

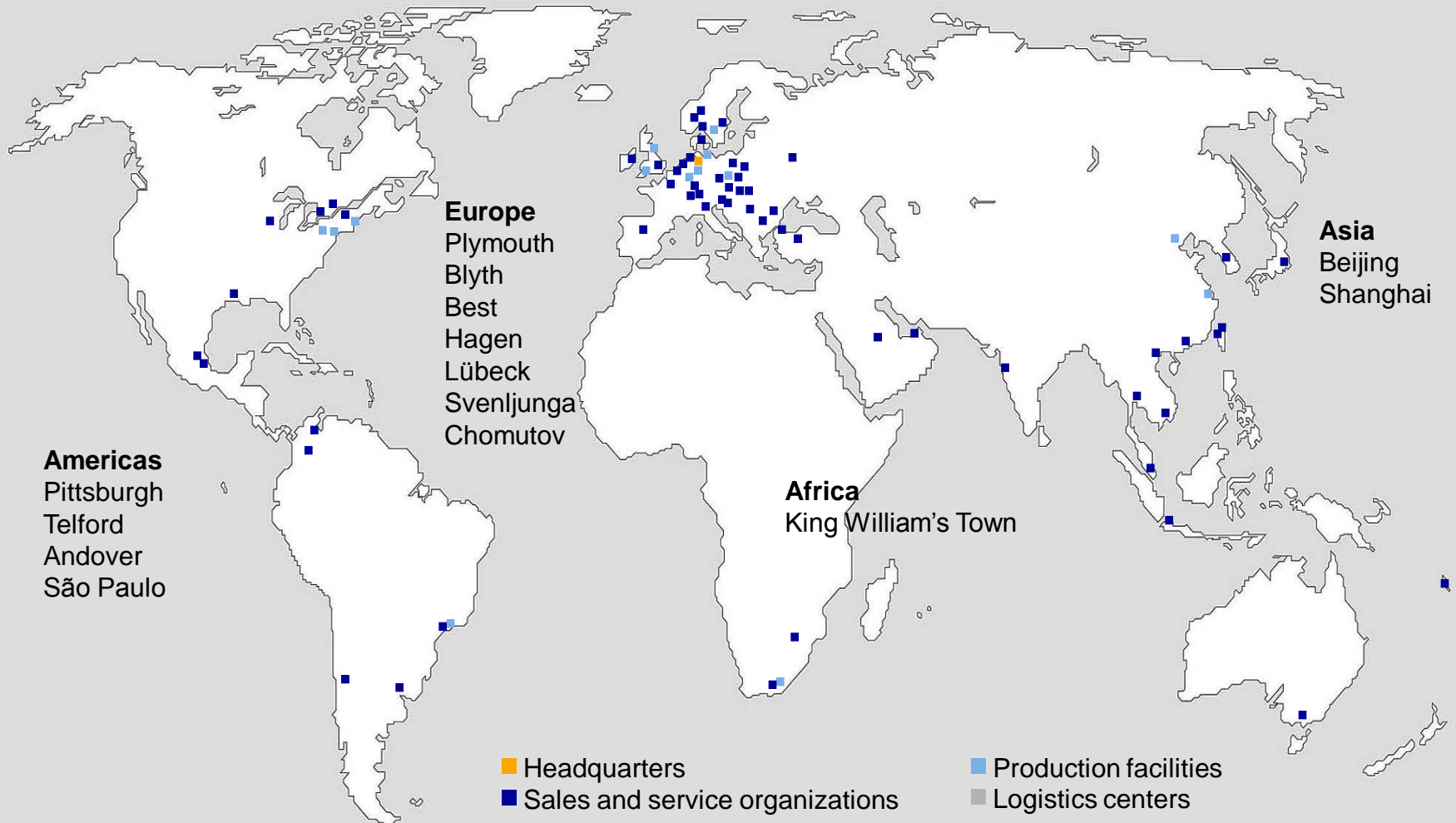


Drug and Alcohol Testing

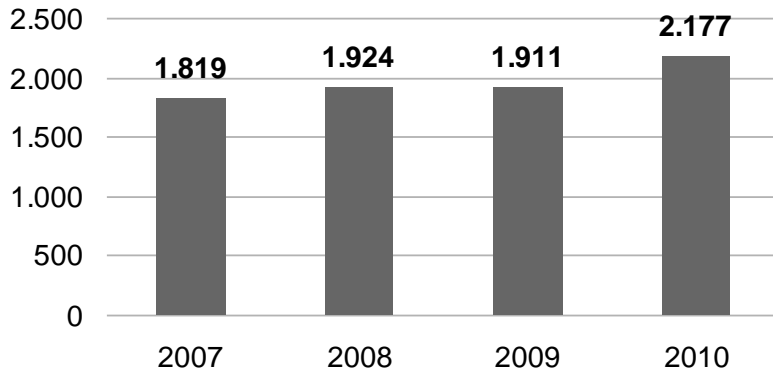
1. Overview Dräger
2. Drugs and Alcohol
3. Matrix and methods of testing
4. Products
 - Alcohol Testing
 - Drug Testing
5. Questions

