In the 1970s, prior to the establishment of the Drug Recognition Expert (DRE) Program, the following scenario was regularly played out on the streets of American communities:

While on routine patrol in city traffic in a marked police car, the watchful officer suddenly directs his attention to a specific car. Alerted perhaps by a traffic violation, such as speeding or an illegal left turn, or perhaps by erratic braking (not an actual breach of the law, but suspicious nonetheless), the officer activates the police car's emergency lights, and signals the car to stop. Both cars pull to the curb lane and stop.

The officer radios in his location to the police station, and slowly, yet attentively, walks up to the apprehensive and still-seated driver. The officer says firmly but politely, Good day, sir. May I see your driver's license and registration please." It's a demand, not a question.

As the nervous driver reaches for the glove box the officer asks, "By the way, what year is this car?" The driver stops reaching and replies, "It's a 93, no, 94 Ford. What's this all about officer?" The officer says, "I'll get to that in a moment. Remember? Your license and registration please."

The officer completes a mental checklist: bloodshot eyes, check, slurred words, check, forgetting about the driver's license, check, car smells like a brewery, check. "I think this guy might be deuce1," the officer thinks.

"Step out of the car, sir. I'd like you to do a few tests to see if you've had too much to drink."

During the "dark ages," roadside tests to determine if a person was under the influence of alcohol or drugs were not standardized. Through trial and error, each officer developed his or her own procedures in order to determine if the individual should be arrested for driving under the influence (DUI). Junior officers, modelling their superiors, would often add their own nuances to the procedures. These non-standardized roadside sobriety tests frequently included variations of counting and alphabet-recitation exercises2, coin pick-up tests3, and assorted balance and coordination tests.

Young officers quickly learned that the intoxicated person had difficulty remembering instructions, particularly more than one at the same time. In the above example, the
officer demanded the driver's license and registration. As the suspect began to reach for these items, the officer asked another question - the year of the car. The driver had to be reminded to produce the license and registration. Without being aware of it, the officer was assessing the person's ability to divide his attention, that is, to do more than one thing at the same time.

Based on the totality of the investigation, including the individual's driving, the officer's general observations of the person's speech, appearance, demeanor, and the person's performance on the non-standardized roadside tests, the officer would make an arrest or release decision. If arrested, the driver would be taken to a police station, and would be advised of his rights and obligations under the implied consent law. Typically, the driver (now an "arrestee") would be administered an alcohol breath test. If the arrestee's alcohol concentration, as measured in breath, reached a certain statutory level, such as .10% BAC (blood alcohol concentration), the individual would be booked into the jail. The case would then be presented to the prosecuting attorney for review and prosecution.

During the 1960s and 1970s, many individuals were producing breath test results that were below the statutory level, even though they appeared to be inordinately impaired. Officers' options were both unsatisfactory and limited.

Releasing the person and requesting him or her not to drive was one option. A psychiatric evaluation of the driver was another option. In essence, the officer would suspect that the individual's erratic driving, behavior and appearance were related to a psychiatric disorder. A third option for handling the so-called "low blow" driver was to obtain an assessment for drug influence by medical personnel, such as doctors and nurses. (Los Angeles, as well as many other jurisdictions, have medical personnel on-duty throughout the day at larger jail facilities.) Unfortunately, then and now, many medical professionals receive limited formal training about the observable effects of abused drugs. And even if they have received formal training, actual experience in dealing with drug abusers in a non-traditional clinical setting may be limited.

More importantly, however, the medical professionals were assessing the arrestee at a different, sometimes significantly later, time. The person had been observed driving, was arrested, was taken to a police station and was given a breath test, all before being taken to an appropriate facility for a medical evaluation. The individual may no longer be under the influence of drugs at the time of the medical assessment. Simply, the drugs may have worn off.

Poly-drug (multiple drugs) use was another complicating factor. The poly-drug user, at different times, may exhibit nearly opposite drug effects. For example, at the time of the officer's encounter with an individual, the person may exhibit the behavior associated with stimulant use, such as aggressiveness, agitation, and dilated pupils. At the time of the medical evaluation, however, the same person may be sedated, lethargic, and sleepy, consistent with a narcotic analgesic such as heroin. The stimulant, cocaine, has worn off; heroin now dominates.
For these reasons and more, an evaluation by medical personnel was not a viable solution to the problem of identifying the drug-impaired driver.

In some cases, a blood or urine sample disclosed the presence of drugs in a suspected impaired driver. It was still difficult, nevertheless, if not impossible, to obtain a filing of charges in court, much less a conviction. Prosecutors were hampered by officers' limited abilities in articulating the basis of the opinion that the person was under the influence of drugs. A procedure was needed that officers could utilize in order to be able to detect, apprehend, assess, document, and subsequently prove in a court of law that the individual was under the influence of a drug. The Drug Recognition Expert (DRE) Program, procedures, and DRE-trained officer were the response to this recognized need.

Out of the Dark

Little has changed over the years from the above arrest scenario. The typical driving under the influence arrest begins with the officer's observations of driving, followed by the officer's face-to-face contact with the person. The major difference between the 1970s and the present is that officers now have a standardized method of assessing alcohol and drug-impairment at roadside: the Standardized Field Sobriety Test (SFST).

In the United States and parts of Canada, most police officers are taught the three phases of Driving Under the Influence (DUI) detection: (1) vehicle in motion, (2) personal contact, and (3) pre-arrest screening. Each of these phases requires decision making on the officer's part. In phase one, vehicle in motion, the officer's primary decision is whether or not to stop the vehicle. In phase two, the officer's primary decision is whether or not the driver should be instructed to exit the vehicle. The officer's primary decision in phase three is whether or not to arrest the person. The development, refinement, and validation of standardized procedures for phase three commenced at the same time that the need for procedures to detect the drug-impaired driver was growing. The resulting development of the SFST, which was largely through the efforts and research of Marcelline Burns, Ph.D. of the Southern California Research Institute (SCRI), was a critical step toward the development of DRE.

Without repeating the extensive volumes of research conducted by Dr. Burns and her associates, the outcome was a standardized procedure that officers could use to determine at roadside if an individual was under the influence of alcohol. Dr. Burns evaluated the assortment of tests that officers through trial and error had developed throughout the United States and Europe. Three tests were found to be the most reliable predictor of a .10% BAC: horizontal gaze nystagmus (HGN) test, walk and turn test, and the one-leg stand test. When these tests were administered by a trained officer as a battery of examinations, officers could reliably determine if an individual's BAC was at or above the most common legal level at the time -- .10%.

The SFST battery includes an assessment of an individual's ability to pay attention, follow simple instructions, and divide his or her attention. For example, during the walk-and-turn test, the suspect is instructed to stand on a real or imaginary line with one
While the suspect stands in this position, the administering officer gives verbal instructions while at the same time demonstrating how the test is to be performed. Often, a suspect who is under the influence, will "forget" to maintain the initial position, and will either begin to perform the walking portion of the test before being told to do so, or will step out of the initial (instructional) position. During the walking or performance phase, the individual who is unable to divide his or her attention will frequently forget part of the instructions, such as counting out loud or touching heel to toe. With the support of the United States Department of Transportation, the battery of tests, known as the SFST, became the curriculum to train American officers in DUI detection.

