# DECLARATION OF WARREN JAMES WOODFORD

I, Warren James Woodford, Ph.D, declare as follows:

1. I reside in Chattanooga, Tennessee and am a forensic chemist and licensed Researcher for training of odor detection animals, including humans and narcotics dogs. My education, training, experience and publications are outlined in my Curriculum Vitae. Exhibit A. I have more than 30 years-experience working in the field of odor science, specializing in the detection of volatile organic chemicals (VOC, i.e., odor molecules in air); in particular, the odors emitted by controlled substances. My training and experience involves odor testing using laboratory devices such as the gas chromatograph, as well as human and canine olfaction (the science of "smelling"), to detect and identify drug odors.

2. I developed and patented the odor of cocaine (*i.e.*, 'Methyl Benzoate' (U.S. Patent 4,260,517, April 7,1981)), which is in use as a dog training aid world-wide and is recognized as a scientific standard odor for the training, certification and proficiency testing of 'drug dogs' to alert to the odor of cocaine. See Exhibit B, *Mimicking the Aroma of Cocaine for Police Use*, NEW YORK TIMES, April 11, 1981. Since 1981, when 1 received the patent for the odor of cocaine, I have permitted Law Enforcement agencies and dog training facilities to use it freely.

3. I have testified in various jurisdictions about the training requirements and conditions for canines to reliably smell and detect the odors emitted by controlled substances. I have been retained as an expert, been deposed, and have executed affidavits and declarations in numerous cases. A list of cases in which I have testified in the last four or more years is attached as Exhibit C.

4. Two days after my patent was awarded on April 7, 1981, *United States v. Beale*, 674 F.2d 1327 (9th Cir. 1982) (*Beale I*), Exhibit D-1, was argued and submitted on April 9, 1981 to the Ninth Circuit Court of Appeals, regarding "the use of independent monitoring devices, such as drug-trained canines." The courts reasoned that it is permissible for police to use canines based on the premise that "the canine detects only contraband." Exhibit D-2 is a later decision in *Beale*. *United States v. Beale*, 736 F.2d 1289 (9th Cir. 1984) (*Beale II*).

5. The Court left open for inquiry and future scientific research whether its conclusion that dogs detect "only contraband" proves inaccurate. *Beale I*, 674 F.2d at 1335 n.14. Otherwise, the use of dogs would not be condoned by the court unless all the normal prerequisites to an ordinary search were complied with.

6. My patent and follow-up scientific studies conducted by other scientists, which confirm its accuracy, establish with scientific certainty that a "canine sniff"

by a well-trained narcotics detection dog does not alert to contraband. That is, trained narcotics sniffing dogs do not alert to actual drugs, but to the major odor components off-gassed into the air by drugs. The off-gassed odor components are not contraband. They are common non-controlled substances.

7. For example, Exhibit E is a National Institute for Occupational Safety and Health (NIOSH) report (Health Hazard Evaluation Report, U.S. Customs and Border Protection Canine Enforcement Training Center, Front Royal, Virginia (December 2004)). This report details the manufacturing of drug odors for use as narcotics dog training aids. It includes my patented odor of Methyl Benzoate (*i.e.*, the odor of cocaine), the odor of Benzaldehyde (*i.e.*, the odor of methamphetamine), and the odor of Acetic Acid (*i.e.*, the odor of heroin) and evaluates possible safety hazards to human workers making these dog training odors.

8. The odors Methyl Benzoate, Benzaldehyde, and Acetic Acid are also emitted from various common non-drug (*i.e.*, non-contraband) items. For example, dogs are trained to detect Acetic Acid, the odor of heroin. A handler must calibrate his/her dog to be able to distinguish actual heroin from "aspirin, vinegary food products and normal body odors."

