RANDOX
TOXICOLOGY

Toxicology Solutions

DETECT OVER

500

DRUGS

Who else can?

Contents


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TOXICOLOGY

Introduction

Pioneering solutions for accurate drug detection

Randox Toxicology aim to minimise laboratory workflow constraints whilst maximising the scope of quality drug detection. We are the primary manufacturer of Biochip Array Technology, ELISAs, Homogeneous EIA, Quality Control and automated systems for forensic, clinical and workplace toxicology.

Our Team

At the core of our business is our research and development team, who lead the way in developing new tests from our UK Headquarters. Our global technical and engineering support means that no matter where your laboratory is in the world, we can guarantee a rapid response to our customers needs.

With 19 patents granted and 17 pending, significant re-investment into research and development has allowed us to introduce novel tests and pioneering technology to the market. With the ability to raise antibodies and develop assays in-house, we can produce the optimum target compounds with excellent specificity. We place quality assurance and accreditation at the core of our manufacturing processes, to ensure this high standard is sustained.

01

Biochip Array Technology

Biochip Array Technology

Moving away from traditional single analyte assays, Biochip Array Technology (BAT) boasts cutting-edge multiplex testing capabilities providing rapid and accurate drug detection from a single sample. Based on ELISA principles, the biochip is a solid state device with discrete test regions onto which antibodies, specific to different drug compounds, are immobilised and stabilised. Competitive chemiluminescent immunoassays are then employed, offering a highly sensitive screen.

Designed to work across a wide variety of matrices, this revolutionary multi-analyte testing platform allows toxicologists to achieve a complete immunoassay profile from the initial screening phase. Offering the most advanced screening technology on the market, Randox Toxicology has transformed the landscape of drugs of abuse (DoA) testing. Our 16 DoA biochip arrays form part of our unrivalled toxicology test menu capable of detecting over 500 drugs and drug metabolites.

Benefits

Simultaneous detection

Multiplex testing facilitates simultaneous screening of various drugs and drug metabolites from a single sample.

Extensive test menu

16 biochip panels are the world's largest toxicology test menu screening >500 drug analytes.

Accurate testing

Biochip Array Technology has a proven high standard of accurate test results with CVs typically <10%.

Optimum efficiency

Multiplex testing delivers a more cost effective and faster solution compared to any existing method.

Small sample volume

As little as 6µl sample produces a complete immunoassay profile, leaving more for confirmatory testing.

Multiple matrices

Including whole blood, post mortem blood, urine, oral fluid, hair, meconium, vitreous humor and tissue.

Testing Process

BAT is an immunoassay testing platform for the simultaneous multi-analyte testing of a panel of related tests. The technology works by combining a panel of up to 21 related tests on a single biochip with a single set of reagents, controls and calibrators. Competitive chemiluminescent immunoassays are employed for the biochip arrays. Light signal generated from each of the test regions on the biochip is simultaneously detected using digital imaging technology and compared to that from a calibration curve.

Example: DoA ULTRA / DUID Array

Discrete Test Regions on each biochip for individual analytes

1. Reference spot
2. Meprobamate
3. Dextromethorphan
4. Oxycodone II
5. Oxycodone I
6. Benzodiazepines II (Lorazepam)
7. Benzodiazepines I (Oxazepam)
8. Barbiturates
9. Methamphetamine
10. Correction spot
11. Zolpidem
12. Benzoylecgonine (Cocaine Metabolite)
13. Phencyclidine (PCP)
14. Opiate
15. Methadone
16. Fentanyl
17. Amphetamine
18. Tramadol
19. Cannabinoids (THC)
20. Tricyclic Antidepressants (TCA)
21. Generic Opioids
22. Ketamine
23. Correction spot
24. Buprenorphine

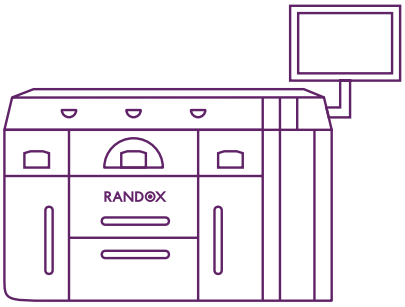
Customisable Test Menu

Due to the expert design of BAT, Randox Toxicology has the ability to provide custom assay design and manufacture to suit individual laboratory testing needs. With the facility to select whatever assays required, up to a maximum of 21, we truly have the solution for any laboratory.

