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An Examination of the Training and Reliability of the Narcotics Detection Dog

BY ROBERT C. BIRD*

INTRODUCTION

During the past twenty years, the United States has been fighting one of the most difficult wars in its history: the war on drugs.¹ The narcotics detection dog has been a stalwart ally in that conflict, detecting illegal narcotics on countless occasions.² Canine

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¹ See, e.g., *Harmelin v Michigan*, 501 U.S. 957, 1002 (1991) (Kennedy, J., concurring) ("Possession, use, and distribution of illegal drugs represents 'one of the greatest problems affecting the health and welfare of our population.'" (quoting *Treasury Employees v. Von Raab*, 489 U.S. 656, 668 (1989))); *Florida v Royer*, 460 U.S. 491, 508 (1983) (Powell, J., concurring) ("[T]he public has a compelling interest in identifying by all lawful means those who traffic in illicit drugs for personal profit."); *id.* at 512 (Brennan, J., concurring) ("[T]he traffic in illicit drugs is a matter of pressing national concern. "); *United States v Mendenhall*, 446 U.S. 544, 561-62 (1980) ("Few problems afflicting the health and welfare of our population, particularly our young, cause greater concern than the escalating use of controlled substances.").

² E.g., *United States v Diaz*, 25 F.3d 392, 395 (6th Cir. 1994) (dog completed 1500 sniffs). For example, one canine, "Max 25," a 1982 valedictorian of the Maryland Police Department's canine narcotics detection school, has withstood repeated judicial scrutiny. See *United States v. Colyer*, 878 F.2d 469, 472 (D.C. Cir. 1989); *United States v. Tartaglia*, 864 F.2d 837, 840 (D.C. Cir. 1989); *United States v Rush*, 673 F Supp. 1097, 1098-99 (D.D.C. 1987); *United*

alerts³ have proved highly effective, with many dogs maintaining a near perfect record of narcotics detection.⁴

Nevertheless, the use of such dogs has sparked controversy. For example, state legislatures debate whether a canine sniff should constitute a search under the Fourth Amendment.⁵ Some courts criticize the sufficiency of canine sniffs in light of studies revealing that most U.S. currency is tainted with trace amounts of cocaine.⁶ Other courts examine the effects of a false alert.⁷ Still others address the cultural myth of a canine as an infallible detector, and claim this myth has significant effects on juries and the judiciary.⁸

States v Carrasquillo, 670 F Supp. 49, 50 (D.D.C. 1987), *aff'd*, 877 F.2d 73 (D.C. Cir. 1989); United States v. Liberto, 660 F Supp. 889, 889-90 (D.D.C. 1987), *aff'd*, 838 F.2d 571 (D.C. Cir. 1988); United States v Watson, 551 F Supp. 1123, 1125 (D.D.C. 1982).

Narcotics detection dogs monitoring America's borders helped catch over 6,000 smugglers in 1995 alone. *Dateline: A Bite Out of Crime* (NBC television broadcast, Mar. 15, 1996).

³ An alert is an indication from a trained dog that the odor of an illegal drug is present.

⁴ *E.g.*, United States v Gonzalez-Acosta, 989 F.2d 384, 388 (10th Cir. 1993) (handler testified that dog never falsely alerted during three years of service); United States v Trayer, 898 F.2d 805, 808 (D.C. Cir.) (dog correctly detected drugs on 58 of 60 attempts), *cert. denied*, 498 U.S. 839 (1990).

⁵ See Hope Walker Hall, Comment, *Sniffing Out the Fourth Amendment: United States v Place — Dog Sniffs — Ten Years Later*, 46 ME. L. REV. 151, 179-85 (1994); Barbara Tarlow, Note, *Dog Sniff Searches and United States v Thomas: The Second Circuit Takes a Needed Bite Out of Place*, 19 LOY. L.A. L. REV. 1097, 1099-1100 & n.18 (1986).

⁶ United States v Saccoccia, 58 F.3d 754, 776-78 (1st Cir. 1995) (collecting cases), *cert. denied*, 116 S. Ct. 1322 (1996); United States v Carr, 25 F.3d 1194, 1214-18 & n.6 (3d Cir. 1994) (Becker, J., concurring in part and dissenting in part) (collecting cases and newspaper articles), *cert. denied*, 115 S. Ct. 742 (1995).

⁷ See, *e.g.*, Merrett v. Moore, 58 F.3d 1547 (11th Cir. 1995) (canine sniffs during highway roadblock delay motorists for up to 45 minutes), *cert. denied*, 117 S. Ct. 58 (1996); Doe v Renfrow, 475 F Supp. 1012 (N.D. Ind. 1979) (canine sniff of high school results in erroneous body search of 13 year old girl), *aff'd in part and remanded in part*, 631 F.2d 91 (7th Cir. 1980), *cert. denied*, 451 U.S. 1022 (1981); Hall, *supra* note 5, at 180.

⁸ People v Acri, 662 N.E.2d 115, 117 (Ill. App. Ct. 1996) (quoting People v Cruz, 643 N.E.2d 636, 662 (Ill. 1994)) (noting that dog sniff evidence is often viewed with "superstitious awe"); Andrew E. Taslitz, *Does the Cold Nose Know?*

However, judges and commentators omit an important discussion. Few address in any detail the training and reliability required to initially serve as a drug detection dog.⁹ Most evaluations are cursory at best.¹⁰ When courts do look more closely, they overemphasize some factors and neglect others.¹¹ As a result, courts approve inferior dogs,¹² and their erroneous alerts may result in unnecessary invasions of privacy.¹³

This Article examines the training and reliability of the narcotics detection dog. Part I reviews the science behind a dog's sense of smell,¹⁴ describes practices and procedures used to train a detection dog,¹⁵ and reviews the state of the law concerning canine reliability.¹⁶ This Part will show that although a dog's nose is uniquely suited to the narcotics detection task, and proper training can produce highly effective canines, settled judicial standards concerning canine reliability are absent.

Part II answers four important questions regarding the reliability of a narcotics detection dog. First, how much training is required to produce

The Unscientific Myth of the Dog Scent Lineup, 42 HASTINGS L.J. 15, 20-42 (1990). See generally *Real Stories of the Highway Patrol* (UPN television broadcast, Aug. 9, 1995) (highlighting successful police dog); *Cops* (Fox television broadcast, July 12, 1995) (similar).

⁹ If a canine cannot show sufficient reliability to detect drugs, then the dog's alert has questionable probative value regardless of legal context. *United States v. \$80,760.00*, 781 F. Supp. 462, 478 (N.D. Tex. 1991), *aff'd without published opinion*, 978 F.2d 709 (5th Cir. 1992). *But cf.* *United States v. Williams*, 726 F.2d 661, 663-64 (10th Cir.) (concluding that alert was valid despite anomalous behavior by narcotics detection dog), *cert. denied*, 467 U.S. 1245 (1984).

¹⁰ See *infra* notes 98-101 and accompanying text.

¹¹ See *infra* notes 102-07 and accompanying text.

¹² *United States v. Cantrall*, 762 F. Supp. 875, 882 (D. Kan. 1991) (approving dog with questionable reliability). The court in *Cantrall* stated that dogs with an accuracy rate of over 50% are sufficiently reliable. *Id.*

¹³ See, e.g., *United States v. Waltzer*, 682 F.2d 370 (2d Cir. 1982), *cert. denied*, 463 U.S. 1210 (1983). In *Waltzer*, one member of the panel praised the dog's reliability in detecting narcotics, calling the dog, "the able, canny canine Kane, with the perfect record — all hits and no misses." *Id.* at 374 (Oakes, J., concurring). Kane later broke that perfect record by erroneously alerting to narcotics in an apartment. *United States v. Young*, 745 F.2d 733, 756 (2d Cir. 1984), *cert. denied*, 470 U.S. 1084 (1985).

¹⁴ See *infra* notes 21-37 and accompanying text.

¹⁵ See *infra* notes 38-81 and accompanying text.

¹⁶ See *infra* notes 82-107 and accompanying text.

a reliable drug dog?¹⁷ Second, what skills should an effective dog handler know?¹⁸ Third, how should a canine's accuracy rate be scrutinized?¹⁹ Fourth, under what conditions are dog sniffs most effective?²⁰ This Part addresses recommendations from practitioners in the canine narcotics detection field, recommends a fundamental shift of focus in reviewing canine reliability from the dog to the handler, and uses statistical analysis to sharpen the focus of canine sufficiency review

I. BACKGROUND

A. *The Science Behind the Sniff*

A dog's nose is uniquely equipped to detect the faintest of odors. Dogs possess potentially billions of chemical receptors called olfactory cells.²¹ These receptors are located among large supports inside the dog's nose named turbinate bones.²² Turbinate bones form numerous cylindrical passages that allow air exposure to millions more cells than is possible with simple tubular nasal passages, such as those found in human beings.²³ Laid out, the surface area of these cells would cover a space the area of the skin on the dog's body²⁴ In comparison, the surface area of human olfactory cells would cover no more than a postage stamp.²⁵

The effect of the dog's olfactory cells is not entirely clear. Some experts claim the result is an enhanced ability to detect minute levels of odorous material.²⁶ Others assert that a canine's strength lies in its

¹⁷ See *infra* notes 108-21 and accompanying text.

