

"There is a science behind olfaction, not a guru"

SOKKS® Micro Particle Systems (SOKKS® MPTS):

SOKKS Odor source detection conditioning The Basic Concept

SOKKS® Micro Particle Systems (SOKKS® MPTS) is developed to selectively detect and localize odor-releasing objects by olfactory mediated conditioned animals, especially canines. It is based on scientific research. Its application is exclusively directed to support military, police and else equivalent certified taskforces.

Combining the advantages of extreme low and pure source loads (no pseudo) - even as mixtures - the development of the SOKKS® -Micro-Particle System settles the tasks long been pretended for safe, ergonomic, economic especially well-defined and well reproducible animal odor source detection conditioning.

Developed in 1997, SOKKS® Micro-Particle Conditioning System has meanwhile gained a world-wide application standard to detect sources of explosives, arsons, narcotics, lost persons and corps and paper money.

The SOKKS® Micro Particle system is suited for conditioning on almost all odorous products.

For further details and references contact:

**Prof Dr Wolf A Kafka¹
Johannishöhe 9
D-82288 Kottgeisering (Germany)
wolf.kafka@t-online.de**

¹ Prof Dr Wolf A Kafka (20.11.1939 in Wasserburg/Inn) was heading the physical and neuro-physiological research at the Max-Planck-Institute for behavior-physiology since more than 30 years. His research concerned the molecular basis and the industrial application of the physiology of odor reception and its discrimination. Numerous international developments, patents, and prizewinning documentations are based on his performances. He is member of several international renowned scientific societies, member at the Peking University, Beijing in China. Since 2012 he is elected chairperson of the advisory members of the Centro di Science (CSC) Comportamentali del cane dell'Universita degli Studi di Padova.

Scientific background of odor identification and accordingly optimized animal odor source detection conditioning mediated by SOKKS[®] training aids

Prof Dr Wolf A Kafka (Germany)

wolf.kafka@t-online.de



SOKKS Micro amount animal odor conditioning

SOKKS[®] MPTS

Mikro-Amount Particle System

Optimizing animal odor source detection conditioning

Prof Dr Wolf A Kafka
(Germany)
wolf.kafka@t-online.de

31.12.2019 SOKKS[®] - Wolf A Kafka 1

1



Some common statements on odor and odor-source detection in before

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 2

2



Substances might be

- **identified and**
- **localized** by their volatile components

Solving the task needs highly

- **sensitive**
- **selective**
- **reliable**
- **safe**
- **fast methods/technologies**

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 3

3

3. SOKKS[®] mediated odor source detection conditioning

Traditional odor conditioning:

Basic problems:

- drugs (narcotics)
- explosives
- arsons
- infective (e.g. corpses) materials

are **hazardous** for human, animal, and environmental well-being



31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 4

4



Consequent disadvantages

- **tough legal regulations** (storage, transportation and thus by lots of paperwork)
- **commonly contaminated by byproducts** (manufacturing, packaging), so that training could result in detection of contaminants, turning out in worst cases to close an airport
- **large amounts of volatile compounds, higher as afforded by the dog's noses.** (Bad for conditioning the detection of well-hidden material and bad also for the contamination of training locations)
- **commonly long-lasting primary single step conditioning**

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 5

5



What is SOKKS[®]?

SOKKS[®] is a training aid to **identify volatile compounds and localize their sources**

It relieves from the afore problems
Its name derives from the first letters of the assisting persons

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 6

6

Scientific background of odor identification and accordingly optimized animal odor source detection conditioning mediated by SOKKS[®] training aids

Prof Dr Wolf A Kafka (Germany)

wolf.kafka@t-online.de



SOKKS[®] is the result of a tragical event.

Once, nearly 20 years ago, one of my coworkers at the Max-Planck-Institute for Behavioral Sciences was lost during his studies on insect olfactory communication. An immediately initiated intensive, more than 3 weeks lasting search together with specialized detector dogs of the Bavarian police failed.

Despite of it, but in return for the generous support a co-operation with the ministry of the interior focused to optimize olfactory conditioning was started. It ended with the product series SOKKS[®]

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 7

7



SOKKS[®] is designed to keep products of interest within one single package (tubus) at lowest amounts



31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 8

8




SOKKS xx original SOKKS xx used SOKKS xx waste

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 9

9

3. SOKKS[®] mediated odor source detection conditioning



SOKKS[®] –Micro-Particle animal odor conditioning system



Source material
extremely clean
physico-chemically
well defined
olfactory inert
(reference tested)

tooth friendly
50x5 mm
flexible cylinder
„tubis“

**multi-component
source loads**
0,5 to 10 µg !

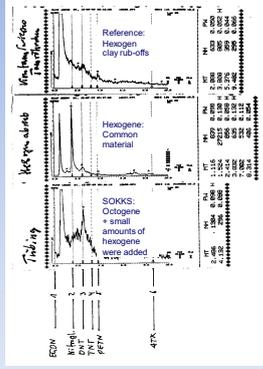
real highly purified compounds, not pseudo

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 10

10

3. SOKKS[®] mediated odor source detection conditioning

Analytics of SOKKS[®] by means of GC-MS coupled analytics



The Sokks material (10 tubi) was posed directly in front of the EGIS-sensor. Egis did neither respond to SOKKS or rub-offs of SOKKS tubi. The amount indicated by Egis ranges within 0,5 to 5 micrograms. Thus, the amount of explosives on the SOKKS material must be lesser

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 11

11



For a better understanding of SOKKS[®] Micro particle conditioning following topics will be discussed :

- odor sources and odor convection
- odor perception
- odor discrimination
- odor-source detection and conditioning

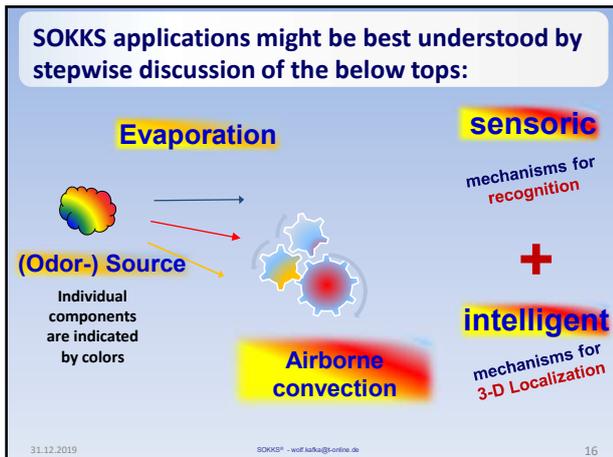
31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 14