Available Antibodies

(7-NH2) Flunitrazepam	Meperidine
AB-PINACA	Meprobamate
Acetaminophen	Mescaline
Amphetamine	Methadone
Barbiturate	Methamphetamine
Bath Salts (αPvP/MDPV)	Methaqualone
Bath Salts (Mephedrone / Methcathinone)	Methylphenidate
Benzodiazepine	Mitragynine
Benzylpiperazines	NBOMe
Buprenorphine	Norbuprenorphine
Cannabinoids (THC)	Norfentanyl
Carbamazepine	Opiates
Chloral Hydrate Metabolite	Oxycodone
Benzoylecgonine (Cocaine Metabolite)	Phencyclidine
Dextromethorphan	Phenobarbital
Digoxin	Phenylpiperazines
DOx Series	Phenytoin
EDDP	Pregabalin
Escitalopram	Propoxyphene
Ethanol	Ritalinic Acid
Ethyl Glucuronide (EtG)	Salicylate
Fentanyl	Salvinorin
Fluoxetine	Sertraline
Generic Opioids	Theophylline
Gentamicin	Tramadol
Haloperidol	Trazodone
Ibuprofen	Tricyclic Antidepressants (TCA)
JWH-018 / AM-2201	UR144 / XLR11
JWH-250 / RCS-8	Valproic Acid
Ketamine	Zaleplon
Lithium	Zolpidem
LSD	Zopiclone
MDMA	

Evidence Range of Analysers

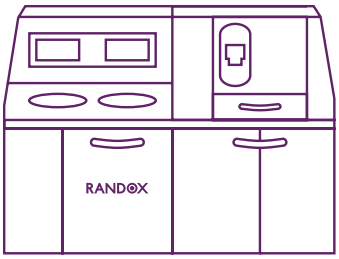


Evidence Evolution

Fully automated, random access analyser

Up to 2640 tests per hour

Ideal for high throughput laboratories



Evidence

Fully automated immunoanalyser

2070 tests per hour

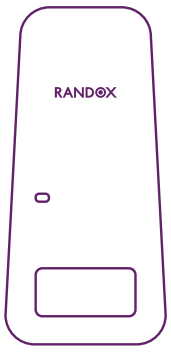
Ideal for high throughput laboratories

Evidence MultiSTAT

Automated, bench top analyser

60 tests per hour

Ideal for workplace, custodial or laboratory drug testing



Evidence Investigator

Semi-automated, bench top analyser

702 tests in 70 minutes

Ideal for small to medium sized laboratories

Matrices

Randox Toxicology biochip analysers and drugs of abuse arrays are suitable for testing a variety of sample types. The nature of the prefabricated biochip surface, secured inside a biochip carrier, forms ideal conditions for the reaction process to take place. As the drug of abuse testing market evolves, studies have highlighted the benefits of screening in a number of matrices in order to gain a comprehensive understanding of a patient sample profile. Consolidation of multiple matrices onto one system, offers an efficient and flexible testing solution.

Whole Blood

- Matrix dedicated kit for whole blood ensures optimum performance
- Simple specimen preparation
- Cut off can be selected, avoids re-calibration/use of different calibrators
- Separation of drugs with same parent type ensures fewer false results

Post-mortem Blood

- Small specimen volume requirements
- Simple specimen preparation
- No SPE columns or solvents needed
- Cut off can be selected avoiding re-calibration/use of different calibrators

Urine

- Matrix dedicated kit for urine ensures optimum performance
- Proven reduction in false results
- Addition of creatinine dilution marker
- DoA 1 for urine is FDA approved

Oral Fluid

- Matrix dedicated kit for oral fluid ensures optimal assay performance
- Separation of drugs with same parent type ensures fewer false results
- Compatible for use with multiple oral fluid collection devices
- Applications for point of collection testing

Tissue

- Biochips offer accuracy and precision in a wide range of tissue homogenates
- Reduced number of false results compared with ELISA methods
- Separation of drugs with same parent type ensures fewer false results
- Minimal sample volume required