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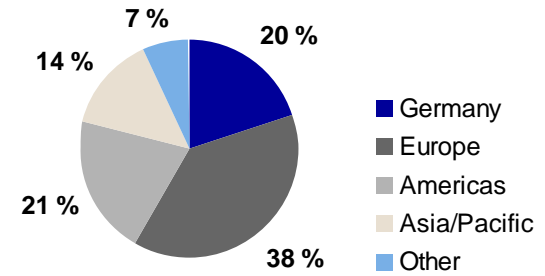
Dräger Organisation - Overview



Sales in EUR (millions)



Sales distribution by region



Dräger Organisation Dräger in Turkey

- Draeger Safety is active for 10 years in Turkey for importing, selling and giving after sales service for all the product portfolio of Draeger Safety...



Main Office in Ankara,
Branch Office in Istanbul
Sales organisation in İzmir
Technical Service Dept. in Ankara

Draeger Technical Service Team and all other Draeger team members in Turkey are active all around Turkey to support the customers in different Draeger products and systems.



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It has been scientifically proven that the following blood alcohol concentrations have the following negative effects:

0.2 ‰ **The ability to perceive moving sources of light deteriorates.**

> 0.3 ‰ **Subjectively noticeable drunkenness.**
The ability to estimate depths is impaired.
Distances are no longer assessed accurately.

> 0.5 ‰ **Objects appear further away than they actually are.**
The eyes become less sensitive to red light.
Changing focus from one source of visual stimulation to another takes longer.
Speed of reaction and attentiveness quickly become significantly reduced.

1.0 ‰ **The eyes' reaction to light and dark is considerably impaired.**
The field of vision is considerably reduced.
Perception and assessment of depths and attentiveness are reduced by half.
Reaction times become even longer.

It has been scientifically proven that the following blood alcohol concentrations have the following negative effects:

- 1.3 ‰** No driver is capable of driving
- > 2.0 ‰** First cases of fatal alcohol poisoning, particularly in those not accustomed to alcohol
- 2.5 - 3.0 ‰** Serious intoxication: general collapse of personality
Possible dimming of consciousness and vomiting, risk of choking on vomit
- 3.0 - 3.5 ‰** Swaying, slurring of speech; increasing lack of orientation and confusion
Partial loss of memory in many cases ("blackouts")
- 3.5 - 5.0 ‰** Fatal alcohol poisoning even in frequent drinkers

Stimulants

- Cocaine
- Amphetamine, Methamphetamine
- Designer drugs → MDMA („Ecstasy“, „Adam“), MDE („Eve“)

Sedatives

- Opiates and Opioides → Heroin, Codeine, DHC, Methadone
- Benzodiazepines → Rohypnol® (Flunitrazepam), Valium® (Diazepam)
- Cannabis → Hashish, Marihuana

Hallucinogens

- LSD, Psilocybine, Mescaline, Phencyclidine (PCP)

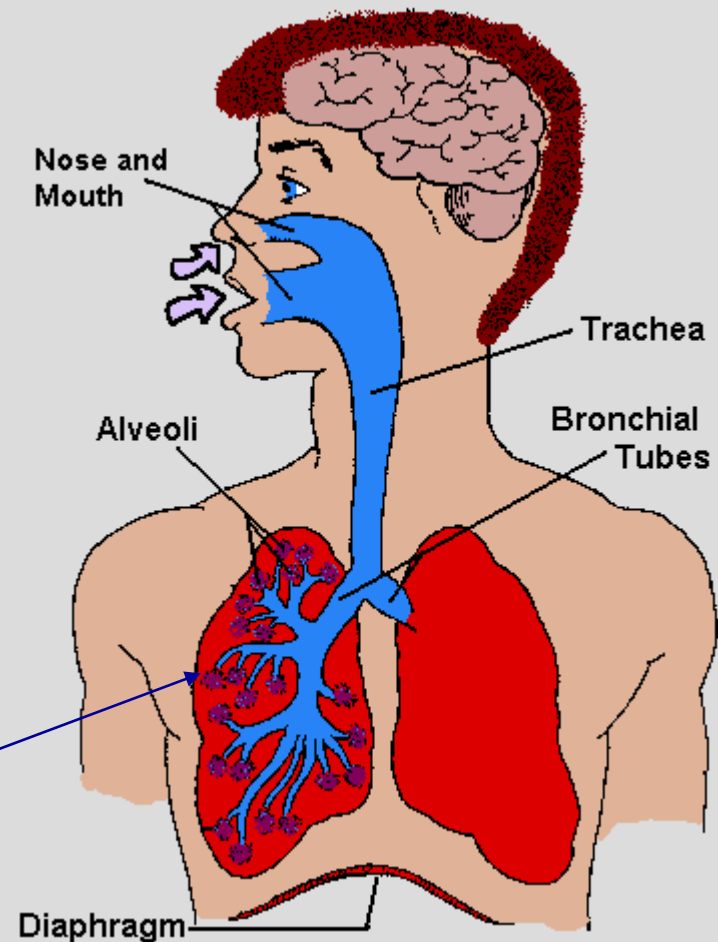
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- Alcohol
 - Breath Test
 - Quick and easy
 - Tried and tested with approvals