Concurrently with the development of the SFST, drug abuse continued its steady incline. There was also a growing awareness by police officers, traffic safety researchers, prosecutors, and the general public, that drug-impaired drivers were significantly contributing to traffic injuries and fatalities. Police officers, seeing firsthand the carnage on the roads caused by drug abusers, were frustrated. They could arrest the drug-impaired driver, but were unable to obtain a conviction. Frustrated officers, problem-solvers by training and avocation, sought out solutions.

In particular, traffic enforcement officers from the Los Angeles Police Department (LAPD) began to develop their own expertise on the effects of impairing drugs other than alcohol. These officers consulted and worked with officers from LAPD’s Narcotics Division. They consulted with doctors, psychologists, and drug abusers to educate themselves about the effects of drugs. In time, LAPD officers developed a step-by-step procedure that enabled them to determine drug influence.

These innovative LAPD officers did not "invent" new knowledge about the effects of drugs, as the effects of many drugs have been known for thousands of years. The writer Aldous Huxley has been quoted as saying that "Pharmacology antedated agriculture." Simply, this means that people were learning about the effects of drugs before they learned to plant and harvest crops. Probably through the observation of animals, humans very early on learned about the pharmacologic, mood and mind altering effects of certain drugs.

DRE Drug Categorization: Patterns of Signs and Symptoms

Borrowing extensively from medicine, psychiatry, physiology, toxicology, and associated fields, a drug categorization system was developed that placed the primary drugs of abuse into seven categories. These categories are not based on shared chemical structures, nor on their legality, or on the user's subjective experience. Rather, this categorization system is based on the premise that each drug within a category produces a pattern of effects, known as signs and symptoms. (A "sign" is detectable by an observer. Signs include bloodshot eyes, horizontal gaze nystagmus, pulse rate, impaired coordination, etc. A "symptom," on the other hand, is by nature subjective. It is experienced by the individual, and may be reported to the observer. For example, a feeling of nausea is a symptom.)
Hallucinations are symptoms, although they may elicit behavioral signs.) It is the **pattern** of effects, rather than a specific effect, that is unique to the category.

The LAPD officers borrowed extensively from existing bodies of knowledge to develop their drug categorization system. They also borrowed from the medical field to develop procedures to evaluate individuals for suspected drug influence. For example, it has been established for years that an individual's state of health, or intoxication for that matter, can be assessed by taking the person's vital signs (blood pressure, pulse, and temperature in the case of the DRE). Likewise, the eye examinations, balance and coordination tests, as well as other parts of a DRE evaluation have an historically accepted role in medicine. As one court stated in its decision regarding the scientific acceptance of DRE procedures, DRE is simply a compilation of the "tried and true."14

To summarize, the initial DREs used accepted medical techniques in order to detect the well-established effects of the drugs of abuse. What was new, however, was the development of a systematic and standardized step-by-step procedure that law enforcement officers could use to detect drug influence. This procedure began taking shape in the early 1980s.

A step-by-step checklist procedure is standard within law enforcement. Following a checklist ensures that nothing is left out, and aids in the presentation of evidence in court. Although the procedure was not nearly as standardized as it is today, these early DRE officers were increasingly called upon by prosecutors to testify about the effects of drugs on driving. Los Angeles judges began to routinely recognize the officers as experts, which meant that these officers could render opinions, unlike the non-expert who could only relate facts. Over a relatively short period of time, the rate of filing and subsequent conviction of drugged drivers equalled that of alcohol alone (approximately 95%).15

The testimony of DREs was usually not (and is still not) the only evidence that is introduced into court in DUI - drug cases. Usually, the prosecutor is able to present scientific evidence of use of drugs through urinalysis or blood analysis by toxicologists. **A greater portion of the burden of proof that the individual was under the influence, however, was placed upon the observer of impairment, the DRE.**

Laboratory and Field Evaluation of the DRE Program

The Drug Recognition Expert Program was becoming institutionalized within the LAPD and within Los Angeles courts in the early 1980s. The National Highway Traffic Safety Administration (NHTSA), an agency within the U.S. Department of Transportation, began to receive requests from various sources to study the validity and reliability of the DRE procedure. In response, NHTSA, in cooperation with the National Institute on Drug Abuse, undertook a laboratory evaluation of DRE procedures in 1984 at the Johns Hopkins University.16 Four LAPD DREs traveled to Johns Hopkins University. An experimental protocol was designed to test the accuracy of the DREs. Each of the officers was isolated, and independently conducted an assessment of 80 volunteer drug users. In a double-blind format, each of the volunteers had received either marijuana (2 dose levels),
diazepam (2 dose levels), amphetamine (2 dose levels), secobarbital (1 dose level), or a placebo. Upon completing a 15 minute assessment, each of the officers was required to determine if the volunteer was impaired, and if so, the type of drug that was causing the observed impairment. The results of this study were reported as extremely encouraging to the DRE Program. In this controlled clinical study, DREs were over 90% accurate in determining impairment, and in correctly identifying the type of drug causing the impairment. The time had come to evaluate the DRE procedures in the law enforcement environment.

In 1985, NHTSA conducted a Field Validation Study of the LAPD DRE program. This study, which is also commonly known as the 173 Case Study, involved a much larger group of Los Angeles DREs, and involved individuals actually arrested for suspicion of driving under the influence of drugs. NHTSA contracted with a private toxicology laboratory to conduct blood analyses of samples obtained from the arrestees. The opinion of the DREs was then compared to the results of the laboratory's analyses for drugs. The results were very similar to the Johns Hopkins Study. Ninety-four percent of the time (162 suspects) a drug other than alcohol was found when the DREs said that the suspect was impaired by drugs. The drug determination was complicated by the fact that over 70% of the suspects yielded detectable levels of more than one drug. Overall the DREs were totally correct in their judgements on 49% of the suspects, i.e., all the drugs were identified, and partially correct, i.e., they identified at least one of the drugs in an additional 38% of the cases. They were wrong on only twenty-three subjects (13%) in that the correct drug category was not identified. Only in one case was no drug or alcohol found.

To summarize the findings as reported by NHTSA:

1. When the DREs claimed drugs other than alcohol were present, they were almost always detected in the blood (94%);
2. Multiple drug use was common: 72% used two or more drugs including alcohol. 45% used three or more drugs including alcohol;
3. All of the drugs were identified in almost 50% of the subjects;
4. 87% of the time the DREs correctly identified at least one drug other than alcohol;
5. Only 3.7% of the suspects who had used drugs had BACs equal to or greater than .10%.

It is likely that most, if not all, of the remainder would have been released to possibly drive again if the drug symptoms had not been recognized by the DREs.