14

Scientific background of odor identification and accordingly optimized animal odor source detection conditioning mediated by SOKKS[®] training aids

Prof Dr Wolf A Kafka (Germany)

wolf.kafka@t-online.de



16

Animals, especially canines as detectors

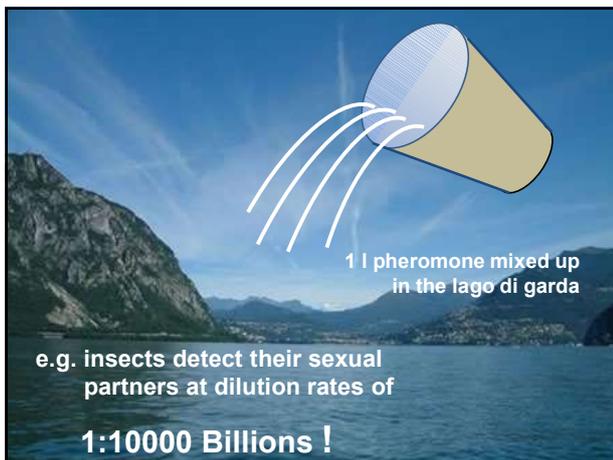
Why?

Their olfactory systems surpass any technical device on base of:

- **extreme sensitivity**
pheromones are detected at levels of one molecule per primary receptor sense cell (dilution rates 1:10000 Billions!) !
- **extreme selectivity**
any molecular variation induces different receptor responses !
- **intelligent 3D-scanning regulation mechanisms**
up to now there is no equivalent technical solution available
- **extreme speed of transduction**
milli-seconds (physico-chemical solutions would last up to hours!)
- **suitability for odor conditioning**

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 17

17



20

Animals

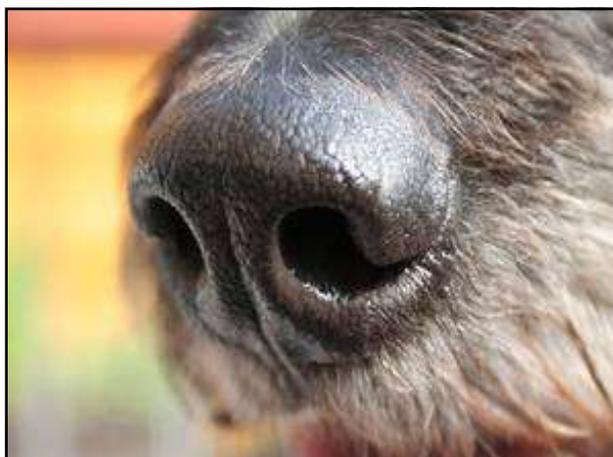
as odor source detectors

e.g. insects, birds, rats, **dogs**

Game and prey behavior
create a better relationship between instructor and his dog than, for example, food reward, in rats or insects

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 21

21



22

Topics of the presentation:

1. **Odor sources:**
definition and principles of its detection
2. **Chemical senses:**
sensitivity, selectivity, discrimination, detection
3. **Conditioning problems:** SOKKS[®] optimized odor- and odor source detection conditioning
4. **Summary**

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 23

23

Scientific background of odor identification and accordingly optimized animal odor source detection conditioning mediated by SOKKS[®] training aids

Prof Dr Wolf A Kafka (Germany)

wolf.kafka@t-online.de

1. Odor sources:
definition and principles of its detection

2. Chemical senses:
sensitivity, selectivity, discrimination, detection

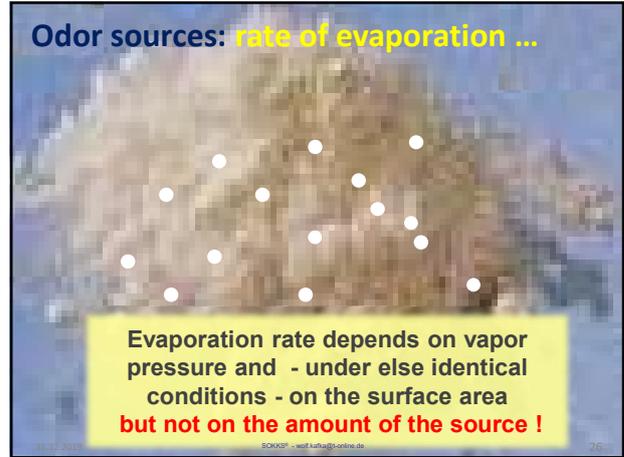
3. Conditioning problems: SOKKS[®] optimized
odor- and odor source detection conditioning

4. Summary

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 24

24

Odor sources: **rate of evaporation ...**

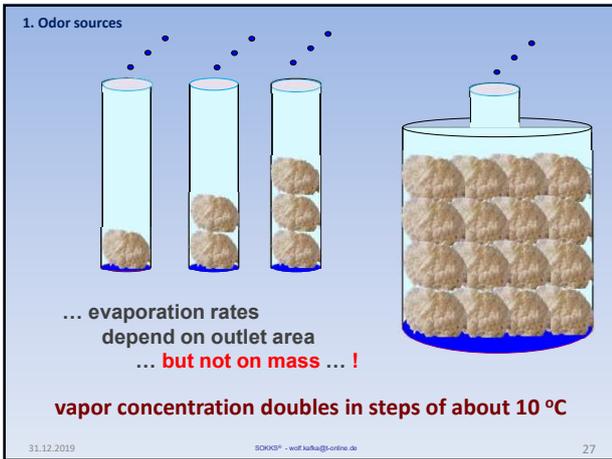


Evaporation rate depends on vapor pressure and - under else identical conditions - on the surface area **but not on the amount of the source !**

