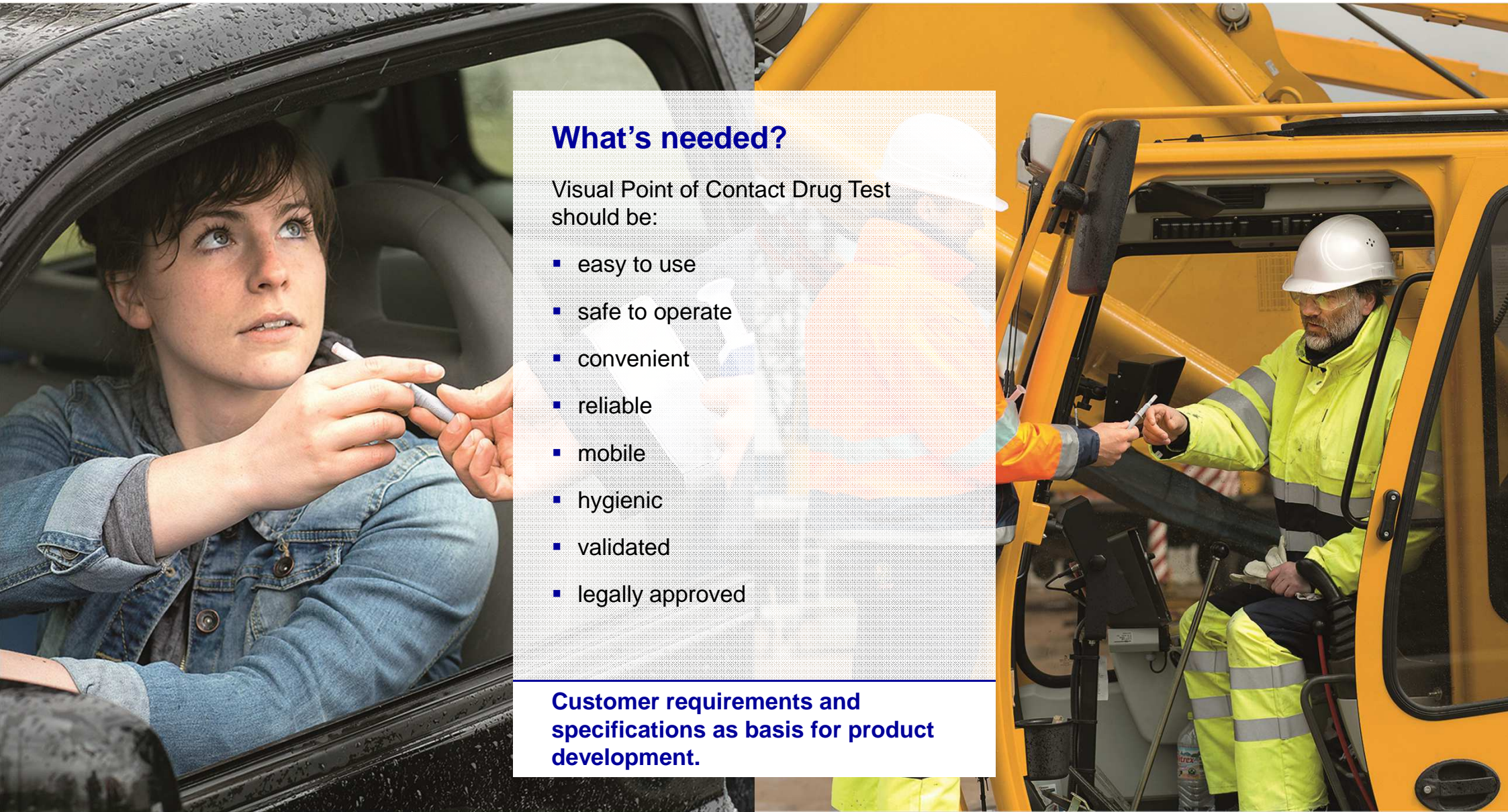




Drug Detection: Emerging Technology

Dräger DrugCheck® 3000

EWDTS | Lisbon | 28/05/2015 | Patrick Kresse



What's needed?