Meconium

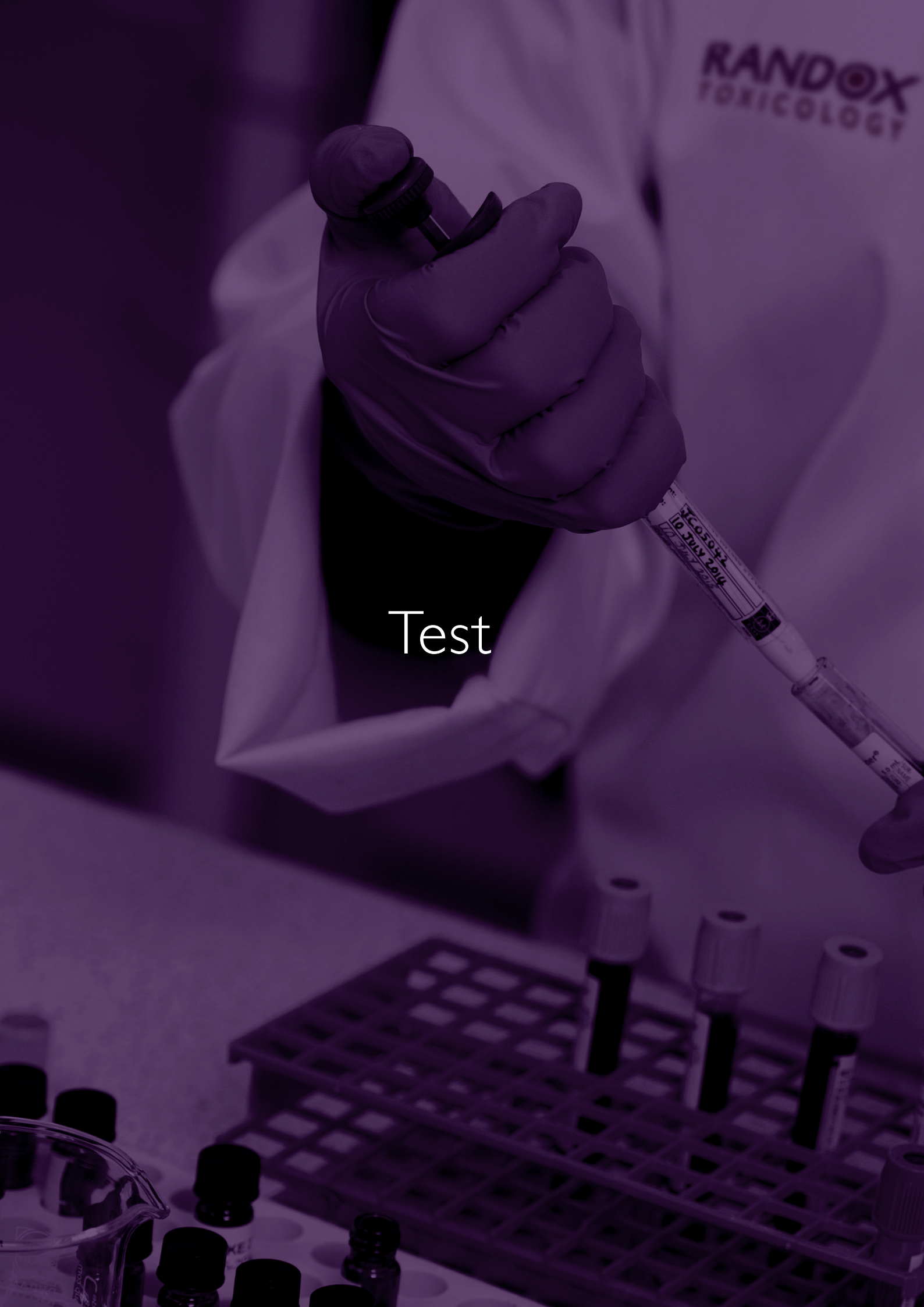
- Considered the best method for detecting drug exposure in pregnancy
- Improved specificity for amphetamine / methamphetamine compared to ELISA
- Improved specificity for cocaine metabolite compared to ELISA
- Separation of drugs with same parent type ensures fewer false results

Hair

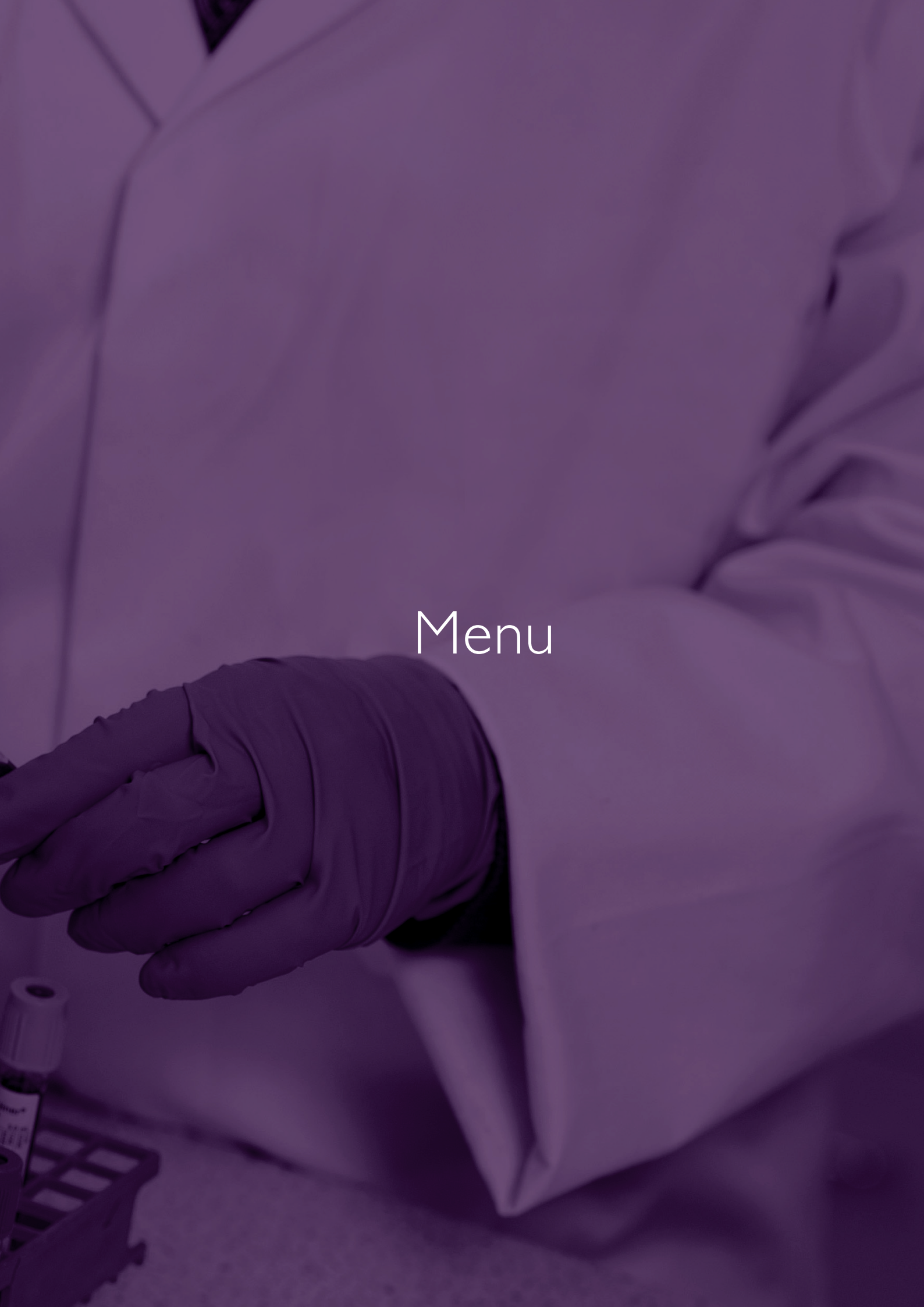
- Can be used to determine drug abuse history over a period of months
- Monitoring abstinence is possible over a length of time
- Sample collection is relatively easy and non-invasive
- No known successful commercial adulterants for hair tests