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 26

26

1. Odor sources



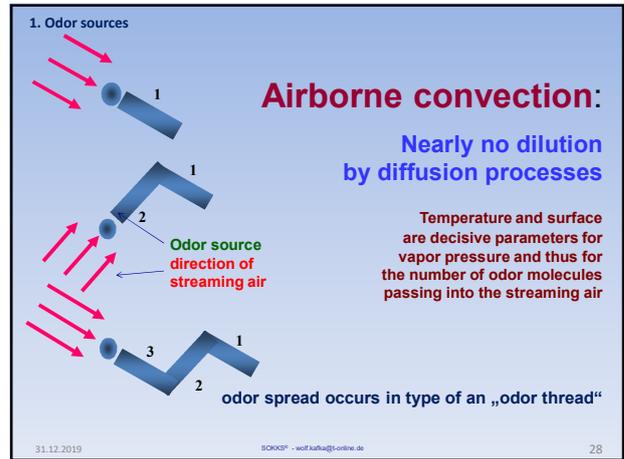
... evaporation rates depend on outlet area ... **but not on mass ... !**

vapor concentration doubles in steps of about 10 °C

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 27

27

1. Odor sources



Airborne convection:

Nearly no dilution by diffusion processes

Temperature and surface are decisive parameters for vapor pressure and thus for the number of odor molecules passing into the streaming air

odor spread occurs in type of an „odor thread“

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 28

28



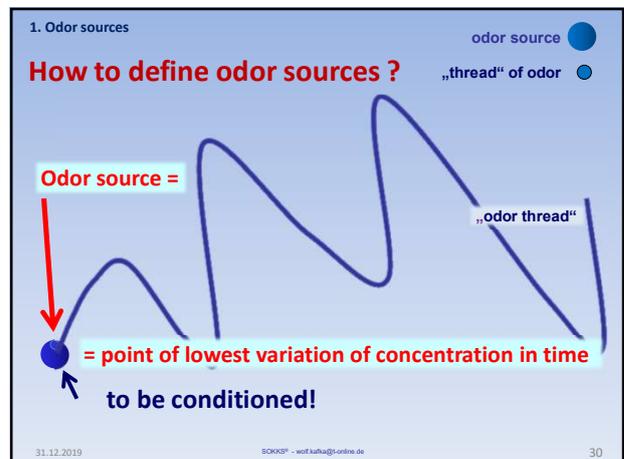
29

1. Odor sources

odor source ●

„thread“ of odor ○

How to define odor sources ?



Odor source =

= point of lowest variation of concentration in time to be conditioned!

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 30

30

Scientific background of odor identification and accordingly optimized animal odor source detection conditioning mediated by SOKKS[®] training aids

Prof Dr Wolf A Kafka (Germany)

wolf.kafka@t-online.de

Topics of the presentation:

- 1. Odor sources:**
definition and principles of its detection
- 2. Chemical senses:**
sensitivity, selectivity, discrimination and detection
- 3. (SOKKS[®] mediated) Optimized odor source detection conditioning**
- 4. Summary**

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 31

31

2. Chemical senses

Olfactory organs in human and canines

**Dimensions of area mucosa olfactoria:
human/canine ~ 1/40 !**

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 33

33

Airs stream analysing structures well designed to render optimal gathering of odor molecules

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 34

34

2. Chemical senses

... physico chemical „Key and lock“ mechanisms ...

Excitability of individual receptor cells depends on number, distribution and fitting between receptor sites and molecules. Even one type of odorant might thus activate different types of receptor cells!

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 35

35

Olfactory receptors and Genes

- Olfactory receptors are broadband, they are responsive to several characteristics, but most sensitive to one olfactory characteristic
- Each olfactory receptor is coded by one olfactory gene
- All olfactory receptors of one type (one gene) converge in one GLOMERULUS (see below).
- The glomeruli send neurons to the olfactory cortex

31.12.2019 SOKKS[®] - Wolf A Kafka 37

37

2. Chemical senses

Excitation of sensory receptor cells

A suited odor molecule induces opening of ion channel and generation of electrical signals

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 40

40

Scientific background of odor identification and accordingly optimized animal odor source detection conditioning mediated by SOKKS[®] training aids

Prof Dr Wolf A Kafka (Germany)

wolf.kafka@t-online.de

2. Chemical senses

... nerve cell excitation
... signal transduction
... processing by nerve impulses

Brain

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 41

41

Odor perception:
How olfaction is coded?

31.12.2019 SOKKS[®] - Wolf A Kafka 42

42

2. Chemical senses

Brain

Odor is made by the brain!

Odor = result of brain processed sensory cell signals, rendered by the chemoreceptors within the nose

That explains why quality and intensity of odors cannot be ascribed to distinct chemical or physicochemical parameters!

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 44

44

2. Chemical senses

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 55

55

2. Chemical senses

Odors are reflected by the pattern of cell excitation

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 57

57

Odors are reflected by the pattern of cell excitation

Comparable to recognize a city by its skyline

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 58

58

Scientific background of odor identification and accordingly optimized animal odor source detection conditioning mediated by SOKKS[®] training aids

Prof Dr Wolf A Kafka (Germany)

wolf.kafka@t-online.de

3. SOKKS[®] mediated odor source detection conditioning

Failure detection by impurities:
symbolized by „Lady Liberty“ and „La Tour Eiffel“
at the skyline of the „Vatican“

59

2. Chemical senses

Some comments on molecules and molecule models:

Molecules are composed out of two or more atoms like oxygen (O below red), hydrogen (H below white), nitrogen (N below blue), carbon (C below black).

Their dimensions range in 10^{-10} m (1 Å), that means 100 millions of e.g. TNT molecules aligned in a row would render a length of roughly 1 cm.

Molecules (e.g. TNT) might be represented by:

Formula	2-D structural formula	3-D models
C7H5N3O6		

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 64

64

2. Chemical senses

Structure activity relationship

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 65

65

2. Chemical senses

Some chemical variables which influence the odor
THE CHEMICAL IS NOT THE ODOR

- The chemical has many components
- Each component contributes to the odor
- The odor of any chemical results from many different variables
- Changing any of the variables changes the odor

The Journal of Comparative Neurology, DOI 10.1002/cn.21404
B.A. JOHNSON AND M. LEON

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 66

66

2. Chemical senses

Note:

Avoid any conditioning by applying pseudos!