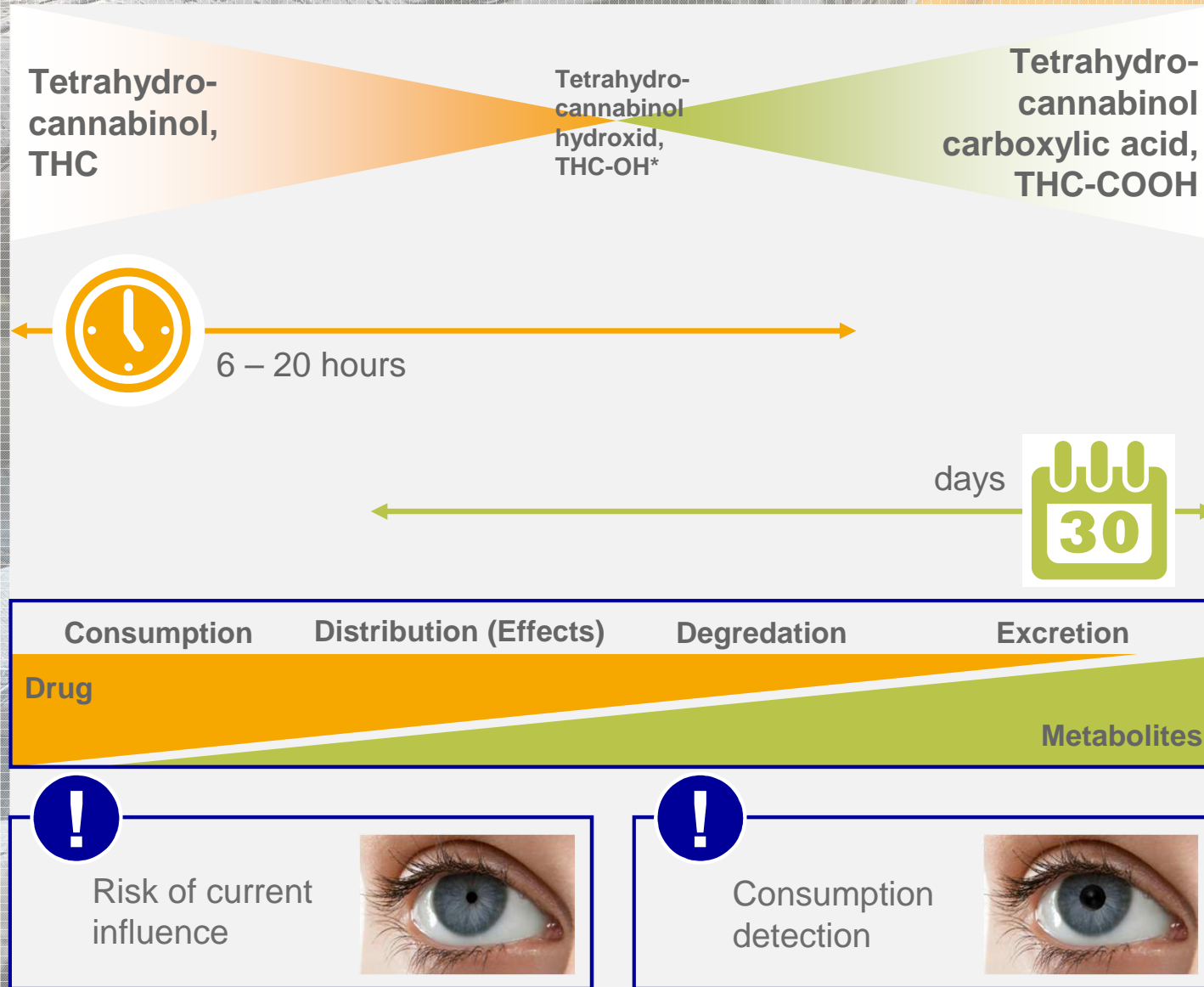
Visual Point of Contact Drug Test should be:

- easy to use
- safe to operate
- convenient
- reliable
- mobile
- hygienic
- validated
- legally approved

Customer requirements and specifications as basis for product development.

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Exemplary THC Concentration in OF over time



* (unstable intermediate)

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Facts - Studies

Oral fluid (OF) is an increasingly popular alternative matrix for drug testing, with cannabinoids being the most commonly identified illicit drug.

Drug Testing and Analysis / 2014

Also, OF concentrations more closely correlate with blood than urine concentrations, making it an attractive matrix for estimates of impairment and time since prior drug administration.

N.A. Desrosiers, et.al. Oral fluid and plasma 3,4-methylenedioxymethamphetamine (MDMA) and metabolite correlation after controlled oral MDMA administration. Anal. Bioanal. Chem. 2013, 405, 4067.

The primary psychoactive component, Δ^9 -tetrahydrocannabinol (THC), contaminates the oral mucosa during smoking. OF THC concentrations are initially high after smoking, but quickly drop within 1–3 h.

M.A. Huestis, E.J. Cone. Relationship of Δ^9 -tetrahydrocannabinol concentrations in oral fluid and plasma after controlled administration of smoked cannabis. J. Anal. Toxicol. 2004, 28, 394.

OF collection is less invasive, does not require same sex collectors, and minimizes sample adulteration, dilution, and substitution compared to urine.

W.M. Bosker, M.A. Huestis. Oral fluid testing for drugs of abuse. Clin. Chem. 2009, 55, 1910.



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Application Scenarios

Dräger



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Application Scenarios



Some Facts The Bottom Line

1. About 10% of the population (aged 12 and older) in industrial countries are frequent drug user.
2. Up to 75% of frequent drug users are either full time or part time employed.
3. Drugs cause 25-35% of all industrial injuries and fatalities.
4. Companies register drop of up to 55% positive rates after implementing drug testing programs within the first years.