Vitreous Humor

- Multiplex is advantageous due to limited sample volume
- Minimal sample preparation
- Increased stability of certain drugs with this matrix
- Excellent correlation with confirmatory methods



Test


Menu

Test Menu

DoA I

FDA Approved

Amphetamine
Barbiturates
Benzodiazepines I (Oxazepam)
Benzodiazepines II (Lorazepam)
Benzoylecgonine (Cocaine Metabolite)
Cannabinoids (THC)
Creatinine (Urine only)
Methamphetamine
Methadone
Opiate
Phencyclidine (PCP)

DoA II

Buprenorphine
Creatinine (Urine only)
Fentanyl
Generic Opioids
Ketamine
LSD
MDMA
Methaqualone
Oxycodone I
Oxycodone II
Propoxyphene

DoA I+

Amphetamine
Barbiturates
Benzodiazepines I (Oxazepam)
Benzodiazepines II (Lorazepam)
Buprenorphine
Benzoylecgonine (Cocaine Metabolite)
Cannabinoids (THC)
Creatinine (Urine only)
Methamphetamine
Methadone
MDMA
Opiate
Phencyclidine (PCP)
Tricyclic Antidepressants (TCA)

DoA III

Chloral Hydrate Metabolite
Ethyl Glucuronide (EtG)
Fentanyl
Flunitrazepam
Ketamine Metabolite
Meperidine
Meprobamate
Zaleplon
Zolpidem
Zopiclone

Cross reactivity can be found in Index (p60)

Test menu validated only for whole blood, urine and oral fluid but all other matrices are applicable.

DoA IV

- Acetaminophen
- Dextromethorphan
- Ethyl Glucuronide (EtG)
- Escitalopram
- Fluoxetine
- Haloperidol
- Ibuprofen
- Methylphenidate / Ritalinic Acid
- Salicylate
- Sertraline
- Tramadol
- Trazodone
- Tricyclic Antidepressants (TCA)

DoA V

- Bath Salts I (Mephedrone / Methcathinone)
- Bath Salts II (α-PVP / MDPV)
- Benzylpiperazines
- Mescaline
- Phenylpiperazines I
- Phenylpiperazines II
- Salvinorin
- Synthetic Cannabinoids (JWH-018)
- Synthetic Cannabinoids (UR144/XLR11)
- Synthetic Cannabinoids (AB-CHMINACA)
- Synthetic Cannabinoids (AB-PINACA)

DoA ULTRA / DUID

- Amphetamine
- Barbiturates
- Benzodiazepines I (Oxazepam)
- Benzodiazepines II (Lorazepam)
- Benzoylecgonine (Cocaine Metabolite)
- Buprenorphine
- Cannabinoids (THC)
- Dextromethorphan
- Fentanyl
- Generic Opioids
- Meprobamate
- Methadone
- Methamphetamine
- Opiate
- Oxycodone I
- Oxycodone II
- Phencyclidine (PCP)
- Tramadol
- Tricyclic Antidepressants (TCA)
- Zolpidem