The overall conclusion of the two studies was:

The LAPD drug recognition procedure provides the trained police officer with the ability to accurately recognize the symptoms of many types of drugs used by drivers.
Subsequent studies of the DRE protocol and program in other jurisdictions, particularly Arizona, supported the conclusions of the NHTSA studies.

Curriculum Development and Institutionalization of the DRE Program

In the early to mid-1980s, the LAPD periodically conducted DRE training. There was no formal curriculum or course outline. Rather, the training included presentations by experienced police officers, narcotics detectives, physicians, and other technical experts. The training course, which varied in length between three and seven days, included a field certification stage. During this certification stage, candidate DREs were required to conduct DRE evaluations on actual suspects while under the supervision of an experienced DRE. Periodically, senior LAPD DREs would meet and decide as a group if the candidate was sufficiently proficient to be recognized as a DRE by the LAPD. Those that were recognized as proficient were deemed certified by the LAPD as a DRE. Out of need, standards for training and certification were slowly evolving.

In 1986, in recognition of the need to develop a formal curriculum, eighteen senior LAPD DREs were selected to develop and present the DRE curriculum. A DRE school was conducted in May of 1986 in Los Angeles utilizing this initial cadre of instructors. NHTSA and other agencies monitored this school, with the goals of standardizing the curriculum, and developing a comprehensive curricula package for administrators, instructors, and students. In 1987, NHTSA completed the development of these lesson plans. NHTSA also conducted an instructor development school in Los Angeles to prepare DREs to present the curriculum. A successful DRE school was then held in Los Angeles using this new standardized curriculum.

The next step in the development and expansion of the DRE Program was the selection of four states to pilot the expansion of the program outside of Los Angeles. The states of New York, Arizona, Colorado, and Virginia were selected. These states were selected because they had in place aggressive DUI enforcement programs, including the training of officers in the SFST battery. Initially, officers from these jurisdictions travelled to Los Angeles to receive the classroom portion of DRE training. Upon completing the classroom training, Los Angeles DREs travelled to these other states to supervise field application and certification of these student DREs. After these students had attained certification as DREs, instructor schools were held to develop some of these new DREs as instructors. Subsequent DRE schools, conducted primarily by these new instructors, were then held in these additional states. This basic format of DRE expansion through the development of an initial cadre of DREs, followed by an instructor school, has continued to this day.

In the late 1980s, it was becoming clear to U.S. law enforcement and traffic safety officials that the DRE Program was poised for tremendous growth. Undoubtedly, for the DRE Program to expand, it needed administrative support and oversight on a national level. The International Association of Chiefs of Police (IACP) had for years maintained an ongoing relationship with NHTSA. The IACP supported NHTSA training programs for police officers, and advised NHTSA on research needs in traffic enforcement. The
IACP was the logical organization to assume the oversight and administration of the growing DRE Program. In 1989, the IACP assumed this oversight, and became the certifying and regulating body for Drug Recognition Experts.

In 1988, the United States Congress passed the Omnibus Drug Bill. This legislation funded a large scale expansion of DRE training. Due in large measure to this bill, law enforcement agencies in 33 states have adopted the DRE program. As of 1998, there are approximately 4,000 certified DREs nationwide, including approximately 400 DRE instructors. In addition, DREs now serve in Canada, Australia, Sweden, and Norway. South Africa, through the auspices of its Council on Scientific and Industrial Research, is expected to adopt the DRE Program in the near future.

DRE training and certification records are now maintained by the IACP. 24 NHTSA has maintained its role in the DRE Program by sponsoring curriculum update conferences, coordinating DRE courses nationwide, developing and issuing training materials, and generally providing administrative support of the DRE Program. The DRE Program is now formally titled the Drug Evaluation and Classification Program (DECP).

NHTSA Report to Congress on the DRE Program

In 1996, NHTSA evaluated its support of the development of the DECP in its report to the U.S. Congress. This report concluded:

"The Drug Evaluation and Classification Program has been remarkably successful in producing meaningful results...saving lives on our nation's roads...gaining court acceptance...and showing a steady return on investment. NHTSA's leadership role in development and implementation of the DECP produced scientific validation of the program, effective training and certification standards, and rapid expansion and institutionalization of the program. Taking into consideration the enormous cost to society of impaired driving injuries today, the economic impact of the DEC has more than compensated for the funds expended to implement and conduct the program. Added to this are the many lives that have been saved by DREs who identified medical crises in time to save the drivers. The Drug Evaluation and Classification Program has unquestionably produced profitable results which can be counted on for years to come."

Part Two: Drug Categories
Sign and Symptom Based

Drug Recognition Experts (DRE) classify the drugs of abuse into seven categories. This categorization system is based on the premise that each drug within a category produces a pattern of effects, known as signs and symptoms. This DRE categorization system is analogous to a handwritten signature, rather than a fingerprint. Each time a signature is written, it will be slightly different. The signature will still be recognizable as identifying a specific individual. Fingerprints, on the other hand, do not change.
Practically, this means that although there are numerous drugs within each of the seven categories, the overall pattern of effects within the category at hand is the same. The effects can and do vary from drug to drug, primarily in terms of intensity and duration of action.

The effects of any drug depend upon many factors. A major factor is amount, that is, the dose. Generally, the effects of a drug are dose-dependent. More of the drug, such as alcohol, will generally produce more pronounced effects. The effects also depend on the user's tolerance to the drug, how the drug was administered, the drug's purity, the user's expectations, coexisting illness, fatigue, and the presence of other drugs. Also, for many reasons, individuals vary in their response to the same drug. For example, people differ in metabolic rates. The effects of a drug also vary in the same individual. Indeed, rarely will a single individual experience or display all the effects associated with a drug.

Drug abusers use drugs for effects on the Central Nervous System (CNS), primarily the brain. If a drug does not affect the brain, then it will not be abused (although, of course, it may be misused).

The seven DRE drug categories are: CNS Depressants (including alcohol), Inhalants, Phencyclidine, Cannabis, CNS Stimulants, Hallucinogens, and Narcotic Analgesics.

The Drugs of Abuse: An Overview
Central Nervous System Depressants

This category includes the most widely abused drug, alcohol. In addition, the category consists of barbiturates, non-barbiturates that have barbiturate-like effects, anti-anxiety tranquilizers, anti-psychotic tranquilizers, certain anti-depressants, and certain pharmaceutical combinations that contain more than one type of CNS Depressant. The benzodiazepines, chloral hydrate, GHB, methaqualone (Mandrax), lithium, phenobarbital, the sedating antihistamines, and many other substances are included in this category. Commonly referred to as "downers," and also as sedative-hypnotics, the effects of these drugs at intoxicating doses mirror the effects of alcohol. Importantly, however, they are not detected by an alcohol breath test, and do not produce an odor of an alcoholic beverage. Unlike the case with alcohol, there are generally no consistent correlations between the levels of these drugs ingested and the degree of intoxication. These drugs produce relaxation, drowsiness, impaired balance and coordination, slurred speech, a lowering of inhibitions, and increased risk taking. They also produce horizontal gaze nystagmus, do not generally affect pupil size, and typically depress the vital signs. The non-alcohol CNS Depressants are extremely dangerous when taken with alcohol. Pharmaceutical preparations of these drugs usually contain warnings advising the user not to drink alcohol at the same time, and to be aware that they may impair driving.