In the European Union substance abuse at the workplace results in several hundred billion euros of economical damage every year.

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Application Scenarios



Challenge:

Reliable and fast detection of drug abuse for more safety

The consumption of illegal drugs at the workplace can have far reaching and lasting consequences. If an employee operates a plant whilst under the influence of drugs, accidents and damage to other persons and machinery might be the result.

Especially for remote operations, explosion protection regulated workplaces or workplaces with lack of infrastructure the possible safety risks multiply when drugs are added.

1 Workplace

2 Law enforcement

Solution: **DrugCheck® 3000**



Dräger DrugCheck® 3000

Application Scenarios

Dräger



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Application Scenarios



Some Facts The Bottom Line

1. About 30,000 road fatalities per year within the EU and further 1,7 Mio injured.
2. Surveys in 13 EU countries revealed 1.9% drug presence within motorists.
3. Most frequently abused substance within motorists is (Cannabis) THC.
4. It was found that 2 ng/ml THC in whole blood (3.8 ng/ml THC in serum) seems to cause impairment equivalent to 0.5 g/l BAC.

On European roads substance abuse and thus driving under the influence causes more than 7,500 fatalities a year.

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Application Scenarios



Challenge:

Reliable and fast detection of drug abuse for more safety

Law enforcement officers are faced with a large variety of situations where drugs are used, e.g. DUI (driving under the influence), domestic violence, theft, etc. Driving whilst under the influence of alcohol or drugs are amongst the most frequent causes of accidents. Effective controls provide with a firm tool to remove a drug abuser. The need for fast and easy to use equipment is evident in such situations.

1 Workplace

2 **Law enforcement**

Solution: DrugCheck® 3000



Simple.
Safe.
Sound.