¹⁸ See *infra* notes 122-39 and accompanying text.

¹⁹ See *infra* notes 140-47 and accompanying text.

²⁰ See *infra* notes 148-76 and accompanying text.

²¹ TRYGG ENGEN, ODOR SENSATION AND MEMORY 116 (1991); Taslitz, *supra* note 8, at 43. For example, a typical German Shepherd possesses 225 million receptor cells. Bill Syrotuk [note different spelling *infra* note 24 — editor], *Trainers Resource Center — K9 Olfactory System — Theory of Scent* (visited Sept. 26, 1996) <<http://www.best.com/~police k9/theory.htm>>

²² Taslitz, *supra* note 8, at 43.

²³ *Id.*

²⁴ *Id.* (citing WILLIAM SYROTUCK, SCENT AND THE SCENTING DOG 13 (1972)).

²⁵ *Id.*

²⁶ *Id.*

ability to discriminate among odors.²⁷ Scientists supporting the discrimination theory believe that each olfactory receptor responds to a different odor;²⁸ the more receptors, the greater the power to distinguish between scents. The answer most likely lies somewhere between the two opposing theories.²⁹

Dogs learn to detect scents in varied manners. Dogs that are most useful in detecting narcotics are often called "single element point source" dogs.³⁰ Point source dogs, including narcotics detection dogs, follow increasing levels of a given scent until they reach the ultimate source of the odor.³¹ Point source dogs can be trained for "detection" or "discrimination."³² Detection dogs react to a particular substance's presence but do not distinguish between similar substances.³³ Discrimination dogs are trained to distinguish similar scents.³⁴

Little doubt exists that dogs have the ability to detect the smallest traces of odors and to perceive these scents much better than human beings.³⁵ In fact, the ability of dogs to detect the faintest of scents has been relied upon for hundreds of years.³⁶ The application of canines to

²⁷ *Id.*

²⁸ *Id.*

²⁹ *Id.* at 43-44.

³⁰ *Id.* at 50 n.230.

³¹ *Id.*

³² *Id.* at 49 (citing SYROTUCK, *supra* note 24, at 79-81).

³³ *Id.* (citing SYROTUCK, *supra* note 24, at 80-82).

³⁴ *Id.* (citing SYROTUCK, *supra* note 24, at 80-82). Narcotics detection dogs are typically trained for detection, not discrimination, so the dogs will detect not just one but all illegal narcotics. *Id.* at 50.

³⁵ *Id.*, *Doe v. Renfrow*, 475 F. Supp. 1012, 1025 (N.D. Ind. 1979) (citing *United States v. Thomas*, 1 M.J. 397, 401 (C.M.A. 1976)), *aff'd in part and remanded in part*, 631 F.2d 91 (7th Cir. 1980), *cert. denied*, 451 U.S. 1022 (1981). For a useful scientific study on canine olfactory sensitivity, see generally E.H. Ashton & J.T. Eayrs, *Detection of Hidden Objects by Dogs*, in TASTE AND SMELL IN VERTEBRATES: A CIBA FOUNDATION SYMPOSIUM 251 (G.E.B. Wolstenholme et al. eds., 1970).

³⁶ *Blair v. Commonwealth*, 204 S.W. 67 (Ky. 1918). The *Blair* court noted that bloodhound evidence "was looked upon with favor as early as the twelfth century" and quoted a declaration of Richard I of England: "Dress yonder Marquis [who had stolen the banner of England] in what peacock robes you will, disguise his appearance, alter his complexion with drugs and washes, hide himself amidst a hundred men; I will yet pawn my scepter that the hound detects him." *Id.* at 68 (quoting SIR WALTER SCOTT, *THE TALISMAN* 289 (New York, A.L. Burg, 1894)). In fact, tales of a dog's superior olfactory skills have been

drug detection utilizes the unique olfactory talents of dogs for a task that would be much more difficult without their assistance.³⁷

B. Practices and Procedures of Law Enforcement Agencies in Training Narcotics Detection Dogs

Both state and federal law enforcement agencies possess elaborate procedures for the training, certification, and management of drug detection dogs. This Part first examines techniques used by the Rhode Island State Police,³⁸ then turns to a brief discussion of the United States Customs Service ("Customs Service").³⁹ Both agencies' guidelines

recorded as far back as 300 B.C. An ancient historian described the tale:

A certain slave for some unknown reason had been done to death by two men, when they met him on a lonely road. His dog, who was with him, and the sole witness, remained by the body. The king passed that way on a royal progress, and, observing the animal by the side of the corpse, bade his charioteers halt. "Bury the body," he commanded, "and bring the dog to me."

Some time elapsed: The dog remained with his new master, and accompanied him when he went to a review of his troops. As two of the soldiers marched smartly past, the animal flew at them with such fury that he all but tore them to pieces. No further evidence was needed, for, in order to escape from the dog, the criminals confessed their guilt.

ALBERT ORBAAN, *DOGS AGAINST CRIME* 40-41 (1968).

³⁷ See *United States v Hernandez*, 473 U.S. 531, 538 (1985) (highlighting the "national crisis in law enforcement caused by smuggling of illicit narcotics."); *Florida v Royer*, 460 U.S. 491, 513 (1983) (Blackmun, J., dissenting) (noting that detection of drug trafficking is hindered by "extraordinary obstacles."); *United States v Mendenhall*, 446 U.S. 544, 561-62 (1980) ("Much of the drug traffic is highly organized and conducted by sophisticated criminal syndicates. The profits are enormous. And many drugs may be easily concealed. As a result, the obstacles to detection of illegal [drug trafficking] may be unmatched in any other area of law enforcement.").

³⁸ Interview with Sgt. Dennis L. Trombley, Member of the Rhode Island State Police K-9 Unit, in North Kingstown, R.I. (July 12, 1995). Sergeant Trombley has been a member of the Rhode Island State Police for over 20 years, and has extensive credentials in narcotics canine detection. Letter from Dennis L. Trombley, Member of the Rhode Island State Police K-9 Unit, to author (July 12, 1995) (on file with the author).

³⁹ Telephone Interview with Don Blair, Instructor, United States Customs Service (July 27, 1995); Telephone Interview with Bob Gruetter, Program Officer of the Office of K-9 Units, United States Customs Service (July 6, 1995).

exemplify common practices used by law enforcement organizations on the state and federal levels.⁴⁰ If properly implemented, the procedures usually produce drug detection dogs of a very reliable caliber.

Developing a skilled narcotics detection canine begins with finding the right dog.⁴¹ Canine candidates are usually obtained from the local dog pound or animal shelter.⁴² Dogs that show initial promise are admitted into the program.⁴³

Training a dog is a relatively simple task. Trainers play with the dog using a towel, which the dog associates as its toy⁴⁴ Trainers then wrap

⁴⁰ See *The K9 Home Page* (visited Sept. 26, 1996) <<http://www.best.com/~policek9/k9home.htm>> (detailing various law enforcement procedures).

⁴¹ Smaller dogs generally have better olfactory abilities than larger dogs. Sandra Guerra, *Domestic Drug Interdiction Operations: Finding the Balance*, 82 J. CRIM. L. & CRIMINOLOGY 1109, 1154 (1992). However, law enforcement agents generally use larger breeds because of their ability to traverse obstacles. Interview with Dennis L. Trombley, *supra* note 38.

Cannines are not the only animal suitable for the drug detection task. Some law enforcement agencies have begun to use Vietnamese Potbellied Pigs to detect narcotics. Sniffer pigs have been widely used by German Police and Customs, and are beginning to gain acceptance in America. Martin Newland, *Pigs on the Scent of Drugs*, THE DAILY TELEGRAPH, June 7, 1991, at 2.

Narcotics detection pigs may even challenge their canine counterparts. Porcine handlers report that pigs are "better at sniffing out drugs than any dog they have ever found." Vice President Al Gore, Remarks at the National Policy Institute Conference (Jan. 26, 1996) (transcript on file with the author). Narcotics detection pigs considerably outperform their canine counterparts in training. *Peterborough: Pig Spy*, THE DAILY TELEGRAPH, Oct. 9, 1992, at 21. Further, their olfactory system is more sensitive than a dog's, and pigs are far more intelligent than their canine counterparts. *Weekend Edition — Saturday: Pig in Hog Heaven, He is Now Officially a Dog* (NPR radio broadcast, Dec. 17, 1994). Unlike the dog, a pig's searching mechanism is a natural extension of its innate tendency to sniff out tree roots for food. *Id.*, *The Osgood File: Narcotics Officer Was Training Pig to Sniff Out Drugs* (CBS radio network broadcast, Jan. 31, 1995). See generally DAVID G. MYERS, *PSYCHOLOGY* 249 (2d ed. 1989) ("Animals can most easily learn and retain behaviors that draw on their biological predispositions."). If the trend continues, sniffer pigs may supplement or even replace dogs in the narcotics detection task.