9. The NIOSH report, Exhibit E, affirms the widely held acceptance that dogs do not alert "only to contraband" (*i.e.*, drugs) as was envisioned by the Court back in the early 1980s. For methamphetamine, dogs alert to the odor of Benzaldehyde. A complicating factor for using dogs to smell detect methamphetamine is that Benzaldehyde is contained in various common products, such as shaving cream, soaps, and hair sprays (see Exhibit F for expanded list).

10. Further, dogs have various smell capabilities. There is no scientifically standardized dog. Some dogs alert to odors in quantities of parts-per-million (ppm, the common measure of air pollutants); other dogs with more sensitive noses alert to parts-per-billion (ppb, one thousandth of a ppm); still others, with the most 'sensitive noses,' alert to airborne odors in parts-per-trillion (ppt, one billionth of a ppm air pollutant).

11. The various training aids listed in the NIOSH report can be used for proficiency testing of any given dog. In a case involving an alleged dog alert to methamphetamine, the scientific parameters for accessing the proficiency of that dog can be defined scientifically and recorded in the dog's training records supplied to Counsel.

12. In various environmental situations, ranging from dirty laundry (odor of heroin) to soap (odor of methamphetamine), common non-contraband products listed in Exhibit F play a role.

13. Scientific scrutiny requires an analysis of the following factors to assess the accuracy of a purported canine alert to methamphetamine:

a. The potential error rate that varies from dog to dog. This should be reflected in training records. However, the accuracy of these records cannot be vouched for. For example, I was recently supplied with records of narcotics-detection dog training from the San Francisco Police Department Tactical / K-9 Unit for a hearing. The 200-page record spanned a three-year, five-month period and indicated that the dog is 100% accurate, all of the time. This is impossible. Rather, it suggests a problem with the handler, incomplete reporting and possible 'cuing' (i.e., subtle signs dog picks up from its handler signaling it to alert).

b. My patent, other published peer-reviewed research and the NIOSH report, Exhibit E, show that odor standards governing a dog's use do exist and can be maintained. Whether any were used in the present case of a dog

allegedly alerting to methamphetamine needs to be examined carefully using the lens of science.

c. Safeguards in the characteristics and capabilities of the use of a dog to alert to methamphetamine include the following:

1. 'Proofing' for handlers to show and demonstrate that the only odor their dog alerts to is the odor of actual methamphetamine; *i.e.*, that the dog does not alert to non-contraband products, packaging materials or any substances used to construct the training-aids.

2. 'Extinction Training" to test the dog's nose-sensitivity to the odor of Benzaldehyde (i.e., ppm, ppb, or ppt?). With extinction training, a dog should be sensitive to when an odor has become stale and ignore scents that no longer indicate the presence of drugs. In *Commonwealth v Ramos*, 72 Mass.App.Ct. 773 (2008), Exhibit G the court found that the general susceptibility of dogs to error (especially without extinction training) would fail to satisfy the standard of probable cause for the issuance of the warrant.

d. The nature and breadth of the inference adduced from a dog alert is a matter of a showing of the dog's proficiency with regard to more than utilization records (logs, etc.) and requires actual data showing its 'proofing' and 'extinction training,' as well as detection of (1) 'odor discrimination,' and (2) 'odor generalization,' as discussed in J. M. Johnston, Ph.D., *Canine Detection Capabilities: Operational Implications of Recent R&D Findings,* Institute for Biological Detection Systems, Auburn University, June 1999 (Exhibit I).

1. 'Odor Discrimination' is data obtained during steps to train the dog to tell the difference between methamphetamine and non-methamphetamine odor of Benzaldehyde.

2. 'Odor Generalization' is the degree of generalization that a dog develops on its own through exposure to methamphetamine odor as compared to non-contraband odors that, to the dog, start to smell similar to the odor of Benzaldehyde.

e. In addition, the handler can also influence a dog's behavior, either by (1) cuing the dog or by (2) subtly, even unconsciously, telegraphing his or her beliefs to the animal.