DoA Evolution

Amphetamine
Barbiturates
Benzodiazepines I (Oxazepam)
Benzodiazepines II (Lorazepam)
Benzoylecgonine (Cocaine Metabolite)
Buprenorphine
Cannabinoids (THC)
Dextromethorphan
Fentanyl
Ketamine
Meprobamate
Methadone
Methamphetamine
Opiate
Oxycodone I
Oxycodone II
Phencyclidine (PCP)
Tramadol
Tricyclic Antidepressants (TCA)
Zolpidem

DoA MultiSTAT

α-PVP (Flakka)	
AB-PINACA	(Urine, Whole Blood only)
Amphetamine	
Barbiturates	
Benzodiazepines I (Oxazepam)	
Benzodiazepines II (Lorazepam)	
Benzoylecgonine (Cocaine Metabolite)	
Buprenorphine	
Cannabinoids (THC)	
Creatinine	(Urine only)
Dextromethorphan	(Whole Blood only)
EtG	(Urine, Whole Blood only)
Fentanyl	
Ketamine	(Oral Fluid only)
LSD	(Oral Fluid only)
Methadone	
Methamphetamine	
Opiate	
Oxycodone	
Phencyclidine (PCP)	(Oral Fluid only)
Synthetic Cannabinoids (JWH-018)	
Synthetic Cannabinoids (UR144/XLR11)	
Tramadol	
Tricyclic Antidepressants (TCA)	(Urine, Whole Blood only)
6-MAM	

Catalogue Numbers

For Forensic Use Only (Unless Specified)

Product	Analyser	Result Reporting Format	Matrix	Full Kit Cat. No.	Half Kit Cat. No.
DoA Array I	Evidence	Qualitative	Oral Fluid	EV3613	EV3616
DoA Array I	Evidence Investigator	Qualitative	Oral Fluid	EV3619	-
DoA Array I (FDA Approved)	Evidence	Qualitative	Urine	EV3500	EV3542
DoA Array I +	Evidence	Semi-quantitative	Urine	EV3742	EV3743
DoA Array I +	Evidence	Semi-quantitative	Whole Blood	EV3747	EV3748
DoA Array I +	Evidence Investigator	Semi-quantitative	Urine	EV3746	-
DoA Array I +	Evidence Investigator	Semi-quantitative	Whole Blood	EV3751	-
DoA Array II	Evidence	Qualitative	Urine	EV3655	EV3654
DoA Array II	Evidence	Qualitative	Whole Blood	EV3685	EV3686
DoA Array II	Evidence Investigator	Qualitative	Urine	EV3662	-
DoA Array II	Evidence Investigator	Qualitative	Whole Blood	EV3681	-
DoA Array III	Evidence	Semi-quantitative	Urine	EV3826	EV3827
DoA Array III	Evidence	Semi-quantitative	Whole Blood	EV3794	EV3795
DoA Array III	Evidence Investigator	Semi-quantitative	Urine	EV3828	-
DoA Array III	Evidence Investigator	Semi-quantitative	Whole Blood	EV3796	-
DoA Array IV	Evidence	Semi-quantitative	Urine	EV3831	EV3832
DoA Array IV	Evidence	Semi-quantitative	Whole Blood	EV3805	EV3806
DoA Array IV	Evidence Investigator	Semi-quantitative	Urine	EV3833	-
DoA Array IV	Evidence Investigator	Semi-quantitative	Whole Blood	EV3807	-
DoA Array V	Evidence	Semi-quantitative	Urine	EV3811	EV3812
DoA Array V	Evidence	Semi-quantitative	Whole Blood	EV3844	EV3845
DoA Array V	Evidence Investigator	Semi-quantitative	Urine	EV3813	-
DoA Array V	Evidence Investigator	Semi-quantitative	Whole Blood	EV3846	-
DoA ULTRA / DUID Array	Evidence	Semi-quantitative	Urine	EV4101	EV4102
DoA ULTRA / DUID Array	Evidence	Semi-quantitative	Whole Blood	EV4054	EV4055
DoA ULTRA / DUID Array	Evidence Investigator	Semi-quantitative	Urine	EV4103	-
DoA ULTRA / DUID Array	Evidence Investigator	Semi-quantitative	Whole Blood	EV4056	-
DoA MultiSTAT Oral Fluid	Evidence MultiSTAT	Qualitative	Oral Fluid	EV4117	-
DoA MultiSTAT Urine	Evidence MultiSTAT	Qualitative	Urine	EV4193	-
DoA MultiSTAT Whole Blood	Evidence MultiSTAT	Qualitative	Whole Blood	EV4195	-
DoA Evolution	Evidence Evolution	Semi-Quantitative	Urine	EV4226	-

Evidence Evolution

Any Test, Any Time

Dimensions	1320 (H) x 1200 (D) x 1675 (W) mm
Weight	390 kg, 860 lbs

Any Test, Any Time

Evidence Evolution is a highly versatile analyser which can process any required workflow including batch analysis, STAT samples and true random access.