⁴² Interview with Dennis L. Trombley, *supra* note 38.

⁴³ *Id.*, Robert Eden, *Trainers Resource Center — Puppy Selection* (visited Sept. 26, 1996) <<http://www.best.com/~policek9/raiseup.htm>> (describing canine selection procedures).

⁴⁴ Eden, *supra* note 43; *Dateline*, *supra* note 2.

a narcotic in the same towel and play fetch.⁴⁵ As the dog repeatedly retrieves its toy, it associates the towel with the drug scent.⁴⁶ Trainers then hide the drug without the toy.⁴⁷ The dog searches for the drug, thinking it will find its plaything.⁴⁸ When the dog finds the drug, the trainer gives the dog the toy, further associating the toy with the scent.⁴⁹ After one drug is learned, trainers repeat the steps with other narcotics, and reinforce identification of drugs already mastered.⁵⁰ By the end of the course, dogs learn how to detect most common illegal narcotics.⁵¹

Canine training is a relatively simple task, lasting only two to six weeks.⁵² Training a human handler, however, requires more time and effort. A dog and handler will train together for ten to sixteen weeks.⁵³ The handler needs the extra time to learn how her dog responds to the targeted narcotics.⁵⁴ Handler and dog are placed together at the beginning of the program, and work with one another throughout their years of service.⁵⁵

⁴⁵ Interview with Dennis L. Trombley, *supra* note 38. The narcotics are tightly bound so that the dog does not accidentally ingest the drugs, which could be fatal in sufficient quantities. *Id.*

⁴⁶ *Id.*

⁴⁷ *Id.*

⁴⁸ *Id.*

⁴⁹ *Id.*

⁵⁰ *Id.*

⁵¹ *Id.* Trainers avoid teaching detection of LSD and "designer drugs" because these substances are so easily absorbed into the bloodstream during a search that a dog could ingest a fatal dose. *Id.*

⁵² *Id.*, Interview with Mike Strickland, Investigator, Tallahassee, Florida, Vice and Narcotics Division (Aug. 30, 1995) (stating that training lasts four to six weeks).

⁵³ Interview with Dennis L. Trombley, *supra* note 38.

⁵⁴ *Id.*, *Point of View — Administration of the K9 Unit* (visited June 26, 1996) <<http://www.best.com/~policek9/policek9admin.htm>> ("Although a team hits the street after a 12 to 16 week training program, it often takes the dog and handler up to two years before they are fully understanding of one another's behavior patterns.").

⁵⁵ Interview with Dennis L. Trombley, *supra* note 38. In fact, narcotics detection dogs often live with their handler during non-work hours. A handler living with their detection dog at home should not treat them as ordinary pets. If pampered, the dogs will be less desirous to please their handler for rewards on the job. This desire is important, because their reward system is primarily based on praise and affection. *Id.*

During training exercises, trainers use distractions to test the dog's skill under adverse conditions.⁵⁶ Officers will conduct tests, for example, near a noisy airplane or in a fish market, where distracting sounds or scents dominate the area.⁵⁷ Dog and handler will also train in rain, snow, extreme heat, and difficult environments.⁵⁸ For example, some dogs learn to walk on moving airport conveyor belts, stepping over passing luggage while sniffing for drugs.⁵⁹ When a dog shows proficiency under a particular adverse condition, it is recorded and placed in the dog's record.⁶⁰ Reports of the dog's performance under adverse conditions, as well as records of the canine generally, go into some detail.⁶¹ Officers record the weather conditions, wind direction, distractions, suspects' behavior (if applicable), and a detailed description of the location of the sniff.⁶²

After a dog and handler team complete their training, they must pass periodic recertification exercises.⁶³ These exercises require the team to detect narcotics under difficult and varying conditions.⁶⁴ The team cannot miss more than one narcotic in all phases of testing.⁶⁵ State police dogs are required to meet state standards, but often certify under

⁵⁶ *Id.*

⁵⁷ *Id.*

⁵⁸ *Id.* For example, training occurs in a tractor trailer truck where dog and handler have piles of unstable boxes to surmount while searching for hidden drugs. *Id.*

⁵⁹ *Id.*

⁶⁰ *Id.*

⁶¹ *Id.* Defendants often request numerous canine records to examine the reliability of the canine involved in their cases:

[T]he defendant seeks to discover: (1) all training, testing or certification documents for [the dog] "Trooper," (2) all records showing "Trooper's" performance including incidents of false-positive alerts and accurate-positive alerts and the number of each; (3) all medical or veterinary records of "Trooper;" (4) all weekly maintenance and/or structured maintenance training records for "Trooper;" and (5) all records and documentation of all field activities of "Trooper" including every instance where "Trooper" has alerted and whether the alert was accurate positive or false positive.

United States v Wood, 915 F Supp. 1126, 1133 (D. Kan. 1996).

⁶² Interview with Dennis L. Trombley, *supra* note 38.

⁶³ *Id.*, Telephone Interview with Mike Strickland, *supra* note 52.

⁶⁴ Interview with Dennis L. Trombley, *supra* note 38.

⁶⁵ *Id.*

more rigorous regional and national requirements.⁶⁶ Dogs normally work for eight to nine years and then are retired to their handlers, who keep them as pets.⁶⁷

Trainers at the Customs Service follow a similar training program for their narcotics canines.⁶⁸ The Customs Service puts its dog and handler teams through a rigorous twelve-week training course, where only half of the canines complete the training.⁶⁹ Custom Service dogs are trained to disregard potential distractions such as food,⁷⁰ harmless drugs,⁷¹ and residual scents.⁷² Agents present distractions during training, and reward the dogs when those diversions are ignored.⁷³ The teams must complete a certification exam in which the dog and handler must detect marijuana, hashish, heroin, and cocaine in a variety of environments.⁷⁴ This exam and the following annual recertifications must be completed perfectly, with no false alerts and no missed drugs.⁷⁵ If a dog and handler team erroneously alerts, the team must undergo remedial training.⁷⁶ If the

⁶⁶ *Id.* For example, the State of Connecticut trains its teams according to standards set by the New England Police Administrators Conference ("NESPAC"). Cathy Silas, *Dog Sniffs: How Relevant and Reliable Are They?*, 6-7 (Fall 1994) (unpublished manuscript, on file with the author). NESPAC requires all dogs to be trained to detect marijuana, hashish, and cocaine. *Id.* at 7. Dogs must successfully alert under varying conditions such as within a vehicle, at an airport, or inside a building. *Id.* Certification procedures require that the dog and handler teams cannot miss more than one concealed drug during all phases of testing. *Id.* at 11. The State of Rhode Island also follows NESPAC standards. Interview with Dennis L. Trombley, *supra* note 38.

⁶⁷ Telephone Interview with Dennis L. Trombley, *supra* note 38; *Point of View — Administration of the K9 Unit*, *supra* note 54 ("The most productive team is a team that is matched for the working life of the dog.").

⁶⁸ Telephone Interview with Bob Gruetter, *supra* note 39.

⁶⁹ *Id.*

⁷⁰ *Id.*, see also Judith Dennison Wolferts, Note, In Re One Hundred Two Thousand Dollars: *Cash-Friendly Civil Forfeiture*, 1993 UTAH L. REV. 971, 976-77 (arguing that foods may cause erroneous alerts).

⁷¹ Telephone Interview with Bob Gruetter, *supra* note 39; see also *Jennings v. Joshua Indep. Sch. District*, 877 F.2d 313, 317 (5th Cir. 1989) (describing dog capable of detecting nonprescription drug scents lingering for up to four to six weeks), *cert. denied*, 496 U.S. 935 (1990).

⁷² Telephone Interview with Bob Gruetter, *supra* note 39

⁷³ *Id.*

⁷⁴ *Id.*

⁷⁵ *Id.*

⁷⁶ *Id.*

team fails again, the team is disbanded, and the dog is permanently relieved from duty.⁷⁷

Like the Rhode Island State Police, Custom Service agents retain a history of a dog's searches, but only for thirty to sixty days.⁷⁸ These records are then discarded because a dog's ability can change over a short period of time, thus old records become less probative of skill.⁷⁹ Their dogs also serve a tenure of eight to nine years, then retire to a life of leisure with their handlers.⁸⁰

The Rhode Island State Police and the United States Customs Service serve as effective examples of narcotics dog training and certification. Dogs that complete Rhode Island's training show a typical competency rate of ninety-five to ninety-eight percent, while the Customs Service demands no less than a perfect record, or the team is disbanded.⁸¹ Since their training procedures produce such highly effective dogs, both organizations should serve as a model for the evaluation of canine reliability.