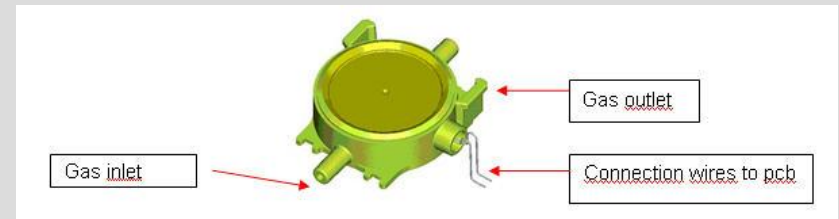
- Drugs
 - Oral Fluid (saliva), Urine, Hair
 - Point of Collection Oral, Urine
 - Lab Based Oral, Urine, Hair

- Breath testing is accepted method
- Quick and easy
- Relies on transfer of alcohol from blood to Alveoli (deep lung) air
- Different factors are used in different countries but normally between 2000 and 2300
- Electrochemical or Infra Red Detection is best. Semi conductors prone to error
- Countries have numerical limit eg 0.08%

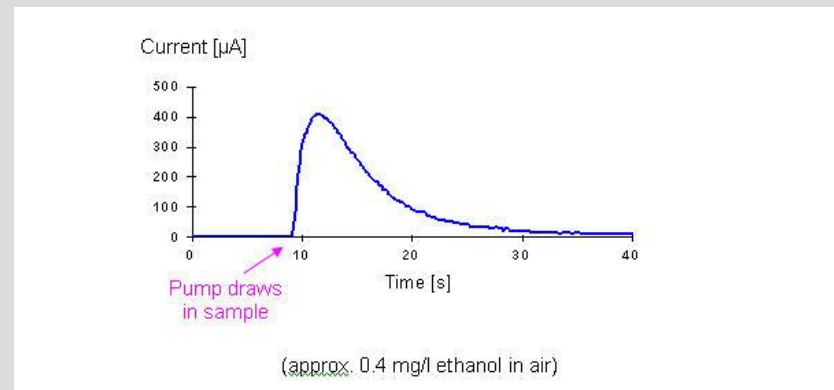
Alcohol exchange takes place



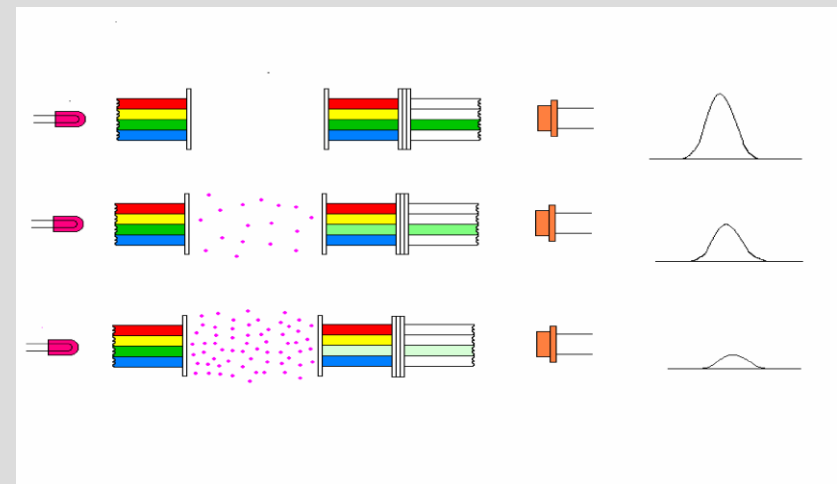
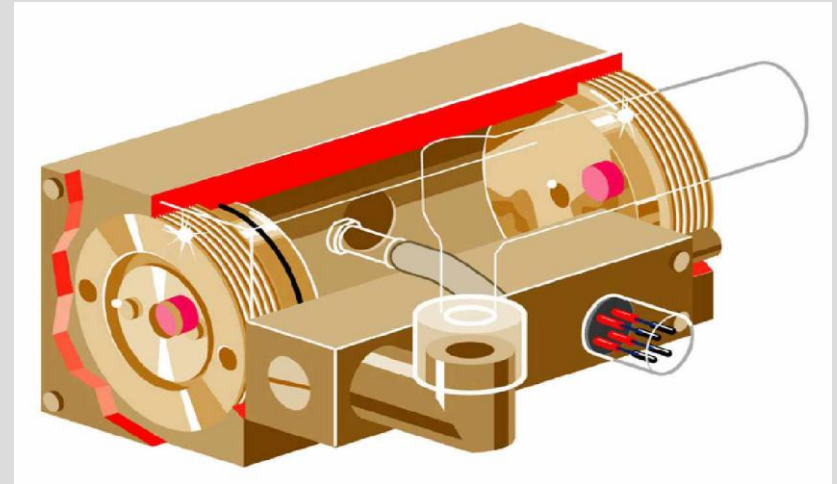
- Electrochemical sensors
 - Small
 - Accurate
 - Require little power