1. 'Cuing' occurs by way of subtle signs dog picks up from its handler signaling it to alert. Data should be maintained and available to counsel showing that specific safeguards were employed by trainers and handlers to eliminate or minimize 'cuing.'

2. 'Handler Belief' -- Investigators at the University of California at Davis published a study in the Journal of Animal Cognition (Exhibit H finding that the performance of drug-sniffing dogs is significantly influenced by whether or not their handlers believe illicit substances are present.

14. As mentioned above, courts in the 1980s analogized the use of independent monitoring devices with drug-trained canines. I agree with this analogy. For example, 'extinction training' of drug-trained dogs is like Ionscan device calibration wherein you 'train' the machine (i.e., calibrate it with the same purpose as training canines). For an 'Ionscan device', one can calibrate the device NOT to "alert" to non-contraband. The scientific principle in using an 'independent monitoring device' employs the same principle for calibration in the general scientific sense as obtains for drug-trained canines.

15. To be deployed in airports to detect narcotics, ionscan devices were required to undergo the courts' scientific scrutiny process. In my opinion, 'drug-trained canines' need the same order of scientific scrutiny.

16. Upon my review of 142 pages of dog training log sheets from the Los Angeles County Sheriff's Office, Narcotics Bureau Canine Crew, regarding "Charlie," the canine used to inspect Mr. Solorio's car, I find nothing that would give me confidence in "Charlie's" alert in this case. (Exhibit J)

17. First, I find no evidence to indicate that any "Extinction Training" took place. As the Court found in *Commonwealth v Ramos*, 72 Mass.App.Ct. 773, 776 (2008) held, the failure to provide extinction training is likely to lead to false positives and taint the probative value of a dog alert.

18. There are only three data sheets (dated 2/23/2014, 5/18/2014 and 6/8/2014) among the 142 pages of log sheets that indicate the use of relevant proofing materials. The materials identified, however, are merely described as such thigs as "training aids," "evidence bags," "FedEx bags," and "packaging materials." Three instances of proofing training with unidentified materials are insufficient.

19. A majority of the log sheets' proofing columns are blank. The few proofing columns that do contain notes lack meaning and relevance in the "drug search" context. The majority of the items listed in "Charlie's" training logs are things such as cat urine odors, small children, uncirculated currency, odors of dog, cat, horse, and bird feces/odors, clean cotton balls and Q-tips, a rabbit in cage, lose chickens, and pelican cases. These proofing materials noted are not at all helpful to proof a dog for training purposes.

20. Moreover, there are no entries reporting that Charlies was trained for "Odor Generalization" and "Odor Discrimination." The records also fail to disclose whether "Queuing" or "Handler Belief" contributed to the drug finds attributed to "Charlie."

21. Dog detection ability is analogous to other scientific techniques such as Ionscan devices which are required to meet scientific evidentiary criteria. Thus, although dog alerts have been accepted in courts since the 1980s, this judicial endorsement has been based on the flawed premise, as stated in *Beale I*, that dogs alert "only to contraband"

22. Dog handlers need to be able to testify with clarity and simplicity to describe what odor (contraband or non-contraband) their dog is trained to react to.

Currently, however, a dog's training is verifiable only by way of proficiency testing using the odors described in the NIOSH report (Exhibit E), which are also common to many non-contraband substances.

23. With nothing in "Charlie's" training logs to show that he was proofed not to respond to non-contraband substances or that he received extinction training so that his alert was more likely to indicate that a controlled substance was recently present, "Charlie's" alerts cannot be seen as reliable according to prevailing scientific standards.

24. The fact that scientific results are subject to 'peer-review' is also very important. In a case involving alleged methamphetamine, experts need access to sufficient data regarding the dog's training and handling to be able to independently evaluate, test and estimate the dog's purported ability to detect the actual drug. This requires records that reflect the significance of the dog's actions and make it possible to evaluate the degree of care with which the dog was deployed.