Inhalants

The drugs in this category are usually inhaled. Three sub-categories comprise the inhalants: volatile solvents, aerosols, and anesthetic gases. The typical user of these drugs is young, and as a result, does not have ready access to more preferred drugs. Included
are solvents, such as paint thinner, gasoline, toluene, turpentine, and paint. Nitrous oxide ("laughing gas"), freon, ether, and many other substances are also included. Common indicators of the use of these drugs are the presence of chemical odors on the user, and residue of the substance on the user's face, clothing, and hands. Intoxicated individuals may look and act similar to one under the influence of alcohol. They may display impaired gait, slurred speech, bloodshot eyes, and a blank stare. Since these substances displace oxygen, the heart generally will accelerate, resulting in an increased pulse rate. Depending on the specific substance, blood pressure can be elevated or depressed. 29 As with the CNS Depressants, these drugs generally produce horizontal gaze nystagmus, but do not usually affect pupil size.

Phencyclidine (PCP)

This drug is usually known as PCP, which represents its longer chemical name of phenylcyclohexyl piperidine. It is also commonly called phencyclidine. Although frequently classified as a hallucinogen, and sometimes as a depressant, a stimulant, or an analgesic, PCP is appropriately termed a dissociative anesthetic. The drug ketamine, which has uses in veterinary medicine, in pediatric surgery, and in other areas, is included in this category, as are chemical analogs of PCP.

The typical effects of PCP are elevated vital signs, accompanied by both horizontal and vertical gaze nystagmus. In addition, rigid skeletal muscles, a blank stare, an absence of pain, hallucinations, and many other effects may be evident. PCP users may become suddenly violent, and pose an extreme danger to police officers. Many non-lethal control devices, such as "taser" dart guns, have been developed in order to subdue the PCP user.

Cannabis

This category, which includes marijuana, hash, hash oil, and the synthetic drug dronabinol, is the most widely abused illicit drug. Although it has a popular reputation as a relatively benign drug, it is extremely impairing, affecting judgment, depth perception, ability to maintain attention, as well as having effects on the cardiovascular system. Cannabis causes blood shot eyes, accelerated heart rate (tachycardia), muscle tremors, forgetfulness, and many other effects. Unlike the first three categories (CNS Depressants, Inhalants, and PCP), this category does not produce horizontal gaze nystagmus. Users of cannabis frequently use alcohol, as well as other drugs, at the same time.

Central Nervous System Stimulants

This category includes the ubiquitous cocaine in all its various forms, amphetamine, methamphetamine, ephedrine, Ritalin, certain diet pills, and other related substances. Commonly known as the "uppers," the effects of these drugs mimic the body's "fight or flight" response, the autonomic nervous system's response to perceived danger. Their effects include dilated pupils, elevated vital signs, hyper-alertness, rapid and agitated
body movements, extreme weight loss accompanied by deteriorating health and hygiene, and a diminished ability to "filter" environmental stimuli, such as noises and movement. CNS Stimulants do not produce horizontal gaze nystagmus. The user may overreact to seemingly minor events, and may view minor inconveniences as elaborate plots. As the effects wear off, the user may physiologically "crash," and may appear nearly the opposite of when he or she was under the influence of the drug. The user may then sleep for long periods, may wake voraciously hungry, and may be extremely dysphoric.

Hallucinogens

Hallucinogens are used for their distorted sensory perceptions known as hallucinations. In many respects, they are closely related to the CNS Stimulants, as is evidenced by the fact that they also cause dilated pupils and elevated vital signs, and do not produce horizontal gaze nystagmus. The user may experience a mixing of the senses, called synesthesia, in which the user may "hear" visual stimuli, such as colors, and may "see" sounds, such as music. LSD, psilocybin, mescaline, peyote, bufotenine, morning glory seeds, jimson weed, nutmeg and the psychedelic amphetamines are some of the drugs in this category. The psychedelic amphetamines include MDMA, or methylenedioxy methamphetamine, which is known in the vernacular as "Ecstasy," and many other related preparations. Very popular in the 1960s, these drugs have experienced a resurgence of use in the 1990s.

Narcotic Analgesics

This final category includes the opiates, such as morphine, codeine, percodan, heroin, meperidine, methadone, fentanyl, and numerous others. These drugs relieve pain, but also produce sedation. The specific effects include constricted pupils, depressed vital signs, slow and deliberate movements, and forgetfulness. These drugs do not produce horizontal gaze nystagmus. Although these drugs are frequently injected, more users, because of concern over the spread of infectious disease through the sharing of hypodermic needles, are insufflating (intranasal administration) and inhaling drugs such as heroin. These drugs are known for their physically addictive qualities, as well as for the extremely unpleasant, though not life-threatening, withdrawal syndrome.

Poly-drug Use

Poly-drug use is the norm for today's drug user. Poly-drug use, also termed poly-pharmacy and multi-habituation, simply means that the drug user is using more than one category of drugs simultaneously or serially. Often, the drugs have nearly opposite effects. For example, an extremely common drug combination in many parts of the United States is the "speed ball." This slang term refers to combining a CNS stimulant, usually cocaine, with a narcotic analgesic, typically heroin. In many respects, these drugs have opposite effects. For example, cocaine dilates the pupils and elevates the vital signs, whereas heroin constricts the pupils and depresses the vitals. Contrary to what defense attorneys attempt to coax the DRE to say, neither drug "cures" the effects of the other. What typically occurs is that the user displays a mixture of signs and symptoms, such as dilated pupils with depressed vitals, that can best be explained by poly-drug use.
DREs apply four concepts to interpret poly-drug signs and symptoms: additive, antagonistic, overlapping, and null.

"Additive" means that each of the drugs used produce the same effect. Each of the drugs reinforces a specific effect of the other. For example, CNS stimulants and cannabis independently elevate pulse rate. Taken together, the user's pulse will be elevated, probably to a greater degree than either drug would separately. Each drug is reinforcing an effect of the other.

"Antagonistic" means that each of the drugs produces an opposite effect. Cocaine dilates the pupils, while heroin constricts them. When taken together, the user's pupils may be dilated, may be constricted, or may be within the normal range (3.0 mm to 6.5 mm diameter). The effects displayed are dependent on the dose of each of the drugs, the user's tolerance to each of the drugs, and importantly, the point in time that the user is evaluated by the DRE. Cocaine, a short-acting drug, may "wear off" quickly, and the effects of the heroin may then dominate.

An "overlapping" effect refers to the case in which one of the drugs produces the effect, but the other drug is neither additive nor antagonistic to it. For example, alcohol produces horizontal gaze nystagmus. If alcohol is taken with cocaine, a drug that does not cause horizontal gaze nystagmus, the user will display nystagmus - again, due to the alcohol.