- Alcohol is oxidised electrochemically
 - Higher the alcohol content in the sample the higher the voltage or total current

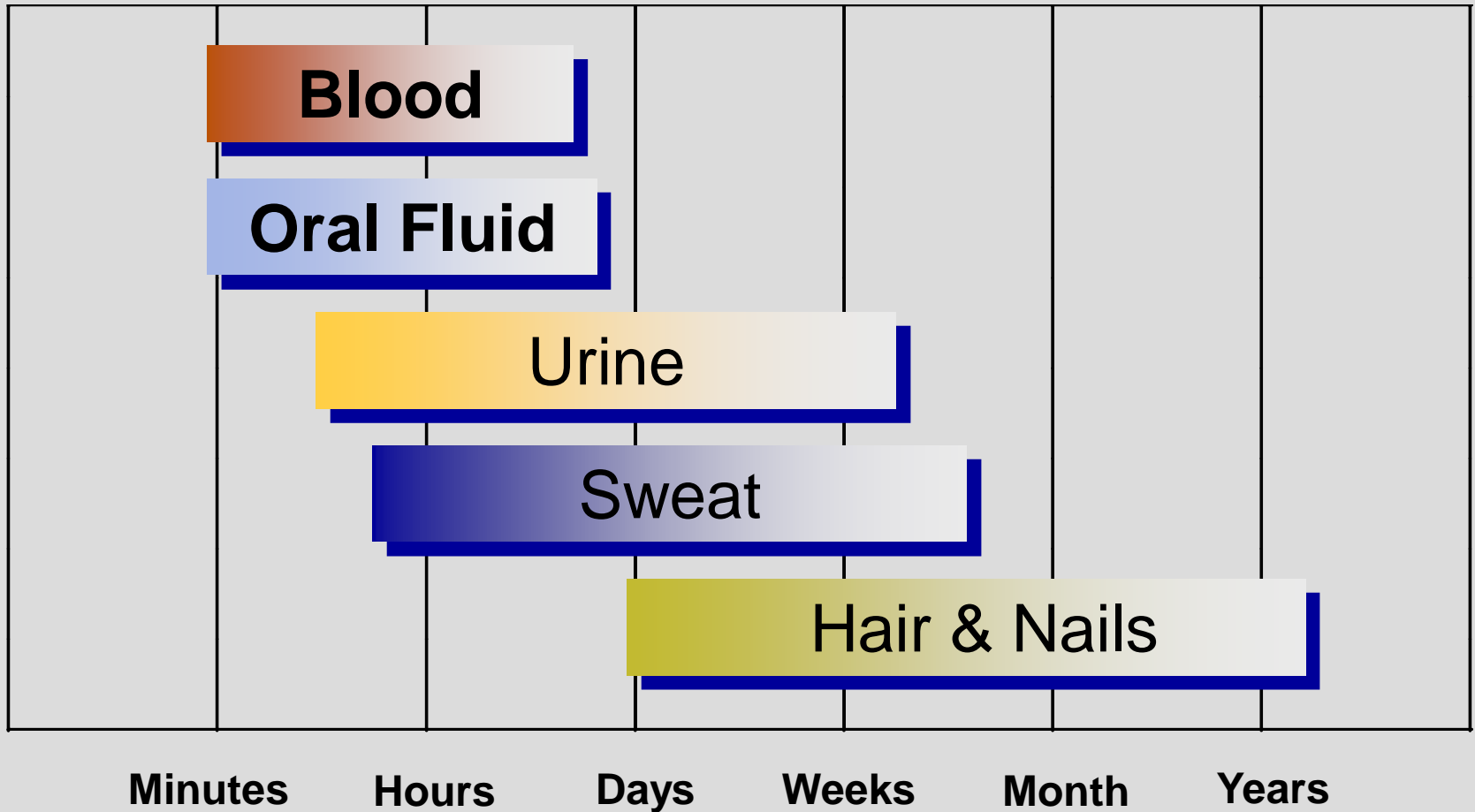


- Infra Red sensors
 - Continuously monitor alcohol concentration in breath
 - Use quite a lot of power
- Infra red beam is absorbed by ethanol molecules in the chamber
 - Higher the alcohol content in the sample the lower the output from the detector