For example:

Even if a pseudo compound might smell like an explosive it must not be explosive. A dog trained by pseudos might cause an airport closure!!!

Always use the odorant deriving from the active ingredients e.g. TNT, Hexogen, ...

Phlegmatics do not belong to active ingredients

31.12.2019 SOKKS[®] - Wolf A Kafka 69

69

Topics of the presentation:

1. Odor sources:
definition and principles of its detection
2. Chemical senses:
sensitivity, selectivity, discrimination and detection
3. SOKKS[®]-mediated odor source detection conditioning
4. Summary

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 70

70

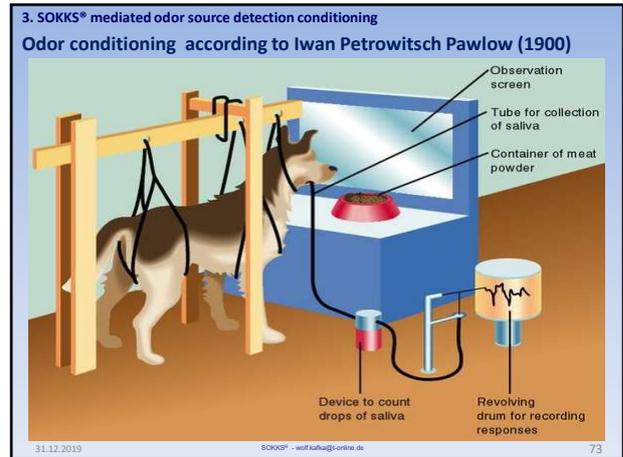
Scientific background of odor identification and accordingly optimized animal odor source detection conditioning mediated by SOKKS[®] training aids

Prof Dr Wolf A Kafka (Germany)

wolf.kafka@t-online.de



71



73

3. SOKKS[®] mediated odor source detection conditioning

In addition to Pawlow:

SOKKS conditioning it is not only intended to

- 1. recognize the odor**

but also to

- 2. detect the odor source**

= point of lowest time-variation of odor concentration

74

3. SOKKS[®] mediated odor source detection conditioning

How odor-source detection works:

76

3. SOKKS[®] mediated odor source detection conditioning

Aim of conditioning: Odor source detection

Odor source: ● (blue)
 „odor string“: ● (small blue)
 KG: ● (orange)

reward detection

is mediated by the point of lowest time-variation of odor concentration

77

SOKKS xx original SOKKS xx used SOKKS xx waste

85

Scientific background of odor identification and accordingly optimized animal odor source detection conditioning mediated by SOKKS[®] training aids

Prof Dr Wolf A Kafka (Germany)

wolf.kafka@t-online.de



SOKKS[®] - Real K9 Training aids:

Explosives	SOKKS [®] -EX
Arsons (Fire accelerators)	SOKKS [®] -Fire
Drugs, narcotics	SOKKS [®] -Drugs
Lost persons, corps, human blood, + opt. sperm	SOKKS [®] -PC
Paper money (€, CHF, US\$)	SOKKS [®] -PM
Cell-phones	SOKKS [®] -c-p
Human characteristics	SOKKS [®] -PI
Bed-bugs	SOKKS [®] -Cimex I.
Termites	SOKKS [®] -Tm
Mercury (gold mining)	SOKKS [®] -Hg
CITES species protection: Ivory, reptiles, birds...	SOKKS [®] -Grafitti
Graffiti	
... and nearly any else volatile compound	SOKKS [®] - ...

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 87

87

3. SOKKS[®] mediated odor source detection conditioning

In detail these are:

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 88

88

Explosives

Trade name	Chemical nomenclature	Molecules *10 ²⁷ /cm ³	formula
Ammongelit	Ammoniumnitrat + Nitroglycol	7000000	NH ₄ NO ₃ + C ₂ H ₄ N ₂ O ₆
Ammonsalpeter	Ammoniumnitrat	7000000	NH ₄ NO ₃
Hexogen (RDX)	Cyclotrimethylen-trinitramin	40	C ₃ H ₃ N ₃ O ₆
Kaliumchlorat	Kaliumchlorat	100000	KClO ₃
Kalialsalpet	Kaliumnitrat	10000	KNO ₃
Natriumchlorat	Sodium Chlorat	100000	NaClO ₃
Nitroglycerin	Trinitroglycerin	70000000	C ₃ H ₅ N ₃ O ₉
Nitropenta (PETN)	Pentaerythritol tetranitrat	100	C ₅ H ₈ N ₄ O ₁₂
Nitrozellulose (NC)		30	
Oktoegen	Cyclotetramethylen-tetranitramin HMX	1	C ₄ H ₈ N ₄ O ₈
Blackpowder	Kaliumnitrat + Schwefel + Holzkohle	10000	KNO ₃ + S + C
Treibladungspulver	Nitrozellulose + glycerin + guanidin	400000	
Trinitrotoluol (TNT)	2,4,6-Trinitrotoluol	60000	CH ₂ H ₂ N ₂ O ₆

Explosives: Molecules*10¹⁹/cm³ ppm-values (Meyer, 1985 & EMC, Consulting Services Dr Hoffmann, Schramberg) due to calculations via Loschmidt-Konstant (N=2,686*10²⁵/m³). e.g. 1 Molecule Octogen in 10⁹ Molecules air. SOKKS-explosive material is nearly 10000 times less down !

A detecting dog would thus detect a dilution factor of 1 to 10¹³, he would detect 1 ml octogen in an air volume of a big lake 20x20x0,07 km.