"Null" effect refers to a combination of drugs in which neither of the drugs used produces the effect. For example, cocaine does not produce horizontal gaze nystagmus; neither does heroin. Taken together, the user will not have nystagmus since neither of the drugs produces nystagmus. To paraphrase an old rock 'n roll song, "Nothin' and nothin' means nothin'."

Part Three: The DRE Process
The Three Determinations of a DRE

Although a DRE may initiate an arrest for DUI-drugs, the usual case is for a different officer, the arresting officer, to request the expertise and assistance of the DRE after making a DUI arrest. The DRE should be requested to conduct an evaluation for drug influence when the suspect's signs of impairment are not consistent with the arrestee's BAC. Simply, the arrestee may appear more impaired than the alcohol level alone would account for. Some agencies, such as the LAPD, mandate a drug influence evaluation by a DRE whenever an individual is arrested for DUI and produces a BAC below the statutory per se level (.08% in California). In addition, an evaluation is mandated whenever the arrestee's degree and/or type of impairment is not consistent with the arrestee's BAC.

A DRE is responsible for making three determinations: (1) the arrestee's impairment is not consistent with the BAC; (2) the individual is under the influence of drugs, and not suffering from a medical condition that requires immediate attention; and (3) the individual is under the influence of a specific category (or categories) of drugs.
The ruling in or out of medical conditions (second determination) is critical. There are many medical conditions, such as stroke, epilepsy, multiple sclerosis, uncontrolled diabetes, and others that produce effects that mimic drug impairment. The DRE needs to be able to quickly and accurately assess the arrestee for the presence of these conditions. It is a frequent occurrence for DREs to determine that the arrestee, who was appropriately arrested, is actually in need of urgent medical care, and is not under the influence of drugs. Only after ruling out these medical conditions does a DRE proceed with an evaluation to determine what category of drug the person is under the influence of.

**A Systematic and Standardized 12 Step Process**

In order to reach an opinion that the individual is under the influence of a specific category (or categories) of drugs, DREs utilize a 12 step, systematic and standardized process. The DRE will not reach a final opinion until the entire evaluation has been completed. The process is standardized in that all DREs, regardless of agency, utilize the same procedure, in the same order, on all suspects. It is systematic in that it logically proceeds from a BAC, through an assessment of signs of impairment, to toxicological analysis for the presence of drugs. This procedure is rooted in standard medical procedures that are used to reach a diagnosis of illness or injury. 36

The 12 steps are:

- **Step One:** The Breath (or Blood) Alcohol Concentration
- **Step Two:** Interview of the Arresting Officer
- **Step Three:** Preliminary Examination (includes the first of three pulses)
- **Step Four:** Eye Examinations
- **Step Five:** Divided Attention Tests
- **Step Six:** Vital Signs Examinations (includes the second of three pulses)
- **Step Seven:** Darkroom examinations of pupil size (includes an examination of the nasal and oral cavities)
- **Step Eight:** Muscle Tone
- **Step Nine:** Examination of Injection Sites (includes the third pulse)
- **Step Ten:** Statements, Interrogation
- **Step Eleven:** Opinion
- **Step Twelve:** Toxicology: Obtaining a specimen and subsequent analysis

**Step One:** BAC
This step often precedes the involvement of the DRE. If the arresting officer has determined that the BAC is consistent with both the type and degree of impairment, no DRE is called. On the other hand, if the BAC is not consistent with the degree and/or type of impairment, a DRE should be requested.

Step Two: Interview of the Arresting Officer

Based on the results in Step One, the arresting officer requests the assistance of a DRE. The DRE will discuss the circumstances of the arrest with the arresting officer, and will inquire as to the suspect's condition at the time of the arrest, whether the arrestee had been involved in a traffic collision, any statements the suspect had made, whether or not the suspect had drugs in his or her possession, and any other relevant matters. This step is analogous to the interview an emergency room physician conducts when an unconscious individual is brought by ambulance to the hospital. The physician will of course inquire of the ambulance attendants as to how long the person has been in that state, if the person has come in and out of consciousness, and so forth.

Step Three: Preliminary Examination

This step is commonly referred to as a "fork in the road." The purpose of this step is to determine if there is sufficient reason to suspect drug influence. As was mentioned earlier, there are often serious medical conditions that may mimic drug influence. Therefore, an extremely important part of this step is the determination that it is in fact a drug, rather than a medical condition, that is inducing the observed impairment. In order to make this critical determination, the DRE will make general observations of the arrestee's condition, inquire of the arrestee as to any health problems, and conduct a pupil size and eye tracking examination. Pupils of different size and/or differences in the tracking movements of the eyes often provide evidence of serious, life-threatening, medical conditions. In addition, the DRE takes the first of three pulses in this step.

Based on what the DRE detects in this phase, a number of outcomes are possible. The DRE may find no signs of drug influence, and may return the arrestee to the arresting officer for routine processing. The DRE may see evidence of a medical condition, and may obtain a medical assessment. Or the DRE may proceed with a full DRE evaluation. Even though the DRE may have decided to proceed with the drug evaluation, if the DRE at any time finds evidence of a serious medical condition, the DRE will cease the evaluation and obtain the medical assessment.

Step Four: Eye examination

During this step, the DRE conducts three separate eye movement examinations. They are: horizontal gaze nystagmus, vertical gaze nystagmus, and an eye convergence examination.

The Standardized Field Sobriety Testing (SFST) research found that horizontal gaze nystagmus (HGN) was the best predictor of an individual's alcohol level. Although there
are many different types of nystagmus, some of which are caused by pathology, the HGN examined for by DREs is rarely confused with nystagmus caused by other physiological conditions. Simply, nystagmus refers to an involuntary, but visible jerking of the eye balls. Horizontal gaze nystagmus refers to the visible jerking of the eyeballs as the eyes move side to side while gazing at an object. The DRE uses a pencil or pen held in front of the suspect's eyes, and moves the object horizontally in front of the individual while the individual moves his or her eyes attempting to follow the object. In addition to alcohol, other Central Nervous System Depressants, Inhalants, and PCP induce this visible jerking.

During the vertical gaze nystagmus (VGN) examination, the suspect is directed to follow an object that is moved up and down. Importantly, any drug that induces HGN may also cause, if the dose is sufficient, VGN. There are no drugs, however, that may cause VGN without first causing HGN. Certain medical conditions, such as brain stem damage, may however cause VGN but not HGN.

During the convergence examination, the DRE, again using a pencil or pen, directs the suspect to look at the object while the DRE places the object at the bridge of the suspect's nose. The suspect will attempt to "cross" his or her eyes while looking at the object. CNS Depressants, Inhalants, PCP, and Cannabis impair the ability of the individual to converge (or cross) the eyes.

Step Five: Divided Attention Testing

To a degree, this step repeats some of the tests that were given to the suspect at the time of the arrest. The setting now, however, is a controlled environment, a police station, rather than at roadside.