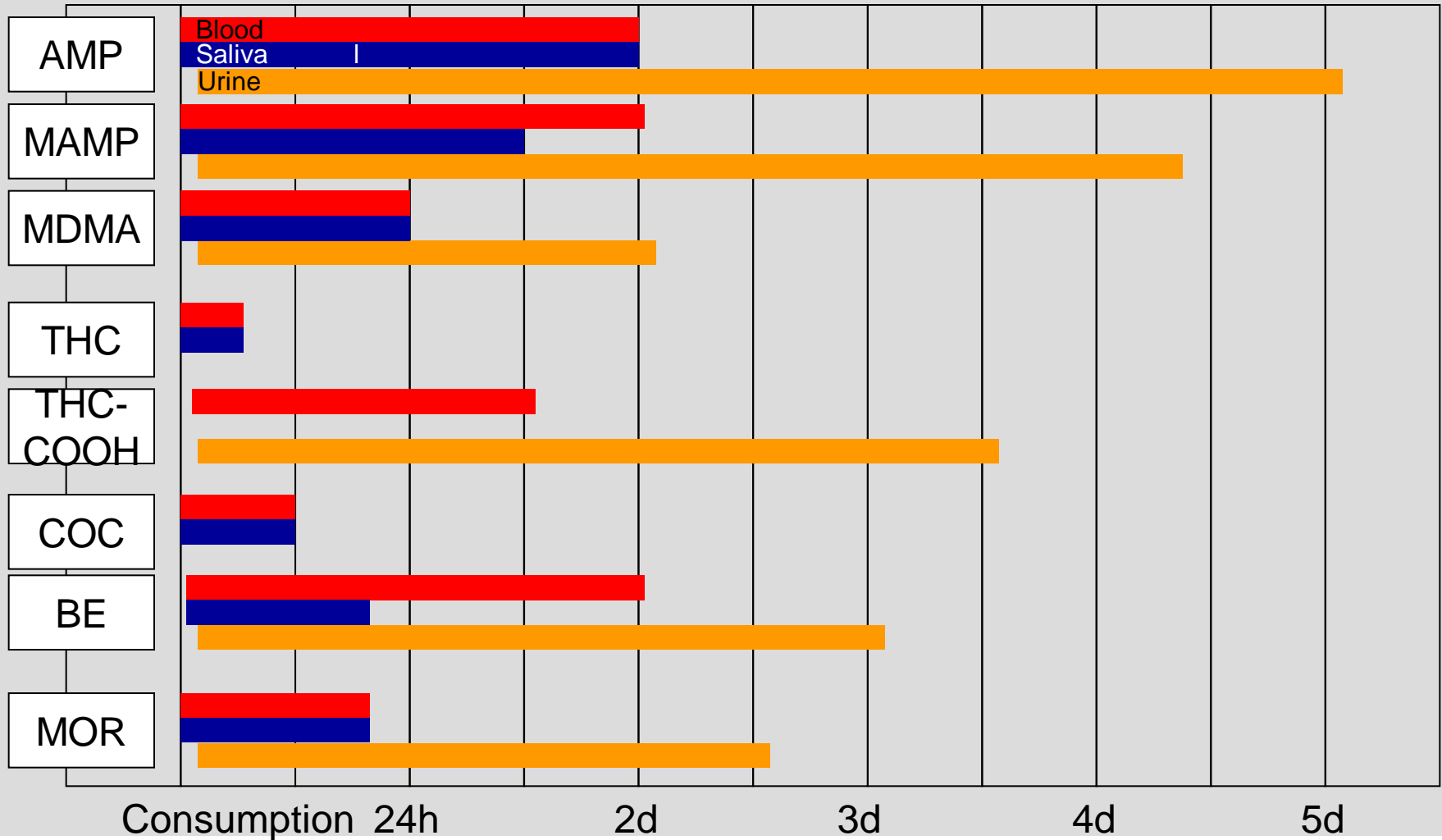
= Duration of Detection

From Caplan & Goldberg, 2001, J. Anal. Tox 25, 396-399



DETECTION TIMES OF VARIOUS DRUGS IN BLOOD, ORAL FLUID, URINE

Detection Times of Drugs of Abuse in Blood, Urine, and Saliva
 Alain Verstraete, Ther Drug Monit., Vol 26, April 2004



Most Drug tests including DrugTest ® 5000 principle of measurement:
“competitive immunoassay“

Two Antigens (one fixed to the test strip, one (possibly) in the sample) compete for a limited amount of labeled antibodies on the test strip.

