primer for Law Enforcement Managers***, Second Edition, by John E. Eck and Nancy G. LaVigne (Police Executive Research Forum, 1994). Explains many of the basics of research as it applies to police management and problem-solving.

Other Guides in This Series

Problem-Oriented Guides for Police series:

1. **Assaults in and Around Bars.** Michael S. Scott. 2001.
2. **Street Prostitution.** Michael S. Scott. 2001.
3. **Speeding in Residential Areas.** Michael S. Scott. 2001.
4. **Drug Dealing in Privately Owned Apartment Complexes**. Rana Sampson. 2001.
5. **False Burglar Alarms.** Rana Sampson. 2001.
6. **Disorderly Youth in Public Places.** Michael S. Scott. 2001.
7. **Loud Car Stereos.** Michael S. Scott. 2001.
8. **Robbery at Automated Teller Machines.** Michael S. Scott. 2001.
9. **Graffiti.** Deborah Lamm Weisel. 2002.
10. **Thefts of and From Cars in Parking Facilities.** Ronald V. Clarke. 2002.
11. **Shoplifting.** Ronald V. Clarke. 2002.
12. **Bullying in Schools.** Rana Sampson. 2002.
13. **Panhandling.** Michael S. Scott. 2002.
14. **Rave Parties.** Michael S. Scott. 2002.
15. **Burglary of Retail Establishments.** Ronald V. Clarke. 2002.
16. **Clandestine Drug Labs.** Michael S. Scott. 2002.
17. **Acquaintance Rape of College Students.** Rana Sampson. 2002.
18. **Burglary of Single-Family Houses.** Deborah Lamm Weisel. 2002.
19. **Misuse and Abuse of 911.** Rana Sampson. 2002.

Companion guide to the Problem-Oriented Guides for Police series:

- **Assessing Responses to Problems: An Introductory Guide for Police Problem-Solvers.** John E. Eck. 2002.

Other Related COPS Office Publications

- **Using Analysis for Problem-Solving: A Guidebook for Law Enforcement.** Timothy S. Bynum.
- **Problem-Oriented Policing: Reflections on the First 20 Years.** Michael S. Scott. 2001.
- **Tackling Crime and Other Public-Safety Problems: Case Studies in Problem-Solving.** Rana Sampson and Michael S. Scott. 2000.
- **Community Policing, Community Justice, and Restorative Justice: Exploring the Links for the Delivery of a Balanced Approach to Public Safety.** Caroline G. Nicholl. 1999.
- **Toolbox for Implementing Restorative Justice and Advancing Community Policing.** Caroline G. Nicholl. 2000.
- **Problem-Solving Tips: A Guide to Reducing Crime and Disorder Through Problem-Solving Partnerships.** Karin Schmerler, Matt Perkins, Scott Phillips, Tammy Rinehart and Meg Townsend. 1998.

For more information about the *Problem-Oriented Guides for Police* series and other COPS Office publications, please call the Department of Justice Response Center at 1-800-421-6770 or check our website at www.cops.usdoj.gov.

For More Information:

U.S. Department of Justice
Office of Community Oriented Policing Services
1100 Vermont Avenue, NW
Washington, D.C. 20530

To obtain details on COPS programs, call the
U.S. Department of Justice Response Center at 1.800.421.6770

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e02021446 Created Date: March 19, 2002