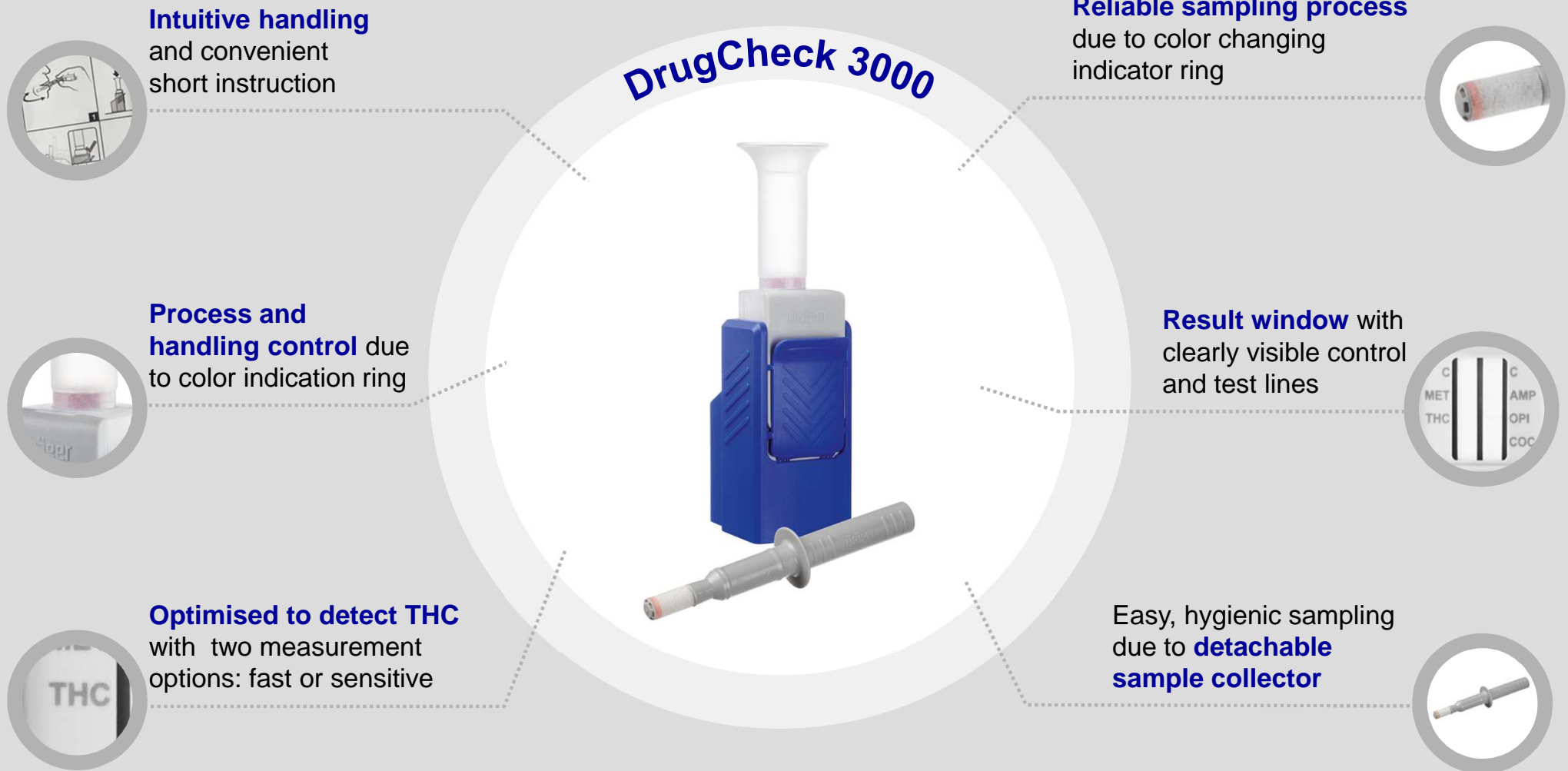
Dräger DrugCheck® 3000

The rapid drug test.



Dräger DrugCheck® 3000

Features & Benefits



Dräger DrugCheck® 3000

Deep Dive



Hygienic and painless:
tamper-proof
collection without
blood samples

DrugCheck 3000



Sampling
and analysis
in one system,
**ready-for-use
on the spot**



Fast detection of variety of substances

Check individuals for five substance classes simultaneously:
cocaine, opiates, amphetamine, methamphetamine, and cannabis (THC)

The Dräger DrugCheck 3000 was optimized to detect THC,
and offers two measurement options: **fast or sensitive**.

Fast

> 40 ng/ml

Sensitive

> 15 ng/ml

Unambiguous on-the-spot drug detection

Its compact design makes the DrugCheck 3000 easy to
transport and is ready for use quickly and easily, and is suitable
for **roadside checks and testing in safety-relevant
workplaces**.

The test kit has **no electrical parts**, which makes it safe to use
in hazardous areas.

Minimizing hygienic risks and cross contamination; the test is
carried out in a few fast and hygienic steps.

Dräger DrugCheck® 3000

Standards & Approvals



The DrugCheck 3000 **complies with the in-vitro-diagnostic directive** relevant for European Union and states with contractual agreement with the European Economic Area.

The DrugCheck 3000 is used as a point of contact screening device only.

In all other markets for law enforcement, criminal justice, rehabilitation **outside the EU**, the DrugCheck 3000 can be used as a Non-IVD product worldwide*.

*The DrugCheck 3000 is sold only for law enforcement purposes in the USA; for forensic use only.



The DrugCheck 3000 conforms to the **98/79/EC directive** and **ISO 13485** requirements.

The DrugCheck 3000 is **under independent continuous clinical evaluation**.

70

countries where our drug testing solutions are sold

5

substance classes simultaneously



Dräger DrugCheck® 3000

Why Dräger?



01

Excellent expertise

- » You benefit from a great variety of products and our training expertise
- » Our products are easy to use and adapted to different working conditions

02

Highest technological quality

- » Dräger is a world leader in the fields of breath alcohol testing and oral fluid drug screening, with thousands of agencies using Dräger equipment across the globe
- » We guarantee up-to-date technology for reliable results

03

Widespread safety know-how

- » Our alcohol and drug detection portfolio provides everything from the top-of-the-line evidential breath tests to the easy-to-use alcohol ignition interlock and drug detection technology on the market. Dräger is dedicated to improving safety.

60 years of experience
in breath alcohol measurement

10 years of experience
in drug detection technology

0,000 000 015 g of THC can be detected in **1ml of Saliva** with the DrugCheck 3000

Thank you!

Patrick Kresse
Global Product Manager
Drug Testing Solutions & Forensic Applications