C. *Review of Canine Reliability Jurisprudence*

The United States Supreme Court has placed great trust in the alert of a narcotics detection dog. In *United States v. Chadwick*⁸² a narcotics detection dog alerted to the presence of drugs in a footlocker.⁸³ Law enforcement agents opened the locker without a warrant and discovered marijuana.⁸⁴ Although the Court held the search unlawful, the Court stated it would have approved the issuance of a warrant based solely on the dog's alert.⁸⁵

The Court's trust in canines developed further in *Florida v. Royer*⁸⁶ In *Royer*, agents believed that defendant Royer's behavior matched characteristics found in the "drug courier profile."⁸⁷ Royer was ques-

⁷⁷ *Id.*

⁷⁸ *Id.*

⁷⁹ *Id.*

⁸⁰ *Id.*

⁸¹ Interview with Dennis L. Trombley, *supra* note 38; *see also* Telephone Interview with Mike Strickland, *supra* note 52 (reporting success rate of 96%).

⁸² *United States v. Chadwick*, 433 U.S. 1 (1977).

⁸³ *Id.* at 4.

⁸⁴ *Id.* at 4-5.

⁸⁵ *See id.* at 15.

⁸⁶ *Florida v. Royer*, 460 U.S. 491 (1983).

⁸⁷ *Id.* at 493. A "drug courier profile" is a series of characteristics

tioned and detained in an airport terminal, where he consented to a search of his baggage.⁸⁸ The Court held that police lacked probable cause to search his luggage.⁸⁹ The Court stated that more expeditious means existed, such as the use of trained dogs, to investigate the contents of Royer's bags.⁹⁰ In doing so, the Court summarized: "[C]ourts are not strangers to the use of trained dogs to detect the presence of controlled substances in luggage. A negative result would have freed Royer in short order; a positive result would have resulted in his justifiable arrest on probable cause."⁹¹

Approval of canine sniffs by the Supreme Court came to full fruition in *United States v. Place*.⁹² In *Place*, agents detained a suspicious-looking traveler at an airport and held his luggage for ninety minutes while police conducted a successful dog sniff.⁹³ While the Court

commonly exhibited by narcotics traffickers. Law enforcement agents often use these characteristics to justify brief investigatory stops. The complete list of characteristics currently employed is as follows:

The seven primary characteristics are: (1) arrival from or departure to an identified source city; (2) carrying little or no luggage, or large quantities of empty suitcases; (3) unusual itinerary, such as rapid turnaround time for a lengthy airplane trip; (4) use of an alias; (5) carrying unusually large amounts of currency in the many thousands of dollars, usually on their person, in briefcases or bags; (6) purchasing airline tickets with a large amount of small denomination currency; and (7) unusual nervousness beyond that ordinarily exhibited by passengers.

The secondary characteristics are (1) the almost exclusive use of public transportation, particularly taxicabs, in departing from the airport; (2) immediately making a telephone call after deplaning; (3) leaving a false or fictitious call-back telephone number with the airline being utilized; and (4) excessively frequent travel to source or distribution cities.

United States v. \$80,760.00, 781 F. Supp. 462, 475 n.30 (N.D. Tex. 1991), *aff'd*, 978 F.2d 709 (5th Cir. 1992); *see also* Brian A. Wilson, Note, *The War on Drugs: Evening the Odds Through Use of the Drug Courier Profile*, 6 B.U. PUB. INT. L.J. (forthcoming 1997) (defending drug courier profile in the airport context).

⁸⁸ *Royer*, 460 U.S. at 494.

⁸⁹ *Id.* at 507.

⁹⁰ *Id.* at 505.

⁹¹ *Id.* at 505-06.

⁹² *United States v. Place*, 462 U.S. 696 (1983).

⁹³ *Id.* at 696-99.

reversed his conviction because the ninety-minute stop exceeded constitutional bounds of detention,⁹⁴ the Court concluded:

[T]he canine sniff is *sui generis*. We are aware of no other investigative procedure that is so limited both in the manner in which the information is obtained and in the content of the information revealed by the procedure. Therefore, we conclude that exposure of respondent's luggage, which was located in a public place, to a trained canine — did not constitute a "search" within the meaning of the Fourth Amendment.⁹⁵

Although the specific comments vary, in all three decisions the Court recognized that a canine sniff by a trained narcotics detection dog is a highly reliable form of detection. However, many questions regarding dog sniffs remain. The Court has not yet addressed the specific qualifications that a "trained canine" possesses. Also, the Court has never questioned the accuracy record of a particular canine in practice. As a result, lower courts have attempted to fill the gap and determine when a canine alert may be accepted as reliable.

Some lower courts see little need to discuss a particular drug dog's reliability at all. For example, the court in *United States v. Dillon*⁹⁶ concluded that "the canine sniffing technique 'is now sufficiently well-established to make a formal recitation of a police dog's *curriculum vitae* unnecessary in the context of ordinary warrant applications.'"⁹⁷

⁹⁴ *Id.* at 709-10; see *Terry v. Ohio*, 392 U.S. 1, 30 (1968) (allowing police to stop a person and ask questions in furtherance of an investigation upon a reasonable suspicion that the person is engaged in criminal activity and to frisk outer clothing upon a reasonable suspicion that the person may pose an immediate danger to police or others).

⁹⁵ *Place*, 462 U.S. at 707. Since the statement was not necessary to the decision in *Place*, commentators have criticized it as *dicta*. See Hall, *supra* note 5, at 151-52. However, the Court later characterized its statements in *Place* as a holding, stating that, "the [*Place*] Court held that subjecting luggage to a 'sniff test' by a trained narcotics detection dog was not a 'search' within the meaning of the Fourth Amendment." *United States v. Jacobsen*, 466 U.S. 109, 123 (1984). See generally Wolferts, *supra* note 70, at 978.

⁹⁶ *United States v. Dillon*, 810 F. Supp. 57 (W.D.N.Y. 1992).

⁹⁷ *Id.* at 61 (quoting *United States v. Watson*, 551 F. Supp. 1123, 1127 (D.D.C. 1982)); see *United States v. Huggins*, 733 F. Supp. 445, 448 (D.D.C. 1990); *State v. Gross*, 789 P.2d 317, 319 (Wash. Ct. App.), *review denied*, 797 P.2d 513 (Wash. 1990). This statement and others like it misconstrue the analysis

Other decisions also accept the reliability of a trained canine without further analysis. In *United States v. Knox*,⁹⁸ the defendants were convicted on drug related charges.⁹⁹ Notwithstanding the defendants' suspicious behavior, the *Knox* court held that the "positive reaction of the Narcotics Unit Dog alone would have established probable cause not only to search defendants' luggage, but to arrest them immediately"¹⁰⁰ Other decisions agree that a narcotics dog alert alone, without examining reliability, grants probable cause for searches and seizures.¹⁰¹

However, a growing number of judges are affirming canine alerts only upon some finding of the particular dog's reliability¹⁰² Some

involved in assessing canine reliability. The purpose of examining a dog's "curriculum vitae" is not to evaluate the practice of narcotics dog training. Courts following *Dillon* are certainly correct in stating that using dogs to sniff for narcotics is a well-established technique. Rather, canine reliability review assesses the ability of an individual dog and handler team to apply its training and accurately perform narcotics detection, and does not question the technique as a whole.

⁹⁸ *United States v. Knox*, 839 F.2d 285 (6th Cir. 1988), *cert. denied*, 490 U.S. 1019 (1989).

⁹⁹ *Id.* at 287

¹⁰⁰ *Id.* at 294 n.4.

¹⁰¹ *United States v. Levine*, 80 F.3d 129, 133 (5th Cir.), *cert. denied*, 117 S. Ct. 83 (1996); *United States v. Williams*, 69 F.3d 27, 28 (5th Cir. 1995) (citing controlling Fifth Circuit precedent recognizing that a dog alert constitutes probable cause), *cert. denied*, 116 S. Ct. 1284 (1996); *United States v. Glover*, 957 F.2d 1004, 1013 (2d Cir. 1992) (stating that an alert by a drug detection dog constituted probable cause for a search warrant); *United States v. Morales-Zamora*, 914 F.2d 200, 205 (10th Cir. 1990) ("We need not reach the issue of consent because probable cause to search was supplied when the dog alerted to the vehicles."); *United States v. Dovali-Avila*, 895 F.2d 206, 207 (5th Cir. 1990) (holding that a dog sniff is not a search at a border checkpoint).

For an analogous view, see *United States v. Thomas*, 50 C.M.R. 114 (N.C.M.R. 1975), in which the court held:

[W]e do not find good reason to encumber the military justice system with a rule requiring a lengthy recitation of a marijuana detection dog's pedigree, its training and presumably its grades in school, and its complete record from school to the current instance, to be furnished a commander each time before he can legally order a search based on the dog's alert. We find that the use of a dog trained by military standards and used by a military police organization is adequate foundation for the commander's authorization to search.

Id. at 117

¹⁰² See, e.g., *United States v. \$80,760.00*, 781 F. Supp. 462, 478 (N.D. Tex.

courts have been unwilling to affirm reliability without appropriate supporting evidence such as training or background.¹⁰³ Other decisions advocate the need for testimony from individuals familiar with the dog.¹⁰⁴ Some look to the dog's performance in practice, and observe that a dog alert may not provide probable cause if that dog has a poor accuracy record.¹⁰⁵ Commentators have provided additional detail, and generally have agreed with these conclusions.¹⁰⁶

1991) (acknowledging that “[r]eliability problems arise when the dog receives poor training, has an inconsistent record, searches for narcotics in conditions without reliability controls, or receives cues from its handler”), *aff'd*, 978 F.2d 709 (5th Cir. 1992).