Case 1: No drug in the sample

If there is no drug in the sample, the fixed drug-conjugate on the strip “wins” the competition, and the labeled antibodies bind to them, creating a detectable red line in the detection zone.

Case 2: Sample contains drug

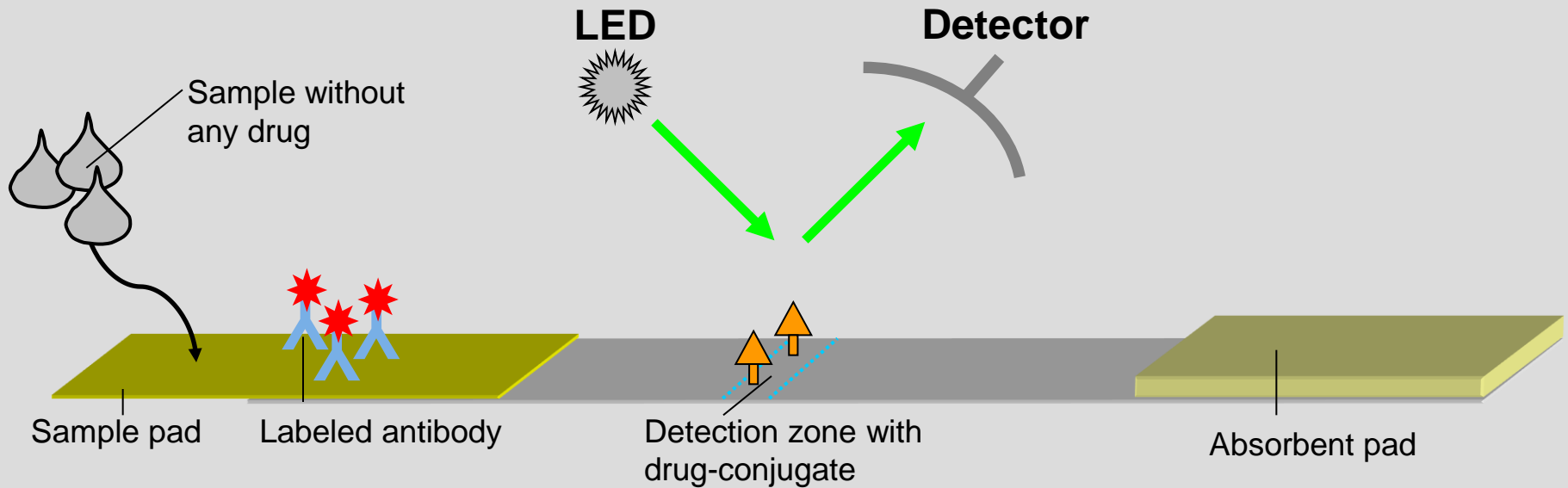
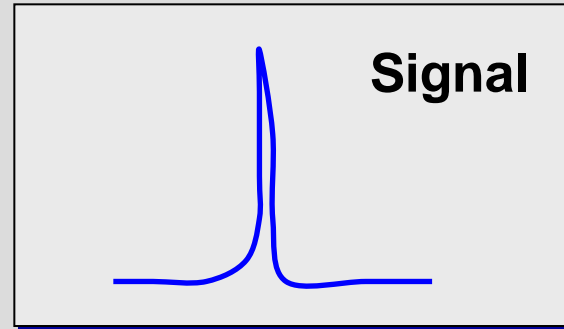
If there is a reasonable amount of drug in the sample, then this drug “wins” the competition as the labeled antibodies get into contact with the drug in the sample first. The antibodies bind to the drug, therefore they are already “occupied” when passing the detection zone. Occupied antibodies do not bind to the drug-conjugate, resulting in no detectable red line in the detection zone.