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 89

89

Arsons - Fire Accelerators

BLKA - 29.04.98 (numbers represent vapor pressure)

1.1	Ethanol	78
1.2	i-Propanol	82
2.1	Acetone	56
2.2	Methylethylketone (MEK)	80
3.1	Ethylacetate	77
3.2	n-Butylacetate	127
4.1	n-Butylglykol	171
5.1	n-Hexene	69
5.2	Cyclohexene	80
5.3	Toluene	110
5.4	Xylol-mixture	140
6.1	petrol	40-200
6.2	candlelight oil	130-280
6.3	gas oil	160-360
6.4	spiritus	78

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 90

90

Drugs -Narcotics

Alkaloids

- Cocain (Koka plant, Peru)
- Morphin
- Crack (Kokain +Natriumhydrogenkarbonat Backpulver)
- Opium, Heroin (Diacetylmorphin Papaver somniferum, Schlafmohn; Afghanistan)
- LSD (Mutterkorn)

Amphetamines

- Ecstasy, Crack (Methylamphetamin+Backpulver)
- Liquid Ecstasy GHD (Gammahydroxybuttersäure, GHD)
- Thai-Pillen (Methamphetamin)
- Crystal Meth

Hemps

- Cannabis indica, sativa, ruede
- Marihuana,
- Cannabis
- Hasch

Herbal Ecstasy

- Coffein Theobromin, Catechin, Epicatechin, Procyanidin (Colanut)

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 91

91

GHB

Fantasy, Liquid E, Liquid X

Gammahydroxybutyrate

= ester of Gammahydroxyaminobutyric acid
a **neurotransmitter**

often combined with other drugs (alcohol, heroin, XTC)



31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 92

92

Scientific background of odor identification and accordingly optimized animal odor source detection conditioning mediated by SOKKS[®] training aids

Prof Dr Wolf A Kafka (Germany)

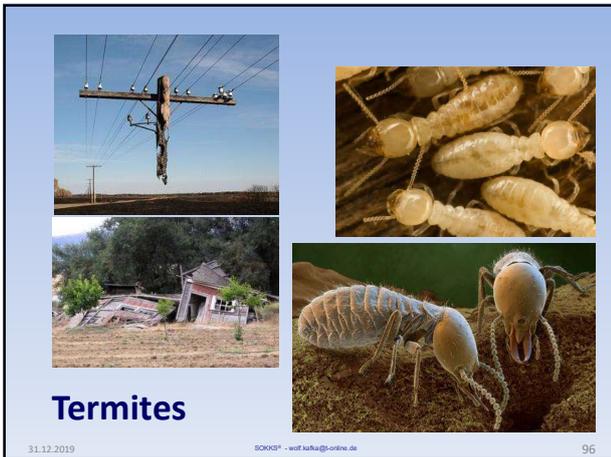
wolf.kafka@t-online.de



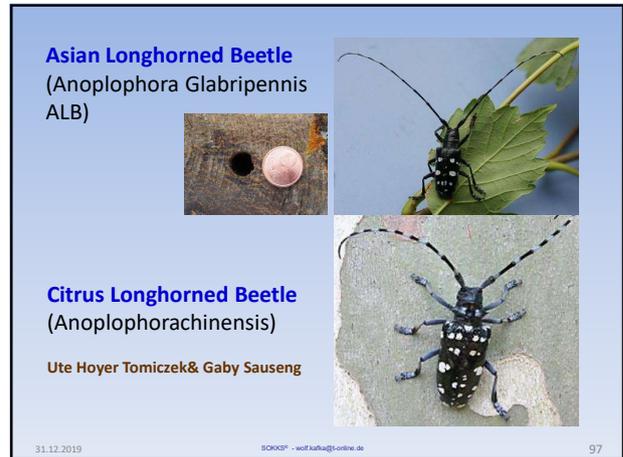
94



95



96



97



105



106

Scientific background of odor identification and accordingly optimized animal odor source detection conditioning mediated by SOKKS[®] training aids

Prof Dr Wolf A Kafka (Germany)

wolf.kafka@t-online.de

SOKKS[®]—Micro-Particle System odor conditioning



Conditioning aids („toys“):
better avoid!

PE-tubes

V2A-gridbox especially Suited for simulation of big amounts





31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 108

108



Example to reduce self-contamination (SOKKS Diabetes hypogl)

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 109

109

3. SOKKS[®] mediated odor source detection conditioning

Simulation of large odor quantities



31.12.2019 SOKKS[®] Animal Odor-Source Detection Conditioning 111

111

3. SOKKS[®] mediated odor source detection conditioning

Simulation of large odor quantities



31.12.2019 SOKKS[®] Animal Odor-Source Detection Conditioning 112

112

3. SOKKS[®] mediated odor source detection conditioning

Simulation of large odor quantities







31.12.2019 SOKKS[®] Animal Odor-Source Detection Conditioning 113

113

3. SOKKS[®] mediated odor source detection conditioning

Conditioning on the wall



31.12.2019 SOKKS[®] - Wolf A Kafka 114

114

Scientific background of odor identification and accordingly optimized animal odor source detection conditioning mediated by SOKKS[®] training aids

Prof Dr Wolf A Kafka (Germany)

wolf.kafka@t-online.de



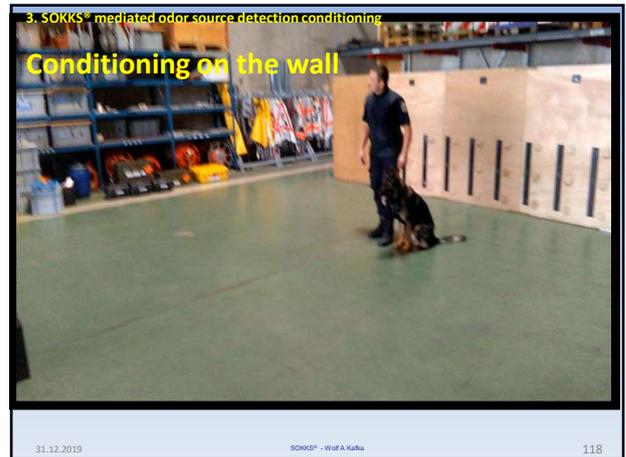
115



116



117



118



120



121

Scientific background of odor identification and accordingly optimized animal odor source detection conditioning mediated by SOKKS® training aids

Prof Dr Wolf A Kafka (Germany)

wolf.kafka@t-online.de

3. SOKKS® mediated odor source detection conditioning
Foto: Rinaldo Brega ,Policia Municipale Padua (Italy)



**Rewarding by odor:
not necessary**



**However: (during starting phase)
award should be set just in time
= after detection within < 0.5 to 1 sec**

31.12.2019 SOKKS® - wolf.kafka@t-online.de 122

122



History and world wide users ...