¹⁰³ See, e.g., *United States v. Fernandez*, 772 F.2d 495, 497-98 & n.2 (9th Cir. 1985) (noting in dicta that since no evidence existed of dog's reliability, the court was unable to determine whether probable cause was established); *Horton v. Goose Creek Indep. Sch. District*, 690 F.2d 470, 488 (5th Cir. 1982) (remanding to evaluate dog's reliability), *cert. demed*, 463 U.S. 1207 (1983); *United States v. Colon*, 845 F. Supp. 923, 928 (D.P.R. 1994) (lack of evidence in the record concerning narcotics dog reliability precludes probable cause determination); *State v. Barker*, 850 P.2d 885, 893-94 (Kan. 1993) (remanding to obtain testimony “from the handler of the dog as to the training, background, characteristics, capabilities, and behavior of the dog”).

¹⁰⁴ See, e.g., *United States v. \$67,220*, 957 F.2d 280, 285 (6th Cir. 1992) (evaluating dog alert evidence as “weak” because “the government did not obtain testimony from the dog's handler or anyone familiar with the performance or reliability of the dog”).

¹⁰⁵ See, e.g., *United States v. Ludwig*, 10 F.3d 1523, 1528 (10th Cir. 1993); *United States v. Wood*, 915 F. Supp. 1126, 1136 (D. Kan. 1996).

¹⁰⁶ 1 WAYNE R. LAFAVE, *SEARCH AND SEIZURE: A TREATISE ON THE FOURTH AMENDMENT* § 2.2(f), at 366-67 (2d ed. 1987) (“In light of the careful training which [narcotics] dogs receive, an ‘alert’ by a dog is deemed to constitute probable cause for an arrest or search if sufficient showing is made as to the reliability of the particular dog used in detecting the presence of a particular type of contraband.”). LaFave has also stated:

Various methods of providing an index of the dog's reliability and credibility narrow down to some basic elements. The magistrate should be advised of the following: the exact training the detector dog has received; the standards or criteria employed in selecting dogs for [drug] detection training; the standards the dog was required to meet to successfully complete his training program; the “track record” of the dog up until the search (emphasis must be placed on the amount of false negatives or mistakes the dog has furnished). Only after this information has been furnished is a magistrate justified in issuing a warrant.

Id. at 367 n.200.

Lower courts have increasingly required a more detailed inquiry of canine reliability. However, the judiciary has not clearly addressed the quality or quantity of information needed to establish a credible canine unit.¹⁰⁷ The following Part addresses the major factors influencing canine proficiency and offers guidelines to establish minimum standards of training and reliability.

II. SIGNIFICANT FACTORS AFFECTING CANINE RELIABILITY

Courts have paid some attention to canine reliability, but have not given the issue a sufficiently rigorous review. Judges have looked to various types of information in assessing canine reliability.¹⁰⁸ However, few decisions examine canine sniffs by taking all relevant factors into account. The recommendations below provide reviewable guidelines, dispel myths about drug detection, and reveal important insights into the nature of the canine sniff.

A. *Dog Training: How Much Is Required to Produce a Reliable Drug Dog?*

Proper training is essential for a functioning narcotics detection dog. An untrained dog, with all of its olfactory powers, cannot discover hidden drugs.¹⁰⁹ Dog training falls into two categories: initial training to certify the dog for narcotics detection and practice after certification to maintain its skills.

A significant amount of training is required to initially certify a drug detection dog.¹¹⁰ For example, the United States Customs Service requires that the dog pass a series of exercises before graduation by correctly detecting all hidden narcotics.¹¹¹ Other certification programs

¹⁰⁷ See *United States v. Diaz*, 25 F.3d 392, 394 (6th Cir. 1994) (acknowledging the problem of the necessary quantum of evidence of credibility); *United States v. Florez*, 871 F. Supp. 1411, 1418 (D.N.M. 1994) (citing *Diaz* and further elaborating on the problem).

¹⁰⁸ See *supra* notes 96-107 and accompanying text.

¹⁰⁹ *But cf.* *United States v. McCranie*, 703 F.2d 1213, 1218-20 & n.4 (10th Cir.) (alert by explosives sniffing dog not formally trained in narcotics created responsible suspicion of contraband), *cert. denied*, 464 U.S. 992 (1983).

¹¹⁰ See *supra* notes 38-81 and accompanying text.

¹¹¹ Telephone Interview with Bob Gruetter, *supra* note 39; see *supra* text

exist in state and local law enforcement agencies.¹¹² Formal training manuals may detail training procedures.¹¹³ However, producing portions of the manual in court may not be possible since it would compromise investigative techniques.¹¹⁴ In the absence of a formal certification program, the number of training searches conducted,¹¹⁵ the time spent training the dog,¹¹⁶ and the dog's success record concerning those training searches are useful in evaluating reliability.¹¹⁷

Trained dogs practice frequently to maintain their skills. For example, the Customs Service spends four hours per week on each dog to maintain its training.¹¹⁸ Other law enforcement agencies spend a similar amount of time on skills retention.¹¹⁹ The Customs Service requires an annual recertification of its dogs, requiring them to complete a rigorous set of tests.¹²⁰

A well-trained narcotics dog is required for a reliable canine sniff. Reviewing judges should expect that a drug detection dog graduated from a formalized program. The length of these programs varies, but most programs should last at least two or three weeks. Courts should expect that a training program includes much more than drug detection. For example, dogs must learn how to function under extraordinary conditions

accompanying notes 74-77

¹¹² *E.g.*, *United States v. Trayer*, 898 F.2d 805, 807 (D.C. Cir.) (examining canine graduate of Metropolitan Police Department's K-9 Division training school), *cert. denied*, 498 U.S. 839 (1990); Telephone Interview with Sgt. David Barger, Connecticut State Police (June 27, 1995) (highlighting Connecticut state procedures); Interview with Dennis L. Trombley, *supra* note 38 (highlighting Rhode Island procedures).

¹¹³ *United States v. DiCesare*, 765 F.2d 890, 897, *amended by* 777 F.2d 543 (9th Cir. 1985); *United States v. Wood*, 915 F. Supp. 1126, 1133 (D. Kan. 1996).

¹¹⁴ *DiCesare*, 765 F.2d at 897

¹¹⁵ *E.g.*, *United States v. Lingenfelter*, 997 F.2d 632, 639 (9th Cir. 1993) (approximately 300 hours of training searches).

¹¹⁶ *E.g.*, *United States v. Delaney*, 52 F.3d 182, 188 (8th Cir.) (76 hours), *cert. denied*, 116 S. Ct. 209 (1995); *United States v. Sentovich*, 677 F.2d 834, 836 (11th Cir. 1982) (between 50 and 60 hours).

¹¹⁷ *See supra* notes 60-62 and accompanying text.

¹¹⁸ Telephone Interview with Bob Gruetter, *supra* note 39.

¹¹⁹ *See, e.g.*, *United States v. Carroll*, 710 F.2d 164, 168 (4th Cir.) (noting that dog at issue performed practice sniffs three times a week), *cert. denied*, 464 U.S. 1008 (1983).

¹²⁰ Telephone Interview with Bob Gruetter, *supra* note 39.

and disregard odorous distractions.¹²¹ Dogs should be recertified at least annually and undergo continual practice searches throughout their tenure.

B. Handler Training: What Skills Should an Effective Dog Handler Know?

Unlike dog training, which is often subject to some scrutiny, courts frequently neglect examination of the dog's handler.¹²² Performing a canine narcotics search requires much more than a person to keep the dog on the leash while it sniffs for drugs. Rather, dog and trainer work closely together as a team. The United States Air Force Court of Military Review summarizes dog and handler teamwork best:

Clearly, the dog and handler function as an integral team. The dog is the sensor, and the handler is the trainer and interpreter. The handler's performance in both roles is inseparably intertwined with the dog's overall reliability rate. And since the net result is the product of the interaction between two living beings, both roles of the handler are highly subjective.¹²³

A handler must be able to properly interpret a canine's subtle signals. In fact, almost all erroneous alerts originate not from the dog, but from the handler's misinterpretation of the dog's signals.¹²⁴ Accordingly,

¹²¹ A well-trained canine can penetrate even the most elaborate olfactory concealments used by drug traffickers. *E.g.*, *United States v. Guzman*, 75 F.3d 1090, 1092 (6th Cir.) (dog detected bundles of cocaine surrounded by axle grease and wrapped with duct tape), *cert. denied*, 117 S. Ct. 266 (1996); *United States v. Loyd*, 837 F. Supp. 922, 924 (N.D. Ill. 1993) (dog detected cocaine hidden in two suitcases containing fabric softener sheets); *cf. United States v. Bueno*, 21 F.3d 120, 123 (6th Cir. 1994) (police discovered narcotics wrapped in cellophane and placed among coffee grounds); *NBC Nightly News: Quarter Million Dollar Drug Dog Will be Trained as Four-Legged Narcotics Agent* (NBC television broadcast, Dec. 8, 1994) (police discovered cocaine surgically implanted inside a live sheepdog). Dogs have also discovered drugs that were sealed in a drink cooler and hidden in a closed refrigerator. Interview with Dennis L. Trombley, *supra* note 38.