Dräger DrugTest® 5000

Principle of measurement – case one

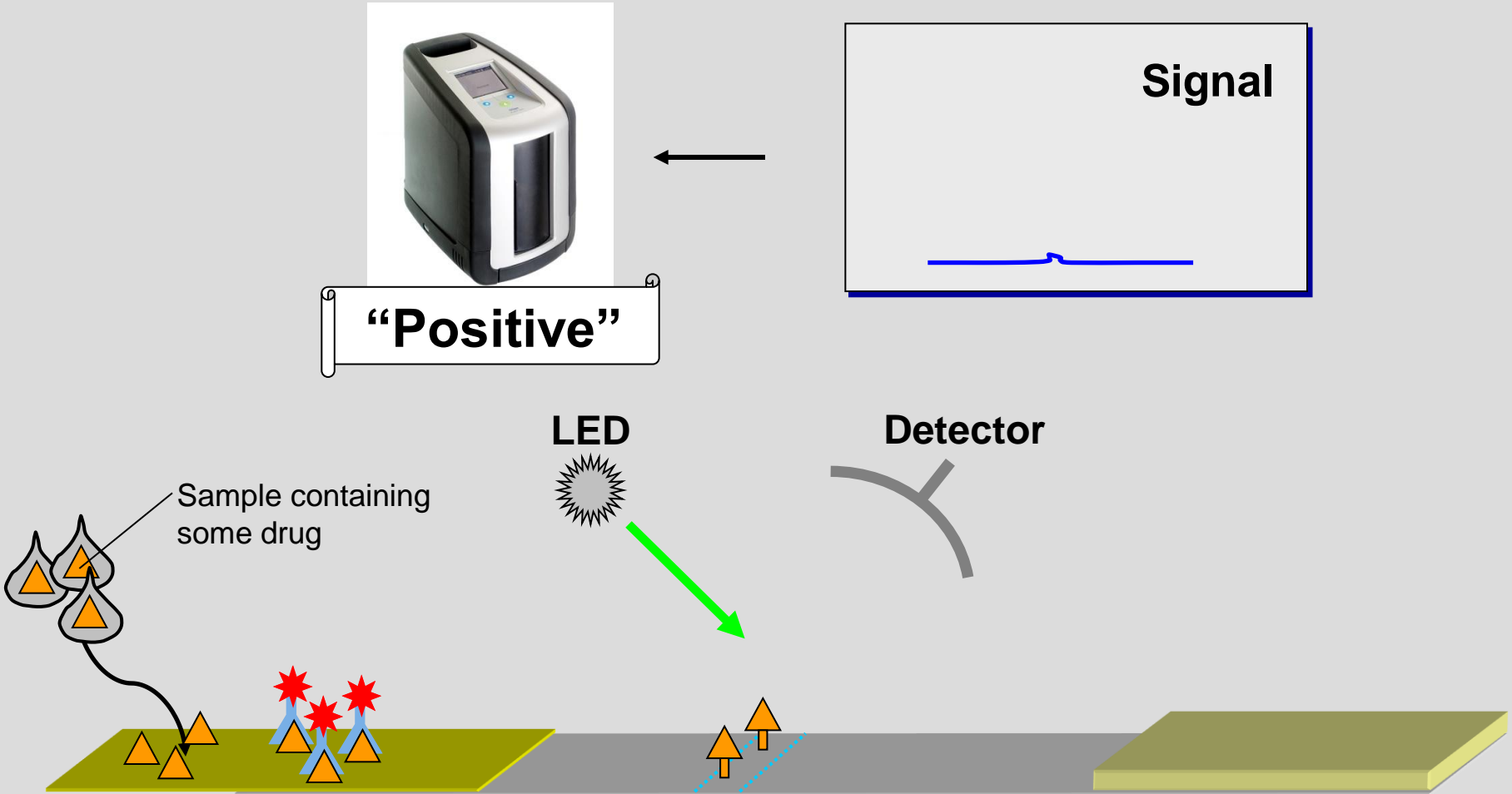


“Negative”



Dräger DrugTest® 5000

Principle of measurement – case two



DRUG DRIVE LIMITS

- Drug Driving UK
 - Driving whilst unfit through drugs (any drug not just illicit ones)
 - New limits for certain drugs in saliva

▪ Cannabis	10ng/ml
▪ Benzodiazepines	10ng/mL
▪ Cocaine	30ng/mL
▪ Amphetamine	40ng/mL
▪ Methamphetamine	40ng/mL
▪ Methadone	50ng/mL
▪ Opiate	40ng/mL
 - Drug Driving Germany
 - Any detectable level of specified drug in blood (saliva screen)

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Pros

- Easy To Use
- Quick
- Passive Test
- Quantitative readout or Pass Fail
- Approved
- Reliable

Cons

- Calibration required
- Cannot produce documentation



Alcotest 6510

Pros

- Easy To Use
- Quick
- Passive Test
- Quantitative readout or Pass Fail
- Approved
- Reliable
- Data management
- Data transfer to printer

Cons

- Calibration required



Alcotest 6810



Alcotest 7510



Pros

- Dual Sensor Technology
- Portable or Stationary
- Superior specificity to ethanol
- OIML Approved
- Reliable
- Flexible communications options
- Tested in court