Dräger Safety AG & Co. KGaA
Revalstrasse 1
23560 Lübeck







Back-Up

Dräger DrugCheck® 3000

Technical Data

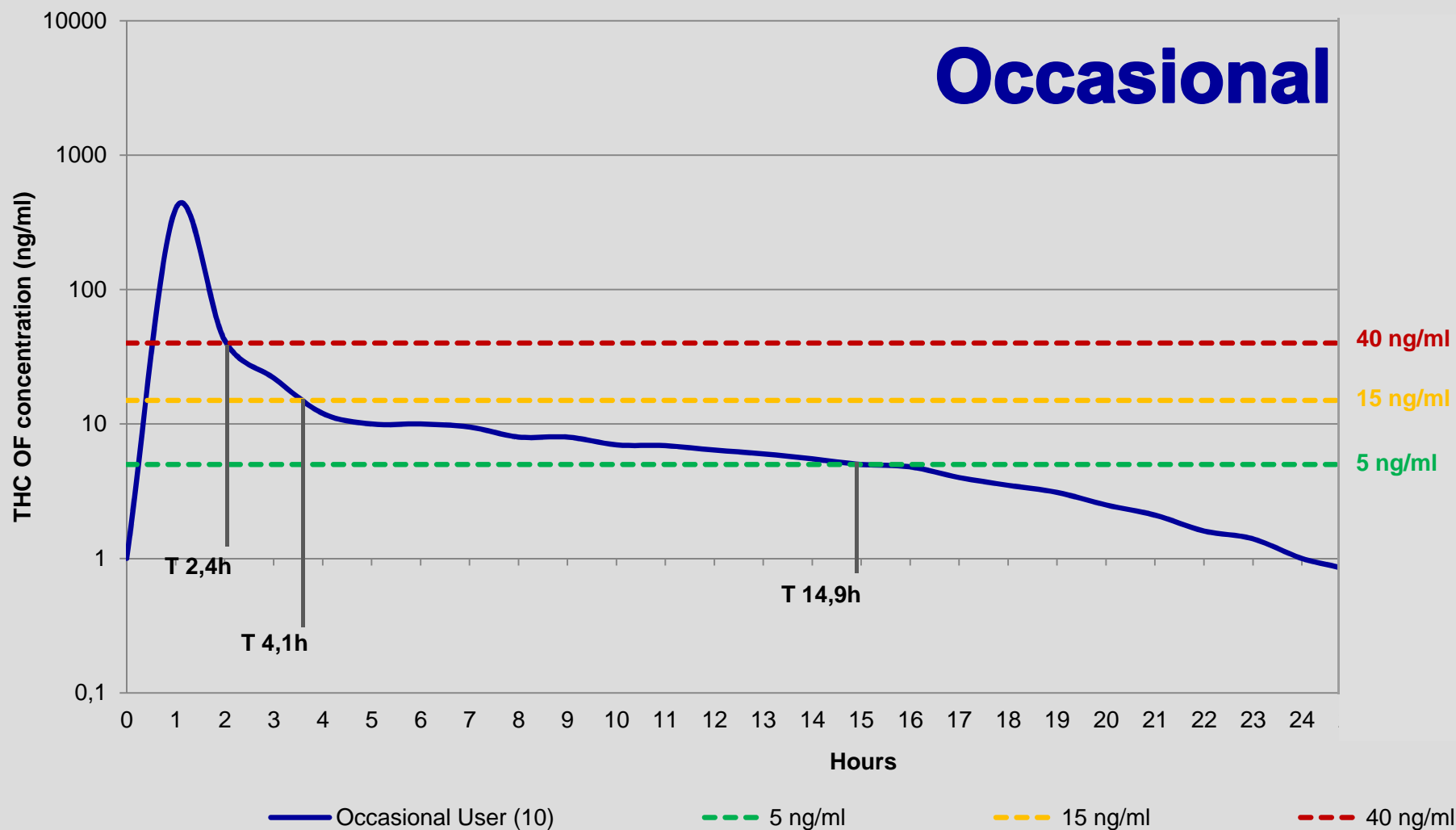


Temperature range	Operation temperature: 0°C to 30°C Storage temperature: 4°C to 25°C	
Short time to result	< 7 minutes at 15 ng/ml THC < 5 minutes at 40 ng/ml THC	
Proven Dräger technology	Experiences from over 10 years in drug detection and continuous improvement	
Low THC Cut-Off level (adjustable)	Low detection limit for THC (15 / 40 ng/ml)	
Pocket size of the test kit	The test kit weights is less than 20 grams; 2 component system.	
Variety of tested substances	Cocaine	(20 ng/ml)
	Opiates	(20 ng/ml)
	Amphetamines	(50 ng/ml)
	Methamphetamines	(50 ng/ml)
	Cannabis	(15/40 ng/ml)
Mobile Use	The DrugCheck 3000 can be used independent of infrastructure in many scenarios.	

Safety	Cost efficiency €	Productivity
Short time of measurement for fast on site evaluation.  		
Reliable drug detection on-the-spot for more efficiency  		
Low THC limit for detection of small amounts of cannabis  		
Easy and ready to use in every situation.  		