¹²² *See, e.g.*, *United States v. Daniel*, 982 F.2d 146 (5th Cir. 1993) (reviewing reliability of dog only); *State v. Barker*, 850 P.2d 885 (Kan. 1993).

¹²³ *United States v. Paulson*, 2 M.J. 326, 330 n.5 (A.F.C.M.R. 1976), *remanded by* 7 M.J. 43 (C.M.A. 1979).

¹²⁴ Telephone Interview with Mike Strckland, *supra* note 52; Interview with

training a handler takes much longer than training a dog. Lengthy training is not uncommon.¹²⁵ For example, the Rhode Island State Police requires a ten to sixteen week training program.¹²⁶ Handlers trained for the Tallahassee, Florida, Police Department undergo programs ranging from four weeks to six months.¹²⁷

Ideally, a handler should complete a comprehensive program that educates her how to manage a particular dog and to interpret its responses. Canines often have their own particular pattern for communicating an alert.¹²⁸ If a handler is not aware of a dog's particular behavior, she may mistake an indication of narcotics for a reaction to food, another animal, or other distraction.¹²⁹ Skilled handlers also receive training for a specific type of substance¹³⁰ or environment,¹³¹ and should pass annual recertification tests.¹³² Trained handlers often train

Dennis L. Trombley, *supra* note 38.

¹²⁵ See *United States v. Delaney*, 52 F.3d 182, 188 (8th Cir.) (handler completed 76 hours of training), *cert. denied*, 116 S. Ct. 209 (1995); *United States v. Diaz*, 25 F.3d 392, 394 (6th Cir. 1994) (handler completed 8-week training school); *United States v. Lingenfelter*, 997 F.2d 632, 639 (9th Cir. 1993) (handler completed approximately 300 hours of training searches). *But cf.* *United States v. Carroll*, 710 F.2d 164, 168 (4th Cir.) (handler completed 10-day detection and tracking training course), *cert. denied*, 464 U.S. 1008 (1983).

¹²⁶ Interview with Dennis L. Trombley, *supra* note 38.

¹²⁷ Telephone Interview with Mike Strickland, *supra* note 52.

¹²⁸ *United States v. Ludwig*, 10 F.3d 1523, 1528 (10th Cir. 1993); *United States v. Paulson*, 2 M.J. 326, 330 n.5 (A.F.C.M.R. 1976), *remanded by* 7 M.J. 43 (C.M.A. 1979).

¹²⁹ *E.g.*, *Paulson*, 2 M.J. at 330 n.5; *see also* *United States v. Guzman*, 75 F.3d 1090, 1091-92 (6th Cir.) (dog handler distinguished between canine alert and mere interest in scent), *cert. denied*, 117 S. Ct. 266 (1996).

¹³⁰ *E.g.*, *United States v. Diaz*, 25 F.3d 392, 394 (6th Cir. 1994) (controlled substances).

¹³¹ *E.g.*, *Doe v. Renfrow*, 475 F. Supp. 1012, 1016 (N.D. Ind. 1979) (search coordinator possessed experience with canine searches of schools), *aff'd in part and remanded in part*, 631 F.2d 91 (7th Cir. 1980), *cert. denied*, 451 U.S. 1022 (1981).

¹³² *E.g.*, *Diaz*, 25 F.3d at 395. A decision from the United States military highlights a typical recertification procedure:

Sergeant Eckard testified that he is a "patrol dog handler" and that he was a "handler for a drug detection dog," having been certified as such in April 1974, at which time he commenced working with [his dog] Tega. He testified that he and Tega had made 1201 drug inspections as of the [trial date]. [Eckard stated:] "We have to go before the Base

and remain with one canine in practice, developing a close bond with the dog and a keen eye for interpreting that particular canine's habits.¹³³

Handlers must also know how to avoid "handler cues." Handler cues are conscious or unconscious signals given from the handler that can lead a detection dog to where the handler thinks drugs are located.¹³⁴ These voice or physical signals can compromise a dog's objectivity and impermissibly lead the dog to alert at the suspected item or person.¹³⁵ Handler cues can be corrected in training by conducting practice sniffs where both the dog and handler do not know where the drugs are located.

Inadequate handler training may inhibit the dog's ability to detect narcotics and trigger erroneous alerts. In *Doe v. Renfrow*,¹³⁶ more than a dozen dogs and their handlers conducted a widescale drug sniff of a junior and senior high school.¹³⁷ The occupations of the volunteer handlers ranged from deputy county sheriff to private citizen.¹³⁸ Al-

Commander every 90 days he hides the stuff, the Base Commander comes in and he knows where it is, then we come in (without knowing where the narcotics are hidden) and run the dog around, the Base Commander views the dog and certifies him."

United States v Grosskreutz, 5 M.J. 344, 345 n.2 (C.M.A. 1978).

¹³³ *Diaz*, 25 F.3d at 394-95. One example shows how closely an experienced trainer can learn his dog's habits. Sergeant Trombley recalled one sniff where his dog, "Elvis," sniffed intently at one piece of luggage. Interview with Dennis L. Trombley, *supra* note 38. Another agent urged him to pursue the matter further, but the sergeant refused. *Id.* Sergeant Trombley knew that Elvis enjoyed the scent of a particular brand of perfume, and that may have attracted the dog's attention. *Id.* When the agents asked the owner of the luggage if she had perfume inside, she said yes and stated the same brand earlier predicted. *Id.*

¹³⁴ United States v \$80,760.00, 781 F Supp. 462, 478 n.36 (N.D. Tex. 1991).

¹³⁵ United States v Trayer, 898 F.2d 805, 809 (D.C. Cir.) ("[W]e are mindful that less than scrupulously neutral procedures, which create at least the possibility of unconscious 'cuing', may well jeopardize the reliability of dog sniffs."), *cert. denied*, 498 U.S. 839 (1990).

¹³⁶ *Doe v Renfrow*, 475 F Supp. 1012 (N.D. Ind. 1979), *aff'd in part and remanded in part*, 631 F.2d 91 (7th Cir. 1980), *cert. denied*, 451 U.S. 1022 (1981).

¹³⁷ *Id.* at 1015-18. The problem of drugs in the school system had reached epidemic proportions. *Id.* But see *Veronica Sch. District 47J v. Acton*, 115 S. Ct. 2386, 2389 (1995) (use of drug dog failed to curb growing drug problem in school).

¹³⁸ *Renfrow*, 475 F Supp. at 1017 n.7

though not stated conclusively in the opinion, the failure to use well-trained handlers may have contributed to the dogs' low success rate.¹³⁹

The judiciary's sole focus on reliability of the dog is misplaced. Handlers interpret their dogs' signals, and the handler alone makes the final decision whether a dog has detected narcotics. Practitioners in the field reveal that handler error accounts for almost all false detections. Thus, courts must not hesitate to closely examine handlers when assessing the dog and handler team.

Reviewing judges should expect that handlers possess a core set of skills to effectively manage and interpret a narcotics detection dog. Like their dogs, handlers should have completed a formal training course and passed recertification exams throughout their tenure. Any training program should warn handlers about handler cues. Further, less handler scrutiny is necessary when a handler is paired with one dog for a long period of time. Such a pairing allows a handler to know her dog well, and thus be able to interpret her dog's subtle signals.

C. Canine Success: How Should a Canine's Accuracy Rate Be Scrutinized?

A dog's accuracy rate in detecting narcotics is one of the most easily obtained indicators of reliability. Handlers commonly record their performance,¹⁴⁰ and this data is readily presentable in a courtroom. This section examines the presentation of that data so that the presentation does not distort the dog's true competence and thus mislead a court into approving an inferior dog. Establishing a range of acceptable conduct is a relatively simple matter. Practitioners regularly report success rates well above ninety percent.¹⁴¹ Reviewing courts should expect that a typical dog and handler team can perform at a similar level.

A more difficult, but equally important, assessment lies in the presentation of the accuracy data. Common sense would seem to indicate that the more times a dog successfully alerts to cocaine, the more reliable the canine. However, clearly establishing reliability requires much more than tallying the number of successes. A more careful examination of canine accuracy data will reveal the true efficacy of a given dog and handler team.

¹³⁹ Out of 50 alerts, only 17 students possessed drugs. *Id.* at 1017

¹⁴⁰ See *supra* text accompanying notes 60-62.

¹⁴¹ See *supra* text accompanying note 81.