The DRE administers the following tests in the following order: Romberg Balance Test, a Walk and Turn Test, the One-Leg Stand Test, and a Finger-to-Nose Test. These tests are divided attention tests, requiring the individual to balance and coordinate body movements, remember instructions, and perform more than one task at once. Frequently, the individual's performance on these tests during the DRE evaluation will be markedly different from the suspect's performance in the field. There are many explanations for this variance: the drug(s) may have worn off during the intermittent time period; the individual may have used multiple drugs, and a different drug may now be dominant. The officer will document the performance of the suspect, and will then continue to Step Six.

Step Six: Vital Signs Examination

The DRE takes three vital signs: blood pressure, using a sphygmomanometer and stethoscope, body temperature utilizing an oral thermometer, and pulse. This is the second of three pulses, the first having been taken in the preliminary examination. Of course, if the arrestee's vital signs are dangerously high or low, the DRE will immediately obtain a medical assessment. DREs are trained to accurately take these vital signs, and to compare the results with medically-accepted normal ranges. Certain drugs elevate
specific vital signs, other drugs depress the vitals, and other drugs may have no effect on certain vital signs.

Step Seven: Darkroom Examination

The eyes have been called "the window to the soul." They are certainly a "window" to the inner body. The pupils enlarge in response to darkness, fear and excitement, as well as in response to certain drugs. They also constrict in response to bright light, as well as in response to certain drugs. The DRE uses a pupillometer to estimate the arrestee's pupil sizes in four different light levels: room light, near total darkness, indirect artificial light, and direct light. The DRE also examines the individual's nasal and oral cavities for evidence of drug use.

Step Eight: Muscle Tone

Certain drugs cause the skeletal muscles to become rigid, whereas other types of drugs, such as alcohol, cause muscle flaccidity. The arrestee's muscle tone is evaluated throughout the examination, through observations of the arrestee's movements. During this step, however, the DRE gently moves the arrestee's arms to determine muscle tone.

Step Nine: Injection Sites Examinations

Many drug users inject drugs intravenously. Rarely, however, do medical procedures involve injecting drugs into an artery or vein. For example, insulin-dependent diabetics do not inject into blood vessels. During this step, the DRE examines the individual for injection sites. Although the drug user may inject anywhere on the body, the more frequently used areas are the arms, neck, and ankles. Importantly, the presence of injections, even recent ones, are indicators of use, rather than drug influence. Their presence, however, may provide evidence of frequency of use, and the type of drug abused. A third pulse is also taken.

Step Ten: Statements, Interview

The DRE now conducts a structured interrogation of the suspect. In the United States, if the suspect has not been advised of his or her constitutional rights (Miranda warnings) previously, the DRE will do so at this point. The DRE will question the person about the use of specific drugs. Frequently, the arrestee will make self-serving denials of drug use, but may admit or even confess drug use and impairment by drugs while driving to the DRE. Arrestees often state that they were using a prescribed drug. The DRE may ask the arrestee about any warnings given to the arrestee by the prescribing physician or pharmacist regarding operating a motor vehicle while taking the drug.

Step Eleven: Opinion

The DRE now forms an opinion as to drug influence, and the category(s) of drug(s) causing the impairment. This opinion is not a guess nor is it a hunch. Rather, it is an
informed opinion that is based on the totality of the evaluation. Although opinions by nature are subjective, the DRE opinion is based, in part, on objective criteria.

It is a primary dictum of DRE training that when in doubt, the DRE shall always find "in favor of freedom" of the suspect. As written, a typical DRE opinion is: "In my opinion, the arrestee is under the influence of a Central Nervous System Stimulant, and cannot safely operate a vehicle." 40

Step Twelve: Toxicology: Specimen and Subsequent Analysis

The fact that this step is the twelfth or last should not be construed to mean that it is the least important part of the evaluation. In fact, toxicological corroboration of drug use is usually necessary for successful prosecution. During this step, the DRE obtains a urine and/or blood specimen from the suspect, which is then analyzed for the presence of certain drugs by a toxicological laboratory. Under the implied consent laws that DRE states have, an individual is required to provide blood or urine to the police when requested. This blood or urine sample is required even though the suspect may have already provided a breath test.

Typically, a week or more will elapse until the laboratory reports their results. The decision to prosecute the individual will usually be delayed until these results have been obtained.

It is critical to understand the laboratory's role in a non-alcohol drug case. In a drug influence case, the laboratory's role is usually not to determine if the individual was impaired, but is to determine use of a specific substance. For example, the DRE has determined the arrestee is under the influence of a Central Nervous System Stimulant. The laboratory analyzes for specific drugs, such as cocaine, amphetamines, and others. The laboratory report, assuming it corroborates the opinion of the DRE, will identify a specific stimulant the person used. In court, the consistency between the DRE's opinion and the laboratory analysis is critical in demonstrating the accuracy of the DRE.

The Tools of the Trade: DRE equipment

A DRE utilizes the following equipment in conducting a drug influence evaluation:

- Pupillometer: a small, approximately 3 inch by 5 inch card (approximately 7 to 12 cm), that is usually plastic, that displays dark circles ranging in half-millimeter gradations from 1.0 millimeters to 9.0 millimeters
- Sphygmomanometer: a manual, aneroid blood pressure cuff consisting of a pumping bulb, a screw valve, an analog gauge, and a bladder.
- Stethoscope: single or double diaphragm, double tubed.
- Thermometer: oral, digital, with disposable covers.
• Penlight: low power, medical style.

• Magnifying light: generally five to ten magnification power, similar to those used by stamp collectors and model builders.

• Pen or Pencil: used as a stylus to conduct eye movement examinations.

• Evidence containers: for blood or urine.

• Protective gloves, latex and/or rubber.

In addition, DREs may utilize a specialized, short distance, instant camera to take photos of injection marks, nasal and oral cavities, and of other evidence. DREs may also utilize various type of breath testing equipment, including preliminary breath testers.

Part Four: DRE Training and Certification

Drug Recognition Expert (DRE) training is probably the most rigorous academic training that any law enforcement officer can undertake. Only selected experienced officers are allowed to enroll in the course. In order to attend DRE training, the candidate is typically nominated in writing by the officer's commanding officer. Some agencies, such as the Los Angeles Police Department, require the candidate to submit a formal application form, while other agencies may require the candidate to appear for an oral interview. The criteria for selection include a demonstrated aptitude and interest in DUI enforcement and/or narcotics enforcement.41 Candidates must also have demonstrated an ability to conduct thorough crime scene investigations, and to testify clearly and convincingly in court.

The International Association of Chiefs of Police (IACP) is the regulating and certifying body for the Drug Recognition Expert program. The IACP establishes minimum standards for all phases of DRE training, including recertification.42

DRE training and eventual certification by the IACP consists of the following criteria:

1. Standardized Field Sobriety Test (SFST) training
2. DRE preliminary training
3. DRE School
4. DRE School Classroom Examination
5. Minimum number of evaluations
6. Minimum number of drug categories observed
7. Toxicological corroboration
8. "Rolling" log reviewed
9. Resume reviewed
10. Certification final examination
11. Endorsement by an instructor
12. Endorsement by a second instructor
13. Certification by the International Association of Chiefs of Police.
Criterion One: Standardized Field Sobriety Test (SFST) Training

Although there are a number of formats for this first phase of DRE training, the usual format consists of two days of training in the proper administration and interpretation of the standardized field sobriety test battery. This segment is primarily skill-oriented. Students practice administering the SFST on volunteers who consume alcohol. In order to complete this phase, students must successfully pass both a written examination and a proficiency test. SFST training is a "stand-alone" course, in that most officers who complete SFST training never continue into DRE training. This phase of the training may also include an introductory overview of the drugs that impair driving.