31.12.2019 SOKKS® - wolf.kafka@t-online.de 123

123



124

SOKKS® first user: Ministry of Interior Bavaria 1997



31.12.2019 SOKKS® - wolf.kafka@t-online.de 125

125

SOKKS® Appliers since 1998



**MilHuZ Kaisersteinbruch Austria (Colonel Otto Koppitsch, 2. from left):
Ceremony "Rochusmedaille" (extremely high level award for dogs).
So far, more than 1,500 dogs were bred in Kaisersteinbruch.**

31.12.2019 SOKKS® - wolf.kafka@t-online.de 126

126

SOKKS® Appliers, Kasachstan



31.12.2019 SOKKS® - wolf.kafka@t-online.de 127

127

Scientific background of odor identification and accordingly optimized animal odor source detection conditioning mediated by SOKKS[®] training aids

Prof Dr Wolf A Kafka (Germany)

wolf.kafka@t-online.de

CHEF du CNFUC
CAPITAINE DE POLICE
ETIENNE JACQUET

Jean-Marc Lenglet

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 136

136

SOKKS[®] Appliyers

Sede do Sindicato dos Agentes Penitenciários Brasil y Paraguay

Contra Almirante Paulo Martino ZUCCARO

Vitor, Ribo and Chris
From Brazilian Army in Vaud

GUIDO WYSS. Responsável pelo Método Sokks na America do Sul Paraguay

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 139

139

Afghanistan war, French Army

jerome.fraiche@technicaldog.com
www.technicaldog.com
former chief trainer of the French Army

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 142

142

European Defence Agency (EDA)

Nato Partner military working dogs counter-IED operations at the Military Center at Kaiser-steinbruch MilHus, in Austria (2015).

Important: Each of the 22 participants from Austrian, Germany, Hungary, Italy, Sweden and the Netherlands **detected SOKKS products** - unknown to the dog handlers - hidden within the test areas!

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 143

143

Scientific background of odor source detetion

1. Odor sources: definition and principles of its detection
2. Chemical senses: sensitivity, selectivity, discrimination detection
3. SOKKS[®] mediated odor source detection conditioning
4. Summary

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 145

145

4. Summary

SOKKS[®] conditioning material is distinguished by:

- **extremely low concentration** (leading contaminations even below or near olfactory threshold),
- **extremely low contaminance** (no wasting of training places),
- **extremely high purity** (reducing misconditioning),
- **tooth friendly, olfactory inert odor carriers,**
- **extremely high chemical stability** (reference material, valid for >3 years),
- **no handling regulation** (no problems when lost, important for regular efficiency controls)
- **time saving multicomponent conditioning.**

Complete basic conditioning may be achieved within 3 days

31.12.2019 SOKKS[®] - wolf.kafka@t-online.de 147

147

Scientific background of odor identification and accordingly optimized animal odor source detection conditioning mediated by SOKKS[®] training aids

Prof Dr Wolf A Kafka (Germany)

wolf.kafka@t-online.de

Taking home message:

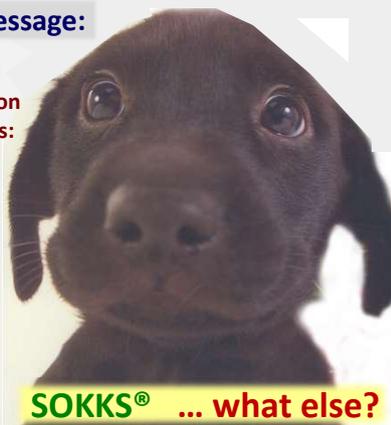
SOKKS[®] - mediated odor source detection conditioning renders:

- sensitive,
- selective,
- save,
- reliable,
- fast, and
- economic

results

There is a science behind olfaction, not a guru

SOKKS[®] ... what else?



31.12.2019

149



Happy with SOKKS[®]

thanks für your patience

152



Happy with SOKKS

SOKKS

odor source detection:

- sensitive
- selective
- save
- reliable
- fast

SOKKS .. what else ?

153

SOKKS® - MPTS

SOKKS® EXPLOSIVES

SOKKS®
EXPLOSIVES

SOKKS® EXPLOSIVES will condition the dog to detect even the smallest amount of explosive, either military, commercial or home made

SOKKS® DRUGS

SOKKS®
Drugs

SOKKS® DRUGS will assist you to train your canine to detect even the smallest amount of the most commonly used and abused drugs

SOKKS® PC/Cadaver

SOKKS®
PC/Cadaver

SOKKS® PC/Cadaver will assist you to train your canine to detect both deceased and live humans and human only blood. NOT animals.

SOKKS® Fire/Arson

SOKKS®
Fire/Arson

SOKKS® Fire/Arson will assist you to train your canine to detect all accelerants. It has been proven extensively in Germany.

SOKKS® cell-phone

SOKKS®
Cell-phone

SOKKS® cell-phone will assist you to train your canine to detect the most commonly used mobile cell-phones (esp. in prisons!).

SOKKS® Cites

SOKKS®
Cites

SOKKS® Cites is a series of products to detect species protected animals or parts of them (e.g. Ivory, Rhinoceros, Reptilia, Parrots, Birds of prey, and combinations thereof).

SOKKS®
Cimex L.

SOKKS® Bedbugs/Cimex

SOKKS® Bedbugs/Cimex is a great product, pure odor like all our products. A simple easy way to train your detection dogs with handling Bed Bugs.

SOKKS®
Myces Mold

SOKKS® myces is a pure odor like all, without spores and thus cannot cause any further mold to spread

SOKKS® is PURE odor product and NOT Pseudo !

SOKKS® is available to Specialist Government Security, Military, Police, Search and Rescue and Emergency Dog Trainers and Government training providers

SOKKS® -EXPLOSIVES

SOKKS® -EXPLOSIVES will condition the dog to detect even the smallest amount of explosive, either military, commercial or home-made including SEMTEX, HMTD and TATP. Dogs trained with **SOKKS® -EXPLOSIVES** can find explosives that elude even the most advanced detection equipment that is currently in use at many airports.