Fast Turnaround Time

Capability to achieve 2640 test results per hour with the Evidence Evolution, with first sample result reported in <36 minutes and up to 44 results reported each minute after.

Multiple Matrices

Testing available across multiple matrices including; whole blood, post-mortem blood, urine, oral fluid, hair, vitreous humor, meconium and tissue to accommodate any laboratory.

Superior Intelligence

Features such as automatic start-up and shut down, reflex testing capabilities and traceability of biochips and reagents, ensures the Evidence Evolution can be tailored to your laboratory needs.

Enhanced User Experience

Highly intuitive software, customisable user settings and easy to follow result screens ensures usability, allowing laboratories to achieve fast and accurate operations with uncompromised quality.

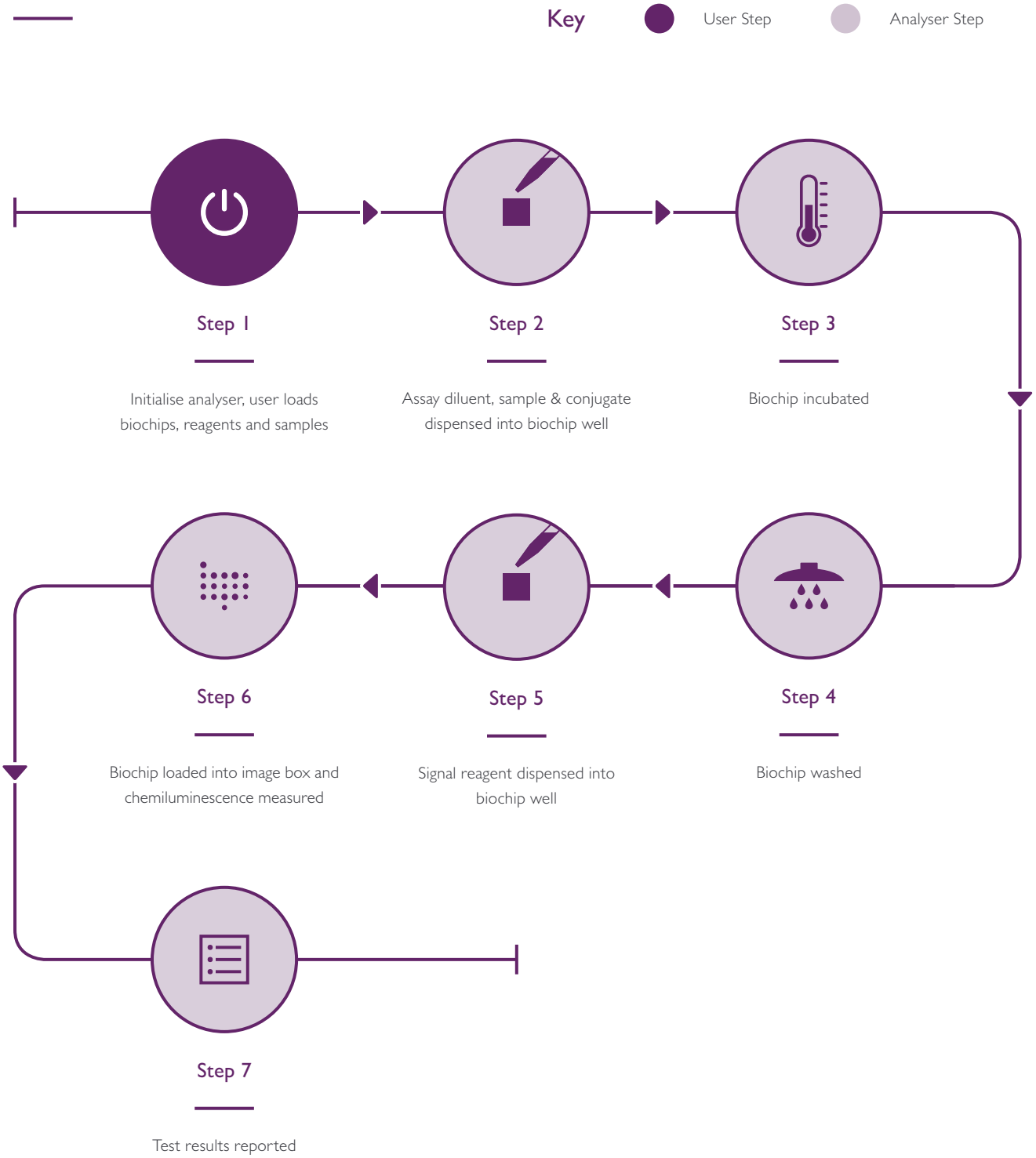
Workflow Optimisation

With continuous sample and reagent loading, alongside automated on-board sample dilution and sample information entry; the Evidence Evolution is a convenient solution for busy laboratories.