One common expression of canine skill involves counting the number of successes in alerting to narcotics¹⁴² or tracking people.¹⁴³ Information tallying the number of successes alone, although somewhat probative, leaves numerous questions unanswered. For example, the number of successes alone does not reveal the amount of narcotics the dog may have missed.¹⁴⁴ For example, a canine with ten successes may have falsely alerted many times that amount. Some testimony by handlers has aggregated successes of actual police work and training sessions, leaving a court to guess just how many successful "real life" searches a canine has conducted.¹⁴⁵ Also, judges must not treat all canine failures alike. A dog that falsely alerts where narcotics were once present¹⁴⁶ represents a less severe failure than a canine alert which reveals a harmless substance, or worse, no drug-related items at all.¹⁴⁷ Accordingly, courts must be cognizant of false alerts and the conditions under which they happen.

D. Sniff Environment: Under What Conditions Are Dog Sniffs Most Effective?

A proper understanding of canine percentages requires more than establishing a numerical figure. The circumstances of a normally proper sniff can adversely affect its success. This Part will examine the dog sniff from a statistical perspective¹⁴⁸ and show that dog sniffs are most

¹⁴² See, e.g., *United States v Delaney*, 52 F.3d 182, 188 (8th Cir.) (noting that the dog alerted more than 50 times in situations where narcotics were found), *cert. denied*, 116 S. Ct. 209 (1995).

¹⁴³ See, e.g., *United States v Carroll*, 710 F.2d 164, 168 (4th Cir.), *cert. denied*, 464 U.S. 1008 (1983).

¹⁴⁴ Although monitorable in training, it is difficult to be sure of the amount of drugs a dog misses in practice. Indeed, drug traffickers will not inform police when canines have not detected their narcotics.

¹⁴⁵ *Carroll*, 710 F.2d at 168.

¹⁴⁶ *United States v. Salas-Torres*, 60 F.3d 837, 1995 WL 406937 (10th Cir. 1995) (unpublished opinion) (discussing canine alert where suspicious materials typically used to hide drugs were found, but no actual narcotics).

¹⁴⁷ *Horton v Goose Creek Indep. Sch. District*, 693 F.2d 524, 525 (5th Cir. 1982) (per curiam), *cert. denied*, 463 U.S. 1207 (1983); see also *Doe v Renfrow*, 475 F Supp. 1012, 1017 (N.D. Ind. 1979) (concerning canine sniff of high school that resulted in erroneous body search of 13 year old girl), *aff'd in part and remanded in part*, 631 F.2d 91 (7th Cir. 1980), *cert. denied*, 451 U.S. 1022 (1981).

¹⁴⁸ This Part will by no means show that dog sniffs can be predicted to a

effective when implemented in tandem with law enforcement expertise and least effective when conducting random searches.

Every dog alert has four possible outcomes. First, a dog positively alerts and drugs are found. Second, a dog does not alert and no drugs are present. These two outcomes are "correct"; the dog has accurately determined the presence or absence of narcotics. A dog can also make two types of errors. A dog can fail to alert when drugs are present. This error is known as a "false negative." Finally, a dog can alert when drugs are not present. This type of error is called a "false positive."

Naturally, the correct responses are equally desired results. The two types of errors, however, are not equally damaging. If a dog commits a false negative, and fails to alert to a person with drugs, the smuggler or other person in possession of drugs gets away. The cost of such a failure is that the narcotics are not removed from circulation and a criminal goes unapprehended. The cost of a false positive is more severe. Police resources are wasted pursuing a false lead. More importantly, an innocent individual is potentially subjected to an unnecessary invasion of privacy. Therefore, any assessment of canine reliability must take into primary account the number of potential false positives that may occur.

The use of statistical analysis reveals that even a very high accuracy rate can produce an unreasonable amount of false positives under certain conditions.¹⁴⁹ For example, assume that a given narcotics detection dog and handler team maintains an accuracy rate of 98%.¹⁵⁰ This means that whenever drugs are present, the dog will alert 98% of the time. Also

mathematical certainty. Indeed, courts and commentators alike are suspicious of statistics as infallible predictors of behavior. *See generally* Laurence H. Tribe, *Trial by Mathematics: Precision and Ritual in the Legal Process*, 84 HARV L. REV. 1329, 1339-50 (1971). However, by examining the nature of a dog sniff as a one variable success or failure act, statistical analysis illuminates where such an activity will more likely produce unacceptable errors.

¹⁴⁹ Interview with Professor Ralph D'Agostino, Boston University, College of Liberal Arts, Dep't of Mathematics, in Boston, Mass. (Sept. 26, 1995). *But cf.* Paul L. Kaminsky, Note, *The "Wrap" on Probable Cause; The Fourth Amendment Contained*, 6 ST. THOMAS L. REV. 449, 469-70 (1994) (reciting similar analysis to show that applying the appropriate theorem may result in counterintuitive results).

¹⁵⁰ This accuracy rate commonly exists amongst drug detection dogs. *E.g.*, Telephone Interview with Bob Gruetter, *supra* note 39 (near perfect accuracy rate); Interview with Dennis L. Trombley, *supra* note 38 (95% to 98% accuracy rate); Telephone Interview with Mike Strickland, *supra* note 52 (96% accuracy rate).

assume that whenever drugs are absent, the dog team will not alert 98% of the time. Assume further that 0.5% of the population at large has drugs on their possession. If the team conducts a random sniffing expedition of 10,000 people (or objects), with no evidence supporting or refuting possession of drugs, what is the probability that the dog and handler team will detect cocaine?¹⁵¹

If the dog sniffs 10,000 people, 50 ($10,000 \times .005$) will possess drugs. Out of these 50, the dog will correctly alert to 49 ($50 \times .98$).¹⁵² Of the remaining 9950 people that do not possess drugs, the dog will falsely alert to 2% of this group, resulting in 199 ($9950 \times .02$) false detections.

Out of this population of 10,000, the dog has positively alerted to 248 people, 49 of which are correct detections and 199 are false alerts.¹⁵³ Thus, the probability that an individual actually possesses cocaine based on this dog is 49 out of 248, a detection rate of less than 20%.¹⁵⁴

This result, at first glance, seems counterintuitive. Handlers frequently report success rates greater than 90%.¹⁵⁵ Yet, the previous calculations reveal that a highly "accurate" dog will alert falsely over 80% of the time. Thus, something must explain the discrepancy between the example and reports from law enforcement.

The discrepancy lies with the assumptions in the example itself. In one important area the example does not reflect reality: the example assumed that 0.5% of the population sniffed possessed narcotics. Such a figure may depict the likelihood of drug possession in a random populace.¹⁵⁶ However, most police dog sniffs are not performed ran-

¹⁵¹ The statistical formula applied is a widely known equation known as Bayes' theorem, used for calculating conditional probabilities. The formula, simply stated, is that the probability of *X* being true if *E* is known to be true may be determined by measuring how often, out of all the times in which *E* is true, will *X* also be true. See WILFRID J. DIXON & FRANK J. MASSEY, JR., INTRODUCTION TO STATISTICAL ANALYSIS 395 (3d ed. 1969); Kaminsky, *supra* note 149, at 466 n.121, Tribe, *supra* note 148, at 1353.

¹⁵² The remaining one person will escape detection.

¹⁵³ Although the completion of 10,000 sniffs by one dog is not likely, the large number is used to better highlight the large amount of false positive sniffs. Regardless of the number of sniffs used, the proportion of successful alerts remains the same.

¹⁵⁴ See generally *United States v. Prandy-Binett*, 995 F.2d 1069 (D.C. Cir. 1993) (applying similar statistical analysis), *cert. denied*, 510 U.S. 1167 (1994).

¹⁵⁵ See *supra* note 81 and accompanying text.

¹⁵⁶ See DEP'T OF COMMERCE, STATISTICAL ABSTRACT OF THE UNITED

domly on the general populace. Police usually use drug detection canines only after a suspect or item is sufficiently suspicious to warrant the use of a dog.¹⁵⁷ Therefore, the relevant “population” is not the general populace, but a narrowed group that police have determined through their training and experience are more likely to possess narcotics than the general public.¹⁵⁸

Modifying our previous example clarifies the point. Assume now that police suspicions before a sniff increase to 3% the likelihood that an individual possesses drugs. Using the same 98% successful canine, the dog’s accuracy rate jumps from 19.8% to 60.2%.¹⁵⁹ Increasing the

STATES 141 (1994) (providing drug use statistics).

¹⁵⁷ *E.g.*, *United States v. Delaney*, 52 F.3d 182, 184 (8th Cir.) (police observing suspicious behavior before applying drug detection dog), *cert. denied*, 116 S. Ct. 209 (1995); *see also* *United States v. Trayer*, 898 F.2d 805, 806 (D.C. Cir. 1990); *United States v. DiCesare*, 765 F.2d 890, 896-97, *amended by* 777 F.2d 543 (9th Cir. 1985); Stefan Epstein, Annotation, *Use of Trained Dog to Detect Narcotics or Drugs as Unreasonable Search in Violation of Fourth Amendment*, 31 A.L.R. FED. 931 (1977 & Supp. 1994) (collecting cases).