THC Concentration in OF over time

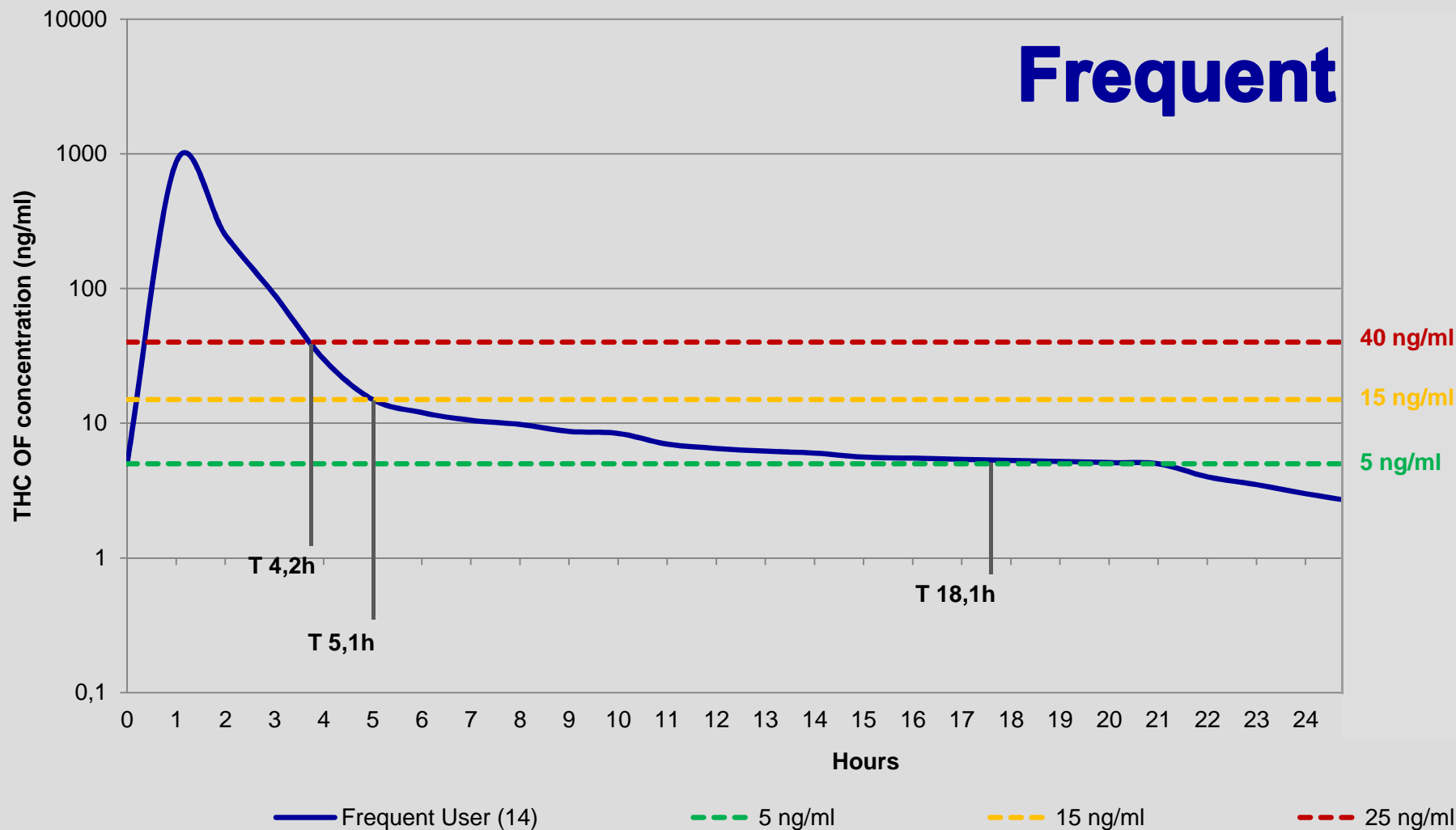
2D-GC/MS Analysis



Cannabinoid disposition in oral fluid after controlled cannabis smoking in frequent and occasional smokers; Matthew N. Newmeyer,a,b Nathalie A. Desrosiers,a,b Dayong Lee,a,b,c Damodara R. Mendu,a,d Allan J. Barnes,a David A. Gorelicka,e and Marilyn A. Huestis ; Drug Test. Analysis (2014); Published 8 February 2014; Published online in Wiley Online Library

THC Concentration in OF over time

2D-GC/MS Analysis

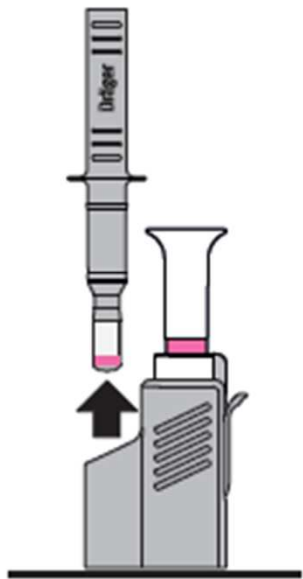


Cannabinoid disposition in oral fluid after controlled cannabis smoking in frequent and occasional smokers; Matthew N. Newmeyer,a,b Nathalie A. Desrosiers,a,b Dayong Lee,a,b,c Damodara R. Mendu,a,d Allan J. Barnes,a David A. Gorelicka,e and Marilyn A. Huestis ; Drug Test. Analysis (2014); Published 8 February 2014; Published online in Wiley Online Library

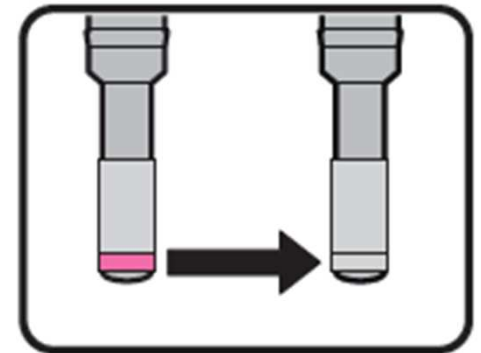
Hands-on

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Functionality: 6 simple steps toward success