Evidence Evolution Specifications

Access Loading	Continuous sample, reagent and biochip input and output
Aspiration Capability	Precision pump with liquid level and clot detection
Biochip Format	When processing 44 analytes per biochip, 2640 tests can be carried out per hour
Biochip Capacity	Cartridge format with 10 x single biochip, individually sealed wells
Calibration Principal	6 point master curve generation
Connectivity	6 x USB ports, 1 x Ethernet, 1 x RS232
Data Backup Methods	Via writable DVD, CD, USB mass-storage or network folder
Data Storage Capacity	Up to 12 million test results with complete raw data. RAID 1 data mirroring
Environment	Ambient environment 18°C-30°C, <2°C temperature variation per hour, 20%-85% relative humidity
Liquid Waste	High and low concentration waste separation
LIS Connectivity	Bi-directional: ASTM Standard (RS232 Connection)
Maximum Throughput	60 samples per hour
Measurement Principal	Chemiluminesence
Network Services	Highly secure remote diagnostics, automated software update and array updates
Operational Modes	Random and continuous access, STAT loading with no dedicated loading route required, batch mode
Operator Interface	22" touch screen monitor, highly intuitive e-touch software
Quality Control	Interactive Levey-Jennings, user definable multipoint rules with system alarm
Reagent Capacity	20 twin vessel reagent bottles (50ml per vessel)
Sample Barcode	Code 39, Codabar, Code 128, I 2 of 5, Code 93, UPC/EAN, Pharmacode, PDF417(option), MicroPDF(option)
Sample Capacity	120 Samples
Sample Dilution	Automatic, on-board dilution, continuously variable between 1:1 and 1:50, array dependent
Sample Tube Compatibility	1-2ml paediatric cups, standard sample tubes (D. 10-16 mm x H. 75-100 mm), Cobas cups (using optional adaptors)
Sample Wedges	10 Independent wedges holding 12 samples each. Each wedge can hold any combination of sample tubes
Sample Volume	Array dependent
System Fluids	Onboard dilution of bulk reagents, refrigerated storage, continuous level monitoring
Time to First Result	Approximately 35 minutes, with 1 result every minute after (array specific)
Walk-away Time	2 hours

Evidence Evolution Process



Evidence

The world's fastest toxicology screening analyser

Dimensions	1750 (H) x 1000 (D) x 2000 (W) mm
Weight	605 kg, 1330lbs

Fast Turnaround Time

With a throughput of 90 samples per hour, the Evidence analyser is uniquely designed for fast and accurate batch analysis and delivers 2070 test results reported in 60 minutes.

World's Most Diverse Test Menu

More tests than any other sole supplier with routine and novel tests available. Randox Toxicology are continually investing in R&D in-line with emerging drug trends.

Multiple Matrices

Testing available across multiple matrices including; whole blood, post-mortem blood, urine, oral fluid, hair, vitreous humor, meconium and tissue to accommodate any laboratory.

Cost Consolidation

Multiplex testing allows multiple tests to be carried out from a single sample, reducing the amount of time and labour spent on individual tests.

Reduced Sample Volume

Provides a complete drugs of abuse profile using as little as 6µl of sample, leaving the remainder of sample available for confirmatory testing.