Criterion Two: DRE Preliminary Training

Following the SFST training, officers that will continue with DRE training must successfully complete a two day DRE preliminary training course. This course expands upon the officers' SFST skills, provides an overview of the DRE procedures, and provides an overview of the effects of the drugs of abuse. In this segment, officers are also taught to properly administer the vital signs examinations that are conducted in a DRE evaluation. Some agencies combine the SFST and DRE preliminary training into a unified four-day course. The LAPD also conducts an accelerated ten-day format that combines SFST training, DRE Preliminary Training, and the DRE course itself into one unified ten-day training event.

Criterion Three: DRE School

This segment of the training consists of seven classroom days of intensive training. There are 31 separate segments to the course. Some of the specific segments are: the physiology of the drugs of abuse, the development and effectiveness of the DRE procedures, vital signs examinations, eye examinations, courtroom testimony, and drug combinations. Each of the seven categories of drugs are covered in depth. Commonly abused substances, methods of administration, and the duration of effects are extensively covered. Students view video-tapes of individuals under the influence of the various categories, and participate in many interpretative exercises. Students also practice the administration of the DRE procedure while under the direct supervision of DRE instructors. Students are tested throughout this phase. Under the guidelines established for DRE training by the International Association of Chiefs of Police, students cannot "test-out" of any of the segments of the course, and must make-up any missed classes.

Criterion Four: DRE School Examination

At the conclusion of the DRE school, students take a comprehensive written objective examination. Eighty percent is the minimum passing score.

Criterion Five: Minimum number of evaluations
This stage begins the certification phase of DRE training. Much like an internship, the student must demonstrate his or her proficiency in properly conducting and interpreting DRE evaluations that are given to actual suspects. The minimum national standards require the DRE student to conduct 12 full drug evaluations. Many agencies, including the LAPD, require 15 evaluations. Some of the required evaluations may include medical rule-outs, and evaluations in which no drug influence was determined by the DRE student. All of the evaluations during this phase must be conducted under the direct supervision of a DRE instructor.

Criterion Six: Minimum number of drug categories observed

Student DREs must evaluate individuals who are under the influence of at least three of the seven categories of drugs. (The LAPD and many other agencies require four drug categories.) The student DRE must correctly conduct the evaluations, and must reach appropriate conclusions. All three drug categories must be supported by toxicology.

Criterion Seven: Toxicological corroboration

During certification, student DREs must submit a minimum of nine physical specimens, blood or urine, to a laboratory for analysis. The laboratory analysis is compared to the student DRE's opinion as to the type of drug influencing the individual. The student must achieve a 75% laboratory confirmation rate. This means that at least 75% of the samples submitted to the laboratory must result in the laboratory finding a drug belonging to the category the student DRE identified. A 75% standard does not mean that the student can be wrong 25% of the time. A student's opinion must always be supported by the individual's presenting signs and symptoms. It does allow, however, for those instances in which the laboratory is not able to detect the type of drug the student DRE had identified.

Criterion Eight: "Rolling" log reviewed

All DREs must maintain a log of all the evaluations, including toxicological results, they have conducted. This log is then submitted to a DRE instructor for review. This log is critical in establishing the DRE's expertise in court, as in documenting DRE experience for recertification.

Criterion Nine: Resume reviewed

Each DRE must maintain an up-to-date resume. This resume should list the training the DRE has received, additional readings, court qualifications, formal education, publications, and other relevant experiences. As is the case with the "rolling" log, the primary purpose of the resume is to enhance the credibility and consistency of the DRE when testifying in court. This resume must be presented for review by a DRE instructor. A copy of the resume is maintained by an agency's DRE coordinator.

Criterion Ten: Certification Final Examination
This comprehensive written examination is given when the student DRE is approaching the conclusion of certification training. This examination, which typically takes from between three and six hours, requires the student DRE to articulate the signs and symptoms of the various drugs, including numerous drug combinations. The examination is scored on a pass-fail basis by a DRE instructor. This examination is similar in concept to examinations given in graduate school that require the student to demonstrate knowledge of all aspects of drug effects.

Criterion Eleven: Endorsement by an instructor

The student DRE is required to secure in writing the recommendation of a DRE instructor stating that the student should be awarded certification. Only DRE instructors that have actually supervised the student DRE may endorse the student.

Criterion Twelve: Endorsement by a second instructor

This step requires the written endorsement of a second DRE instructor.

Criterion Thirteen: Certification by the International Association of Chiefs of Police.

Once criteria one through twelve have been completed, the student DRE submits all the required documentation to the agency's DRE coordinator. After reviewing the completed package, the agency coordinator approves and submits certification documents to the International Association of Chiefs of Police (IACP) through a state coordinator. A tracking number is assigned to the DRE, and certificates are issued to the new DRE by the IACP. Certification is for a two year period.

Recertification and Continuing Education

In order to maintain certification, the DRE must attend a minimum of eight hours of continuing education training each two years. Many agencies require a minimum of eight hours of continuing education annually. Typically, the continuing education includes reviewing and practicing the DRE procedures, case law, toxicological issues, and an update on new drugs and drug use trends. The DRE must also have conducted a minimum of four drug influence evaluations during this period, one of which is directly supervised by a DRE instructor.

The IACP has also adopted continuing education requirements for DRE instructors.

Conclusion

The Drug Recognition Expert Program grew out of the need that law enforcement recognized: a need to better identify, apprehend, and prosecute the drug-impaired driver. From its humble beginnings in Los Angeles, law enforcement agencies in 33 American states have adopted the DRE Program. As the new millennia approaches, traffic
enforcement officers from other countries are increasingly recognizing that the DRE approach may be a solution in part to the drug problem in their communities.

In 1995, the Royal Canadian Mounted Police hosted the first DRE training to be held outside of the United States. Canadian officers from British Columbia are now applying DRE to the Canadian drugged-driver problem. A successful Canadian DRE program will undoubtedly increase world-wide interest in the DRE approach, a user-accountable response to drugged-driving.

1"Deuce" is a slang term, primarily used in California, for a person who drives under the influence of alcohol. "Deuce" is derived from 502, a former California penal code for DUI.

2A "counting" test may require the person to count backwards out loud from 38 to 11. In an "alphabet-recitation" test the individual may be instructed to recite the alphabet beginning with the letter G through X.

3In one type of "coin pick-up" test, the officer would place three coins of varying denominations on the road. The suspect would be instructed to pick up the coins in an order determined by the officer. For example, the officer might say: "Pick up the coins in the following order: quarter first, then the nickel, then the dime."