1

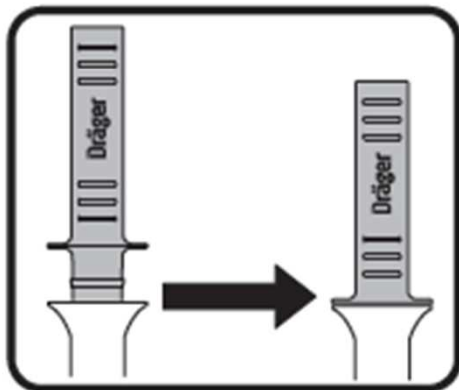
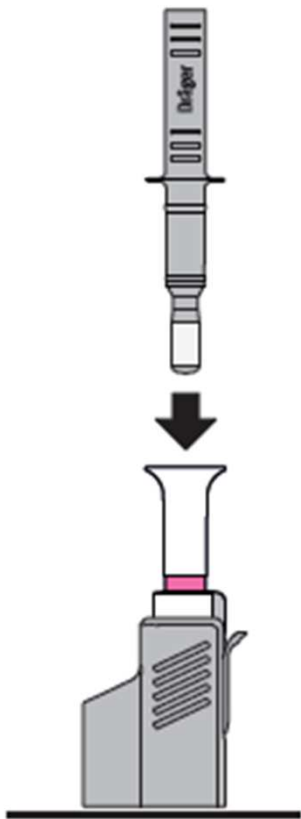


2

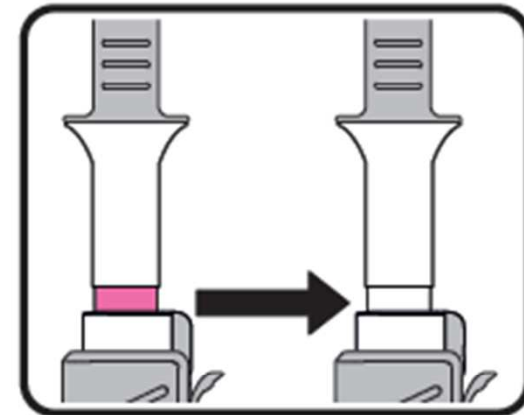
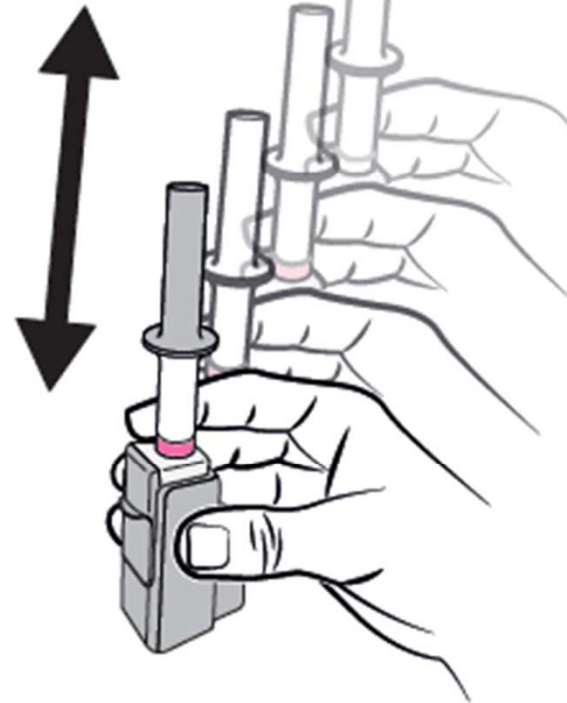
Intuitive test conduction: COLLECTION & EXTRACTION