SOKKS® -EXPLOSIVES trained dogs have been tested on and have detected:

- Ammonia-Gel
- Ammonia-Nitrate
- Hexogen (RDX)
- Potassium Chlorate
- Potassium Nitrate
- Sodium Chlorate
- Nitro-glycerine
- Nitro-Cellulose
- TNT
- All Dynamites
- Water Gels
- Oktogen (HMX)
- Smokeless Powder
- Black Powder
- Gun Powder
- Chlorates
- Nitropenta (PETN)
- TATP
- HMTD
- TAPD

SOKKS® -EXPLOSIVES first entered service with the Bavarian State Police in Munich and Nuremberg, Germany and has since become the standard in detector dog training for worldwide police and military forces. Using **SOKKS®** you will not need licenses, bunkers, special containers and vehicles for the possession, transportation, and storage of explosives. Due to its unique manufacturing, **SOKKS® Explosives** is completely harmless and can be carried in the field by each handler and simply stored in the office. You can train anywhere, anytime since there is absolutely no risk of fire or explosion. Even a lost training aid is useless to anyone that finds it as it is impossible to reverse the process and extract the explosives molecules

NEVER EXPOSE A SOKKS® TRAINED CANINES TO PSEUDO

“Real”, or conventional training aids, can be used for certification purposes only. If the **SOKKS®** canine is repeatedly exposed to pseudo training aids, the dog will become conditioned to locate the inherent contaminants in these aids.

SOKKS® Drugs

SOKKS® Drugs will assist you to train your canine to detect even the smallest amount of the most commonly used and abused drugs. Trained with SOKKS-MPTS™ Drugs your dog will be able to detect all the following drugs:

- Cocaine (Koka, Peru)
- Morphin
- Crack (Kokain +Natriumhydrogenkarbonat Backpulver)
- Opium, Heroin (Diacetylmorphin Papaver sommniverum, Schlafmohn; Afghanistan)
- LSD (Mutterkorn) Yes
- Amphetamines
- Ecstasy, Crack (Methylamphetamin+Backpulver)
- Liquid Ecstasy GHD (Gammahydroxybuttersäure, GHD)
- Thai-Pillen (Methamphetamin)
- Hempt Cannabis indica, sativa, ruderalis
- Marijuana,
- Cannabis
- Hash
- Ecstasy Coffein Theobromin, Catechin, Epicatechin, Procyanidin (Colanut)

SOKKS® Drugs is completely harmless and requires no special handling, storage or requirements, you just need to be careful about cross-contamination as you would with any training scent. You can carry this training aid safely on you and train anywhere any-time, without leaving residual odor. SOKKS® Drugs can be planted and left in place without posting a guard, as it is completely safe to handle and poses no risk in case of accidental ingestion. SOKKS® Drugs contains the equivalent of one gram of drugs dissolved in 80 million gallons of water. In these minute concentrations, the drug loses all its pharmaceutical characteristics, yet it still exudes sufficient odor for canine detection training.

SOKKS® Drugs follows the same principle as the explosives system, with one exception. Whilst target odor is presented in its pure form, this system combines several odors in one training aid. Extensive research has shown that training the dog on all target odors each time is beneficial to the overall ability of the dog. This “combined” method of training has become the standard of all police, military stations and airports in Germany.

SOKKS® Drugs is completely harmless and requires no special handling or storage apart from the normal cross-contamination considerations. You can carry the training aids in the field and any time your schedule allows, without leaving residual odor (especially important when asking members of the public to carry a training aid). SOKKS® Drugs can be planted and left in place without posting a guard as it is completely safe to handle and poses no risk in case of accidental ingestion.

SOKKS® Drugs is NOT PSEUDO! It is PURE ODOR in minute quantities. Your dog will still detect larger quantities, only now he will be surer and faster in his response with increased drive and desire.

NEVER EXPOSE A SOKKS® TRAINED CANINES TO PSEUDO

“Real”, or conventional training aids, can be used for certification purposes only. If the SOKKS® canine is repeatedly exposed to pseudo training aids, the dog will become conditioned to locate the inherent contaminants in these aids.

SOKKS® -ACCELERANT

SOKKS® Accelerant will assist you to train your canine to detect all accelerants.

It has been proven extensively in Germany and the results can be verified. If your fire investigation unit is considering deploying a canine as part of the investigation team we recommend **SOKKS® Accelerant** as the ideal conditioner

- 1.1 Ethanol 78
- 1.2 i-Propanol 82
- 2.1 Acetone 56
- 2.2 Methyl ethyl ketone (MEK) 80
- 3.1 Ethyl acetate 77
- 3.2 n-Butyl acetate 127
- 4.1 n-Butyl glycol 171
- 5.1 n-Hexene 69
- 5.2 Cyclohexene 80
- 5.3 Toluene 110
- 5.4 Xylol-mixture 140
- 6.1 Petrol 40-200
- 6.2 Candlelight oil 130-280
- 6.3 Gas oil 160-360
- 6.4 Spiritus 78

(numbers represent vapor pressure)

SOKKS® PC/CADAVER

SOKKS® PC/CADAVER will assist you to train your canine to detect both deceased and live humans and human only blood. NOT animals. **SOKKS®-Cadaver** is REAL odor and will enable the dogs to detect humans at all stages of decomposition. The dogs already trained using the **SOKKS®** have had proven and verifiable results in both land and water searches. No longer worry about messy training aids. Join the future in detection dog conditioning by implementing **SOKKS® PC/CADAVER** into your training inventory

Lost persons, corps and parts of it compose of highly complex and merely analysed mixtures

According to continuous decomposition corps, or parts of, do not render valid conditioning material!

SOKKS® studies have shown that characteristic human vapors are released at the very end of life. Stable over many years!

Extremely valuable as stable reference conditioning material to detect, not only corps, but alive persons.

SOKKS® PM & PAPER MONEY

SOKKS® PM & PAPER MONEY will assist you to train your canine to detect Euro Currency.

The ability in the dog trained on SOKKS® to find currency disguised and/or hidden is greatly improved. This is because SOKKS® trained dogs have a clear olfactory picture of their target.