4Under the laws of most of the United States, an individual is considered to have given his or her consent to submit to a breath, blood or urine test subsequent to an arrest for driving under the influence. Driving is considered to be a privilege, and not a right. This is frequently termed "implied consent."

5In most of the United States, proscribed alcohol levels are defined as a weight of alcohol to volume of blood ratio. A .10% BAC is equivalent to 100 milligrams of alcohol per 100 milliliters of blood, or 100 milligrams of alcohol per 210 liters of breath.

6In many of the "release and request" dispositions, the individual had in fact ingested a relatively small amount of alcohol. Since the person was more impaired that would normally be expected, the officer would suspect that the person was simply an infrequent and intolerant drinker.

7Driving While Impaired (DWI), Driving While Abilities Impaired (DWAI), Operating Under the Influence (OUI) and DUI are for the most part synonymous terms. Terms vary according to jurisdiction.

8The National Highway Traffic Safety Administration sponsored two important studies that directly led to the development of the SFST battery, including specific procedures. Both studies were conducted by the Southern California Research Institute. They are: "Psychophysical Tests for DWI Arrest" (Final report, June, 1977), and "Development and
Field Test of Psychophysical Tests for DWI Arrest" (Final report, March, 1981). A subsequent field evaluation of the SFST battery was conducted. This field evaluation, as reported in "Field Evaluation of a Behavioral Test Battery for DWI Report" (released September, 1983), by Anderson et al., supported the effectiveness of the SFST battery.

9Horizontal gaze nystagmus (HGN) refers to an involuntary side to side jerking of the eyes as they fixate and follow an object, such as a pen or pencil, that is moved horizontally in front of the person.

10In 1995, the Colorado Department of Transportation sponsored a field validation study of the SFST battery. This study documented the effectiveness of the battery at a .05 BAC. ("1995 Colorado SFST Field Validation Study" by Burns and Anderson).

11This important concept, termed divided attention, has direct association with the multiple tasks involved in operating a motor vehicle, during which many tasks are being done simultaneously.

12Los Angeles Police Department officers Sergeant Richard Studdard (retired) and Detective Len Leeds (deceased) were largely responsible for the early development of DRE procedures.

13Horizontal gaze nystagmus, pupil size estimates, pupillary light reaction, and additional eye examinations are included in the DRE procedure.


15Los Angeles City Attorneys Office, Hill Street Branch.

16The four LAPD officers who participated in this study as evaluators were: Sergeant Richard Studdard, Sergeant Jerry Powell, Officer Patricia Berry and Officer Doug Laird. All have since retired from the LAPD.


20 Preusser, Ulmer and Preusser studied the impact of DRE training on alcohol-impaired driver arrests, finding that DRE-trained officers are more likely to arrest drivers with lower alcohol levels. Evaluation of the Impact of the Drug Evaluation and Classification Program on Enforcement and Adjudication, December, 1992. D.F. Preusser, R.G. Ulmer and C.W. Preusser. Report no. DOT HSA 808 058. (The DRE Program is also known as the Drug Evaluation and Classification Program (DECP)).

21 The following Los Angeles Police Department officers were responsible for the development and presentation of the DRE curriculum: Patricia (Russell) Berry, James Brown, Milt Dodge, Ian Hall, Arthur Haversat, Clark John, Baron Laetzsch, Gary Lynch, Ron Moen, Michael Murray, Thomas Page, Craig Peters, Jerry Powell, Scott Sherman, Richard Studdard, Larry Voelker, Michael Widder, and Nicholas Zingo.

22 John "Jack" Oates, William Nash, and Bill Tower (on loan to NHTSA from the Maryland State Police), represented NHTSA at this course.

23 At this time, the Los Angeles Police Department was the certifying agency for DREs.

24 The IACP also supports a DRE Section which serves as a resource and responds to the needs of DREs, program coordinators, and other traffic safety professionals. For information on membership requirements, the reader should contact the IACP at 1-800-THEIACP.


26 Misuse refers to an inappropriate use of a drug. For example, taking an antibiotic for a viral infection is misuse. Abuse refers to the use of a substance for psychoactive (mind altering) effects.

27 Benzodiazepines are anti-anxiety tranquilizers that share a similar chemical structure. Examples include: Valium (diazepam), Librium, Xanax, Halcion, flunitrazepam ("roofies" or Rohypnol), Klonopin (clonazepam) and many others.

28 Gamma-hydroxy butyrate

29 The anesthetic gases cause blood vessels to enlarge or dilate. This may cause a drop in blood pressure.

30 Ketamine is used legitimately only in an injectable form. The Physician's Desk Reference (PDR) includes Ketamine. Its effects are basically identical to that of PCP.
"Taser" is an acronym for Thomas A. Swift Electronic Rifle.

Dronabinol's brand name is Marinol. Listed in the Physician's Desk Reference, it is a U.S. Drug Enforcement Administration Schedule II drug. Its uses include combating nausea induced by cancer chemotherapy. Dronabinol is synthetic tetrahydrocannabinol, the psychoactive component of marijuana.

These drugs are sometimes called sympathomimetics and adrenomimetics. This means that they mimic the naturally occurring and appropriate response of the body to danger.

The term "opioid" is often applied to this category. This means that the effects are similar to opium, although the substance may not contain any actual opium.

The National Institute of Drug Abuse and the National Institutes of Health sponsored the Heroin Use and Addiction: A National Conference on Prevention, Treatment, and Research, in Washington, D.C. in September of 1997. Researchers reported that the potency of street heroin has increased substantially, thus making insufflating (snorting) heroin more attractive and effective.

A "history and physical" is the common term applied to the making of a medical diagnosis.

Although the Romberg Balance and the Finger-to-Nose tests are not part of the Standardized Field Sobriety Test battery, experience has shown these tests to provide valuable clues of drug impairment.

DREs are taught the following normal ranges for the vital signs. Pulse rate: 60 to 90 pulsations per minute; Blood Pressure: 120 mm Hg to 140 systolic over 70 to 90 diastolic; Temperature: 98.6 degrees Fahrenheit, plus or minus one degree.

DREs are taught that the normal pupil size range in all levels of light is 3.0 to 6.5 mm.

The legal definitions of driving under the influence and drugs vary according to jurisdiction. For example, some jurisdictions specify "motor vehicle," while others simply use the word "vehicle."

In California, it is illegal to be under the influence of several specified controlled substances (heroin, cocaine, PCP, methamphetamine and others). This law (11550 Health and Safety Code) empowers officers to arrest individuals anywhere when they are under the influence of the proscribed drugs. Driving is not an element of this offense.

The IACP relies upon a Technical Advisory Panel (TAP) in matters pertaining to DRE training, curricula, and certification. TAP includes representatives from the fields of prosecution, toxicology, law enforcement, and medicine.
This standard was originally recommended by a nationwide panel of toxicologists that was selected by the National Highway Traffic Safety Administration (NHTSA).

Some states and agencies have adopted more stringent requirements for recertification.