Dräger DrugCheck® 3000

Functionality: 6 simple steps toward success



3

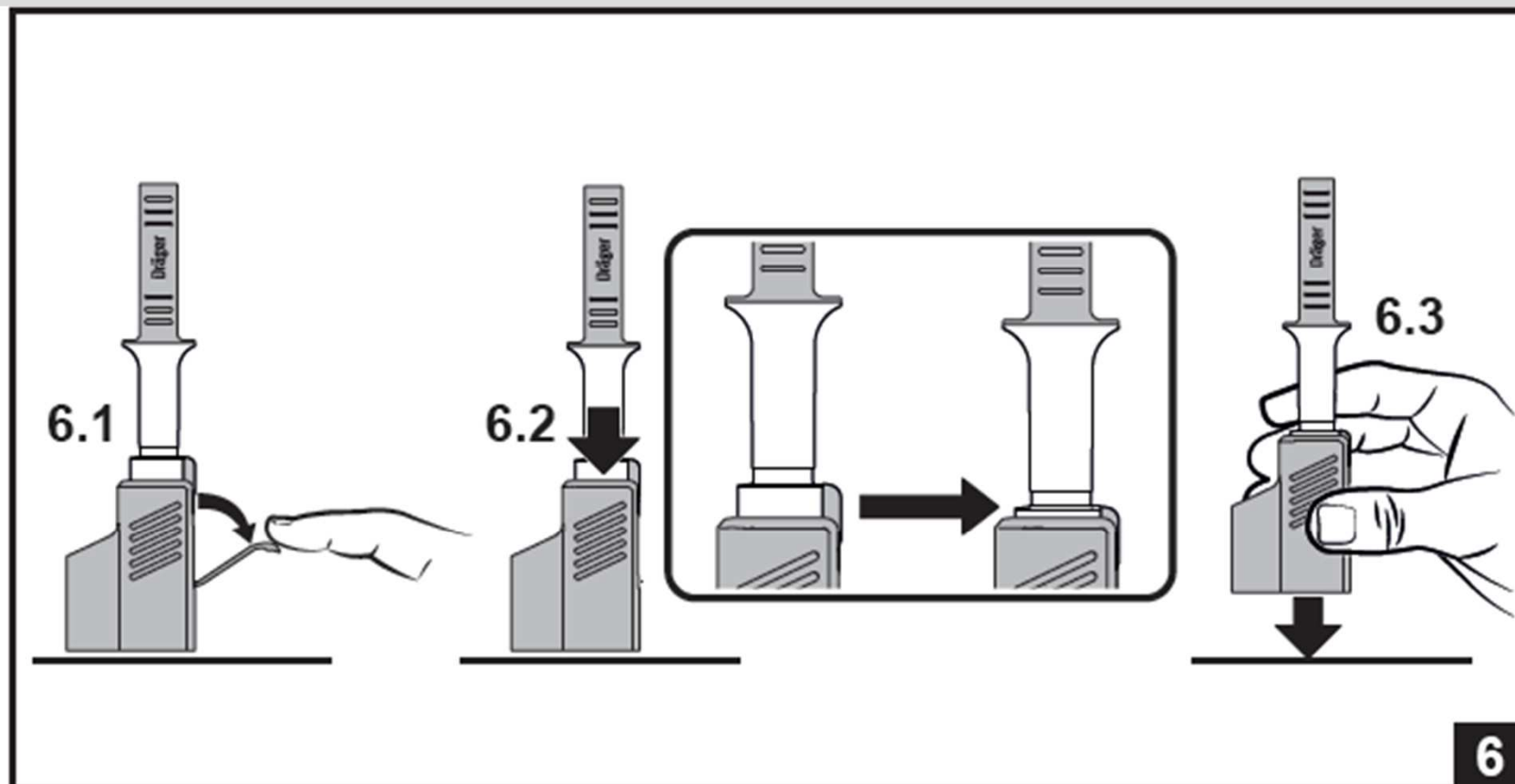


4

Intuitive test conduction: COLLECTION & EXTRACTION

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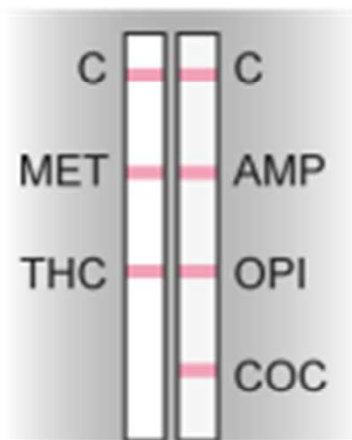
Functionality: 6 simple steps toward success



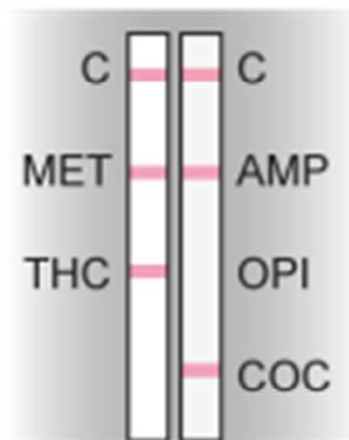
Intuitive test conduction: WAITING & STARTING

Dräger DrugCheck® 3000

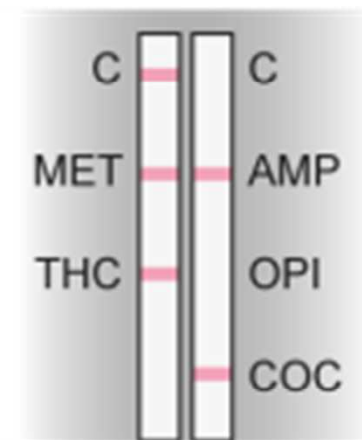
Functionality: 6 simple steps toward success



Test is valid
and negative



Test is valid
and positive for opiates



Test is invalid

Intuitive test conduction: RESULT EVALUATION