It is very easy to cross train your dog for example to detect drugs and currency using the SOKKS® Micro Particle Training System as the scent pictures conditioned in the dog are clear and precise

SOKKS® Myces Schimmelpilz (Mold)

Is a pure odor like all, without spores and thus cannot cause any further spread of mold

SOKKS® cell-phone

The ability in the dog trained on SOKKS® to detect mobile cell-phones disguised and/or hidden is of great interest in e.g. prisons, especially since it is- contrary to electronic sensors - valid to detect cell-phones in off-mode.

SOKKS® Bedbugs/Cimex. I

SOKKS® Bedbugs/Cimex. I is a great product, pure odor like all our products. A simple easy way to train your detection dogs with handling Bed Bugs.

Again, like all SOKKS® products this enables the training of your dog to be easy and without contamination.

SOKKS® Cites (Species protection)

SOKKS® Cites is a series of products to detect species protected animals or parts of it (e.g. ivory, rhinoceros, reptilia, parrots, birds of prey, and combinations thereof). Its development was supported by ZOO Vienna (Austria).

Please contact us for your special demand.

OTHER SOKKS® ODORS

Please contact us if you require a specific odor (odor). If it has an odor, we can develop a product for your detection dog team.

All SOKKS® products are harmless and safe to use.

SOKKS® – Micro Particle Training Systems

FAQ's

***Can a SOKKS® dog still find large amounts of explosives and drugs?
Why is that possible?***

SOKKS® dogs will find large quantities. Currently the largest find for an explosive K-9 trained on **SOKKS®** is over 500 pounds and up to 15 pounds of drugs. The reason is that the **SOKKS®** K-9 is trained to prosecute isolated molecules of the target odor, not the entire molecular scent spectrum of each individual explosive or drug. That means that even when there is a total presence of hundreds of pounds of substance, the actual portion of the target that exudes the PURE odor is usually less than half of the total substance. Since we are no longer forcing the K-9 to find all the odors of the target substance (including contaminants) the large quantity question becomes much less difficult to train for. **SOKKS®** K-9's can be exposed to large quantities if you have the opportunity to do so.

Is this another form of Pseudo?

SOKKS® is not pseudo. It contains minute amounts of the molecules that make up the target odor. This eliminates as many contaminants as science allows. Pseudo substances are chemically related to the odors of the drugs and explosives, but they are not identical. **SOKKS®** uses only the actual odor of the drugs and explosives.

How many different odors are there?

There is only one odor for each family of detector dog. All drug training aids are exactly identical as are all of the explosive training aids. This means your K-9 is trained on identical odors each time the dog is exposed to **SOKKS®**. This is possible due to the scientific research done by Prof. Dr. Wolf A. Kafka.

What odors is the dog trained to detect?

SOKKS®-Drugs will condition the dog to find:

- Cocaine and Crack Cocaine
- Heroin
- Morphine and Opium Derivatives
- Hashish and Marijuana
- Amphetamine based drugs, such as LSD and Ecstasy
- Meth- and Crystallmethamphetamine

SOKKS®-Explosives will condition the K-9 to find military and commercial explosives. Dogs have been tested on:

- Ammonia-Gel
- Ammonia-Nitrate
- Hexogen (RDX)
- TNT
- All Dynamites
- Various Watergels
- Oktogen (HMX)
- Smokeless Powder
- Blackpowder
- Various Chlorates
- Nitropenta (PETN)
- Nitro-Cellulose (NC)
- Handgrenades, weapons, artillery shells, etc.
- and many more.

Is it hard to order training aids?

Absolutely not. All you need to do is mail an order on department letter head. Your letter needs to be signed by a supervisor and include your department address and telephone number. Once your check is received, we will send by DHL the training aids to your department.

What are the storage requirements? Do I need a safe or a bunker?

If you have a dark and cool place, you can store **SOKKS®** Training aids should be stored in the original container in a dark, cool place. **SOKKS®** should not be frozen, nor should it be exposed to bright light and high temperatures for long periods of time.

But what about the DEA and ATF regulations?

The **SOKKS®** system will be exempt from all DEA and ATF regulations for training aids. That means no investigations in case of loss, no logs to keep, no need to weigh training aids, no safes or bunkers, and no need for armed guards. No other real odor training system enjoys these exemptions.

What if my dog swallows a training aid? Do I need to carry the antidotes?

SOKKS® is completely non-toxic. It is absolutely safe for both the handler and the dog. If your dog swallows a training aid, he is still in some danger of intestinal injury and should be seen by a veterinarian.

How long do the training aids last?

Each dog team will have forty training aids per year. Each aid can be used up to twenty times, allowing you to do up to 800 trials per year. Once a training aid has been used twenty times, it is replaced with a new aid. All used aids are shipped back to K-9 TSI at the end of the year for recycling. Having this many training aids per dog allows you to

take obviously contaminated training aids out of service immediately and still be able to train without having to wait weeks for a replacement.

What is the cost for SOKKS®? What about technical support?

SOKKS® is the cheapest method for training detector dogs on the market. The sets include all the material to allow you to start training within one hour of receiving your aids. **SOKKS®** does not require you to change the manner in which you train the K-9, it merely replaces the training aids. Detailed, easy to understand, user instructions are included with each set.

What about legal issues? Will this be acceptable in court?

SOKKS® K-9's are trained on pure odor. We believe that in short order judicial notice will be taken of **SOKKS®**. Each dog can still be certified using current state standards by using conventional training aids. However, since **SOKKS®** uses the PURE ODOR of the REAL DRUG all current court decisions regarding the validity of training with real substances still apply.

Can I still train with conventional “real” training aids or pseudo?

NEVER EXPOSE A SOKKS® TRAINED K-9 TO PSEUDO. “Real”, or conventional training aids, can be used for certification purposes only. If the **SOKKS®** K-9 is repeatedly exposed to these old training aids, the dog will become conditioned to locate the inherent contaminants in these aids. There is no need for handlers to even have access to old training aids except for annual certification trials.

SOKKS® is not a guarantee that your K-9 will be successful. A carefully selected K9 and the proper application of the principles of conditioning are more influential on the learning process than the training aid. If properly trained a **SOKKS®** K-9 will become a true asset to your department.

For any further requests please contact:

Prof Dr Wolf A. Kafka
wolf.kafka@t-online.de