Cons

- Service required
- Initial cash outlay



Alcotest 9510

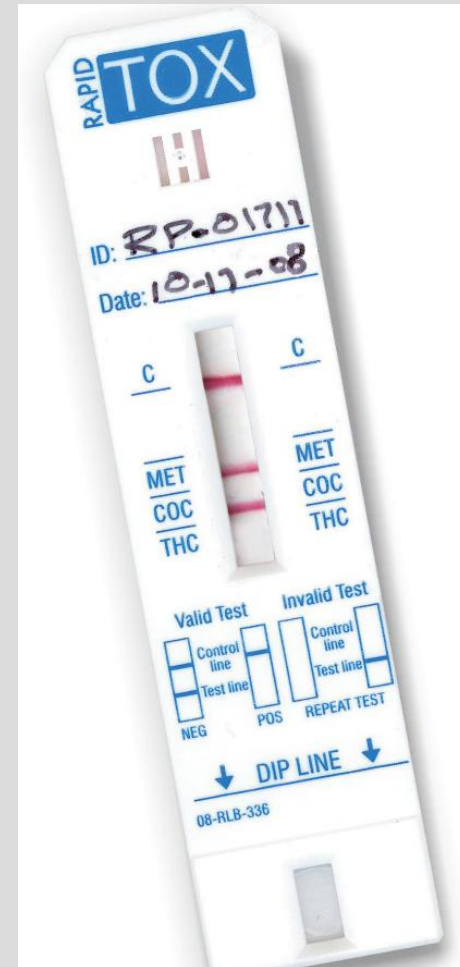
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Pros

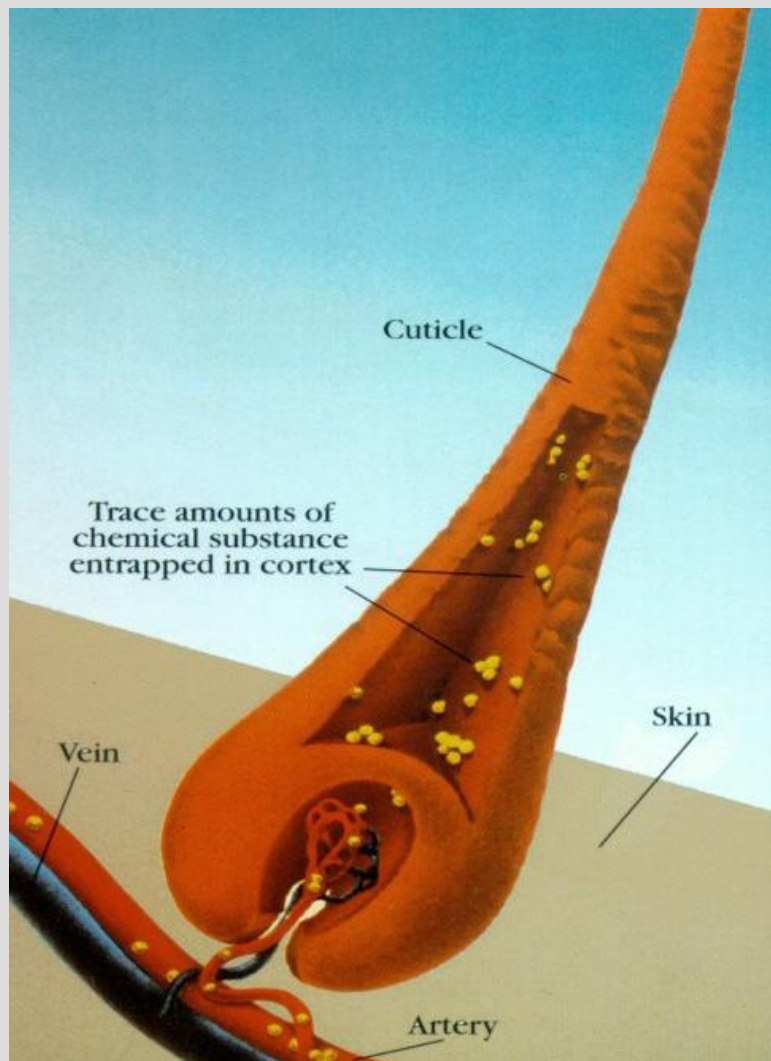
- Mature technology
- Shows 2-3 days drug use
- If strips can be read in about 3 mins

Cons

- Invasive
- Requires same sex monitoring
- Relatively easy to adulterate
- Cannabis detected up to 4 weeks after taken



DrugCheck UTK 1200



Pros

- Several months drug use
- Easy sampling

Cons

- Lab based only
- Expensive
- Doesn't show recent drug use

Pros

- None invasive
- 1:1 for blood
- Can be used to show impairment/recent drug use
- Difficult to adulterate

Cons

- New technology
- Short detection window



DrugCheck STK1200

Pros

- Non invasive
- Hygienic, no handling of sample
- Sufficient sample indication
- Remove operator error
- Temperature Controlled for max Precision
- Data entry and management

Cons

- New technology



Dräger DrugTest 5000



Interlock

Pros

- Guarantees vehicle can't be driven
- Data Management
- Anti circumvention included

Cons

- Requires calibration

QUESTIONS



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