¹⁵⁸ Police often use characteristics found in the drug courier profile to narrow down a population subject to a dog sniff. *See supra* note 87. Agents utilizing the drug courier profile have often been accurate in detecting narcotics traffickers. *See Florida v. Royer*, 460 U.S. 491, 525 n.6 (1983) (Rehnquist, J., dissenting). Agents also possess a list of traits commonly found in illicit mailings of narcotics. Accordingly, these traits are known as the “drug package profile.” A partial list follows:

- i) the size and shape of the package (particularly in view of the declared contents of the package);
- ii) whether the package is taped to seal all openings;
- iii) whether mailing labels are hand-written;
- iv) whether the return addressee and the return address listed on the package match;
- v) unusual odors coming from the package;
- vi) whether the city of origin and/or city of destination of the package are common “drug source” locales; and
- vii) whether there have been repeated mailings involving the same sender and addressee.

United States v. Daniel, 982 F.2d 146, 150 n.5 (5th Cir. 1993); *see also* *United States v. Cantrall*, 762 F. Supp. 875, 879 (D. Kan. 1991).

¹⁵⁹ The full equation is set forth below. If the dog sniffs 10,000 people, 300 (10,000 x .03) will possess drugs. Out of these 300, the dog will correctly alert to 294 of the 300 (300 x .98); 6 individuals will escape detection. Of the remaining 9700 people that do not possess drugs, the dog will falsely alert to 2% of this group, resulting in 194 (9700 x .02) false detections. Out of this population of 10,000, the dog has positively alerted to 488 people, 294 of which are correct detections, 194 are false alerts. Thus, the conditional probability that

population probability to 10% increases the dog's success rate to 84.5%. If police suspicions raise the likelihood to 50%, the dog retains its full 98% accuracy rate.

As shown, successful canines will have difficulty establishing high accuracy rates on their own, and will likely be most successful when used in tandem with the suspicions of law enforcement.¹⁶⁰ Therefore, narcotics detection dogs are most reliable against an individual item or person where police first suspected the presence of narcotics before using the drug dog.¹⁶¹ During such a search, the relevant population sniffed will already have been narrowed by police expertise. Traffic stops, questioning of suspicious individuals, and examinations of suspect packages exemplify this type of narrowing, and courts should more readily rely on dog alerts in these settings.

Canines are less reliable when police use less of their own expertise. This reasoning applies to sniffs directed at a suspicious locale, such as an airport¹⁶² or border crossing, rather than a person or item. These sniffs retain some qualities of individualization: police are monitoring suspicious areas. However, the dogs are sniffing in a somewhat random manner and searching for narcotics over a large area. Here, courts should accept only well-trained canines as reliable drug detectors because the sheer number of items examined can trigger unacceptable false alerts.¹⁶³

Finally, dog sniffs are least effective when they survey a random population.¹⁶⁴ These sniffs closely resemble the original hypothetical example, where even a highly accurate dog will inevitably trigger numerous false alerts.¹⁶⁵ The very high percentage of drug-free individuals sniffed by such a procedure could trigger an unacceptable false

an individual actually possesses drugs based on this dog is 294 out of 488, a detection rate of 60.2%.

¹⁶⁰ Telephone Interview with Charles A. McCreary, Supervisor of Canine Drug Enforcement Section, Pennsylvania State Police (Sept. 1, 1995).

¹⁶¹ See *supra* note 157

¹⁶² The Customs Service frequently conducts "area" sniffs at airports. Telephone Interview with Bob Gruetter, *supra* note 39.

¹⁶³ Accordingly, customs agents require a perfect record from their dogs, or else they are removed from duty. *Id.*

¹⁶⁴ See Bruce Vielmetti, "Fishing" for Drugs, *Police Hit Legal Snag*, ST. PETERSBURG TIMES, Nov 13, 1995, at 1B (interviewing Capt. K. C. Newcomb of the Tampa Police Narcotics Unit, who stated, "'We've got better techniques and methods than going fishing. It's too hit and miss and too gray from a legal standpoint.'").

¹⁶⁵ See *supra* text accompanying notes 149-54.

positive rate from all except a perfect dog. This phenomenon has emerged in practice. For example, in *Merrett v. Moore*,¹⁶⁶ the Florida Highway Patrol established a roadblock for the primary purpose of detecting narcotics.¹⁶⁷ Over one thousand drivers waited for as long as forty-five minutes to have their cars sniffed by dogs.¹⁶⁸ In addition, one car overheated, several cars were scratched by dogs, and one person was bitten.¹⁶⁹

During the roadblock police did not discriminate at all concerning who was sniffed. They applied their dogs to random motorists who passed through the checkpoint. As a result, the roadblock was a failure: out of twenty-seven positive alerts, only once did police discover narcotics.¹⁷⁰

Such failures also happen in the school environment. In *Doe v. Renfrow*,¹⁷¹ school administrators engaged in a school wide drug inspection using trained canines.¹⁷² Students were forced to remain silent in their seats for over two hours while law enforcement agents searched for drugs.¹⁷³ Uniformed police officers were stationed in the halls, and guards were posted at the schoolhouse doors.¹⁷⁴ The dogs eventually alerted to fifty students for drugs.¹⁷⁵ Out of these fifty students, only seventeen were found in possession of narcotics.¹⁷⁶

¹⁶⁶ *Merrett v. Moore*, 58 F.3d 1547, *reh'g en banc denied*, 77 F.3d 1304 (11th Cir. 1995), *cert. denied*, 117 S. Ct. 58 (1996).

¹⁶⁷ *Id.* at 1549; *see also* *State v Landfald*, 571 So. 2d 10 (Fla. Dist. Ct. App. 1990) (examining police roadblock used to find drug traffickers); *Cardwell v. State*, 482 So. 2d 512 (Fla. Dist. Ct. App. 1986) (holding roadblock reasonable under the Fourth Amendment).

¹⁶⁸ *Merrett*, 58 F.3d at 1549.

¹⁶⁹ *Id.*

¹⁷⁰ *Id.* This is not the first time that Florida law enforcement has attempted such a widescale sniff and failed just as badly to detect narcotics. *See* Robyn E. Blumner, *Moving One Step Closer to a Police State*, ST. PETERSBURG TIMES, Mar. 17, 1996, at 4D (recounting case where dogs in roadblock stopped 1,300 cars and false-alerted 27 of 28 times); *see also* Hall, *supra* note 5, at 180.

¹⁷¹ *Doe v. Renfrow*, 475 F Supp. 1012 (N.D. Ind. 1979), *aff'd in part and remanded in part*, 631 F.2d 91 (7th Cir. 1980), *cert. denied*, 451 U.S. 1022 (1981).

¹⁷² *Id.* at 1016.

¹⁷³ *Doe v. Renfrow*, 451 U.S. at 1022-23 (1981) (Brennan, J., dissenting from denial of cert.).

¹⁷⁴ *Id.* at 1023.

¹⁷⁵ *Id.* at 1024.

¹⁷⁶ *Renfrow*, 475 F Supp. at 1017

The environment in which police conduct a sniff can significantly affect its success. Random sniffs of large numbers of people will inevitably result in many false positive alerts. Sniffs conducted at random but in a highly suspicious locale fare better. However, only the most highly-trained dog and handler teams can succeed in such an environment. The most successful sniffs are those conducted in conjunction with the expertise of law enforcement. Accordingly, courts can most readily accept dog sniffs that are used to confirm police suspicions, and most readily reject sniffs that survey in a random manner.

CONCLUSIONS

The narcotics detection dog has been an essential tool in fighting the war on drugs. Canine alerts have resulted in countless seizures of illegal narcotics. Without them, fighting the tide of narcotics trafficking would be significantly more difficult.

As a whole, law enforcement provides careful training to its dog and handler teams. State, regional, and national organizations set rigorous standards for certification and management. These requirements usually produce very effective narcotics detection teams, who show extraordinary accuracy during both training and real life sniffs.

However, dog sniffs often fail. Erroneous alerts trigger potentially traumatic searches and frustrate the efforts of law enforcement. Such erroneous alerts can be minimized by conducting an effective review of canine reliability. Reviewing judges should expect certain standards from the dog, the handler, the dog and handler as a team, and the implementation of the sniff.

First, any reliable drug dog should have graduated from a formalized program of narcotics detection. Such a program should include training under difficult and distracting conditions. Second, the handler must also have received extensive training. This program should include consistent pairing with one dog, warnings against handler cues, and training under difficult environments. Since handler error accounts for almost all false detections, examination of a handler's qualifications should receive particular judicial scrutiny. Third, courts should be wary of the presentation of accuracy data. Information that merely tallies successes does not provide a complete picture. Well-presented data should include the number of failures, if any, and the conditions under which they occurred. Fourth, reviewing courts must also be aware of the conditions under which canine sniffs will occur. A sniff conducted in tandem with law enforcement expertise will most likely result in minimal mistakes and successful seizures of narcotics. The judiciary should be most skeptical

of sniffs conducted in a random, unfocused manner. All but the most carefully planned random sniffs using highly-trained dog teams will likely result in many false detections.

These important issues in canine narcotics detection are not concerned with curtailing a questionable police practice. Rather, these recommendations make an already successful law enforcement technique even more effective. These recommendations will not only increase seizures by minimizing false leads, but at the same time protect innocent individuals from potentially traumatic invasive searches.