25. "Charlie's" training does not comply with any scientific peer literature on the nature of drug detection by dogs. As an expert specializing in the detection of volatile organic chemicals and in training of odor detection animals, the training

and handling data I have received for "Charlie" are insufficient to be able to independently evaluate the dog's purported ability to detect drugs.

24. There are thus variables that need to be accounted for that will affect any serious attempt to scientifically validate a dog alert. First, it is important that training records reflect that the dog is alerting to a controlled substance and not to other items that share the same scent attributes. While the Court in *Beale I* was satisfied that dogs alert only to contraband, my research, which is widely accepted and has been adopted by police departments, shows that dogs actually alert to non-contraband odors. Training data must show that a dog can tell the difference between methamphetamine and non-methamphetamine odor of benzaldehyde, such as exists in shaving cream, foods, soap and many lotions. "Charlie's" logs, however, fail to show any significant effort to proof "Charlie" in any significant way.

25. Second, there can be no confidence in training records that are not maintained under rigorous standards. The influence of handlers on training exercises and incomplete reporting will yield any data obtained meaningless. Again, there is no data controlling for the influence of these factors on "Charlie's" alerts.

26. In addition, a handler's cues and beliefs can undermine any certainty in the strength of a dog alert. To prevent this, controls should be used not only in training, but also in the field where protocols are more likely to be ignored. Video recording of dog inspections of vehicles, people, packages and other objects should be used to assure that possible alerts are independent of human interference and influence over the dog's behavior. I have seen no evidence of such controls or methodology concerning "Charlie's" use for drug detection.

27. At this time, the fundamental conclusion that the Court relied on in *Beale I* – that dog's alert to controlled substances – is no longer valid. In the case of cocaine, methamphetamine and heroin, the result of scientific testing, including my own, is that dog's alert to Methyl Benzoate, Benzaldehyde, and Acetic Acid, which are present in many common non-contraband products. This research has been replicated and subjected to peer-review many times. As the NIOSH report discloses, the consensus is universal that dogs are trained on these byproducts, rather than on actual narcotics.

28. Moreover, the known potential error rate for canine sniffs is unknown since it differs from dog to dog and all results are dependent on the handler's actions, the completeness of reporting and possible cuing. As noted above, records must reliably establish a rate of error. The records I received do not do so.

29. It must further be shown that standards exist for maintaining records and controlling against false alerts. Handlers and police agencies must demonstrate that dogs have been trained to distinguish odors and have not generalized the odor to which they alert so that alerts include non-contraband substances. Reports on dog's performance must be rigorously maintained with attention to the variables likely to lead to a false alert. Training methodology and use of dogs in the field should be designed so that such factors as cuing and handlers' beliefs do not lead to unreliable results. As a corollary, records from the field should also be maintained to reflect both accurate alerts and instances where dog alerts turned up no evidence.

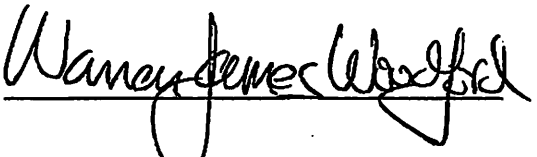
30. I have found no evidence that "Charlie" was trained to these standards or that appropriate methods were used to allow any confidence in his purported drug detection.

31. While my research and patent are widely accepted in the relevant scientific community as providing a scientific standard odor for the training, certification and proficiency testing of drug dogs, the limitations of what my research proves must also be accounted for. In the case of methamphetamine, a dog must still be trained to distinguish the odor of narcotics from similar scents and other substances that also emit Benzaldehyde as a byproduct. No scientific conclusion can be drawn

when records are not prepared according to an established protocol or when there is a lack of controls on officers' influence over an animal's behavior.

32. These factors must be rigorously controlled for through adherence to a rigid protocol. The failure to do so with "Charlie" makes it impossible to draw any scientific conclusions about the reliability of the dog's alerts.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief. Executed this 23rd day of October at Chattanooga, Tennessee.



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