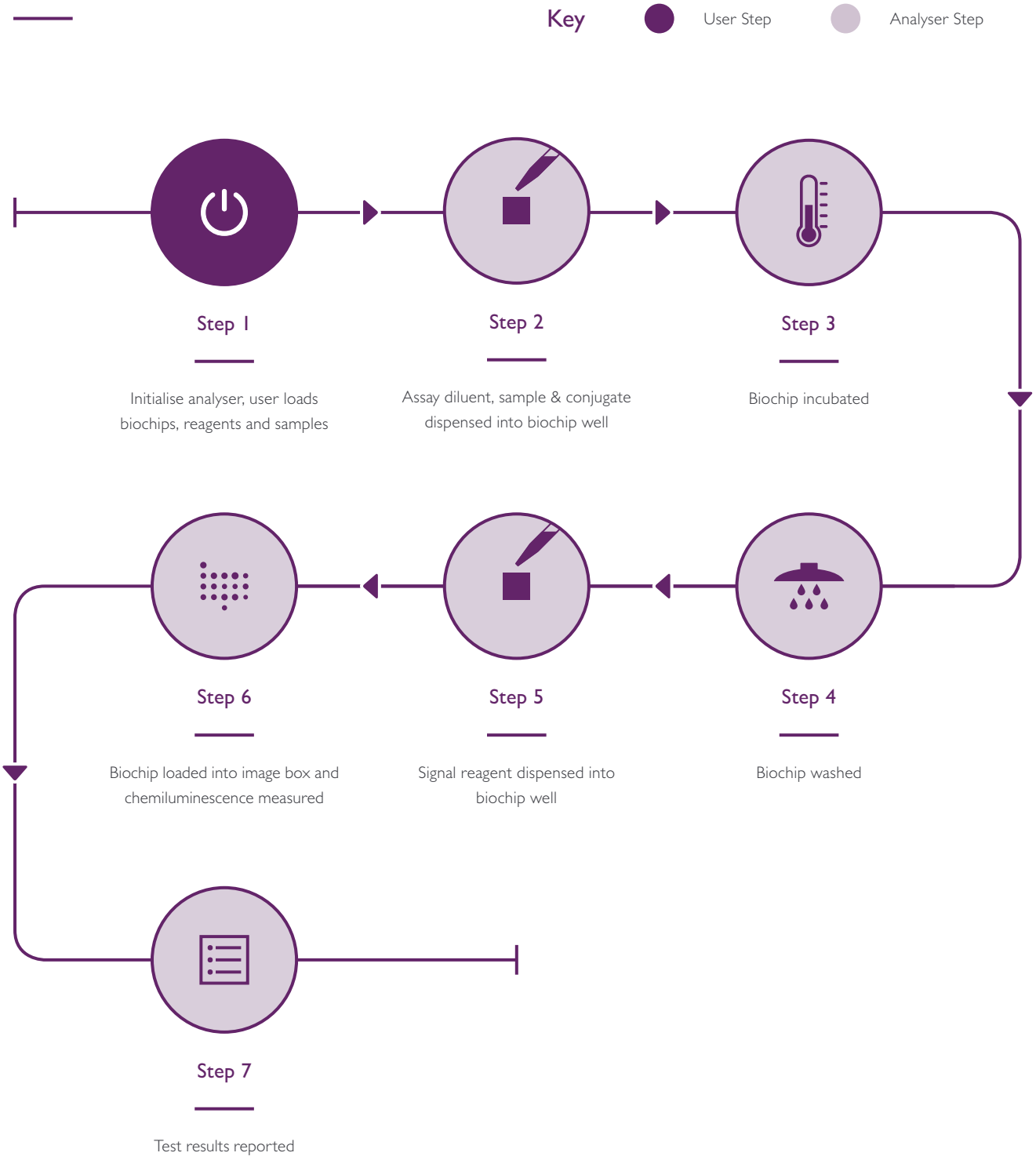
Optimum Laboratory Efficiency

A fully automated system maximises walk-away time. This allows staff to dedicate more time to other important duties ensuring optimum laboratory productivity.

Evidence Specifications

Accreditation	The Evidence analyser is approved through the FDA 510k process. It is manufactured in a facility that is compliant with 21 CFR Part 820 of the Code of Federal Regulations.
Biochip Format	1x biochip carrier (holds 9 individual biochips)
Biochip Capacity	4x biochip cassettes (40 biochip carriers, 360 biochips)
Calibration Principal	9 point calibration
Connectivity	LIS / LIMS compatible
Data Backup Methods	CD, electronic back up of operating parameters
Environment	Ambient environment 16°C-30°C, <80% relative humidity
Incubation Time	30-60 minutes (array specific)
Installation Requirements	Evidence must be connected to a three-wire power supply with a safety ground
Liquid Waste	Removed to an external drain or tank
LIS Connectivity	Bi-directional: ASTM Standard (RS232 Connection)
Maximum Throughput	90 samples per hour (array specific)
Measurement Principal	Chemiluminesence
Operational Modes	Windows® based
Quality Control	Extensive QC package including full QC reports, Levey-Jennings charts and multi-rule QC options
Reagent Capacity	16 reagent wedges
Sample Barcode	Code 39, Codabar, Code 128, I 2 of 5, Code 93, UPC/EAN, Pharmacode, PDF417 (option), MicroPDF (option)
Sample Capacity	180 Samples
Sample Tube Compatibility	12mm or 16mm diameter by 100mm, 16mm diameter by 75mm length tubes with minimum volume 500µl. Sample cups of 15mm diameter by 23 – 38mm length and minimum volume 350µl can be placed into 16mm diameter tubes on the carousel
Sample Rings	2 sample rings capable of holding 90 sample test tubes or cups per ring
Sample Volume	6 - 150µl per Biochip (array specific)
System Fluids	Refrigerated reagent storage, bulk storage for wash and displacement

Evidence Process



Evidence MultiSTAT

On-site testing of multiple drug classes from a single sample

Dimensions	585 (H) x 535 (D) x 570 (W) mm
Weight	48 kg, 106lbs

No Laboratory Required

The Evidence MultiSTAT is a versatile analyser that provides automated drugs screening in a range of settings, such as workplaces, custodial environments and low throughput laboratories.

Extensive Test Menu

The Evidence MultiSTAT facilitates on-site simultaneous screening of multiple drug classes, including classical, prescription and synthetic drugs of abuse.

Multiple Matrices

Testing available across multiple matrices including; whole blood, urine and oral fluid to accommodate any testing requirement.

Simple Process

With prefilled reagents cartridges and a simple interface, non-laboratory trained staff can operate the analyser in any environment and achieve accurate, qualitative results in minutes.

Rapid Screening

As minimal sample preparation is required, qualitative results can be provided in 17 minutes, offering an efficient and accurate toxicology screen.

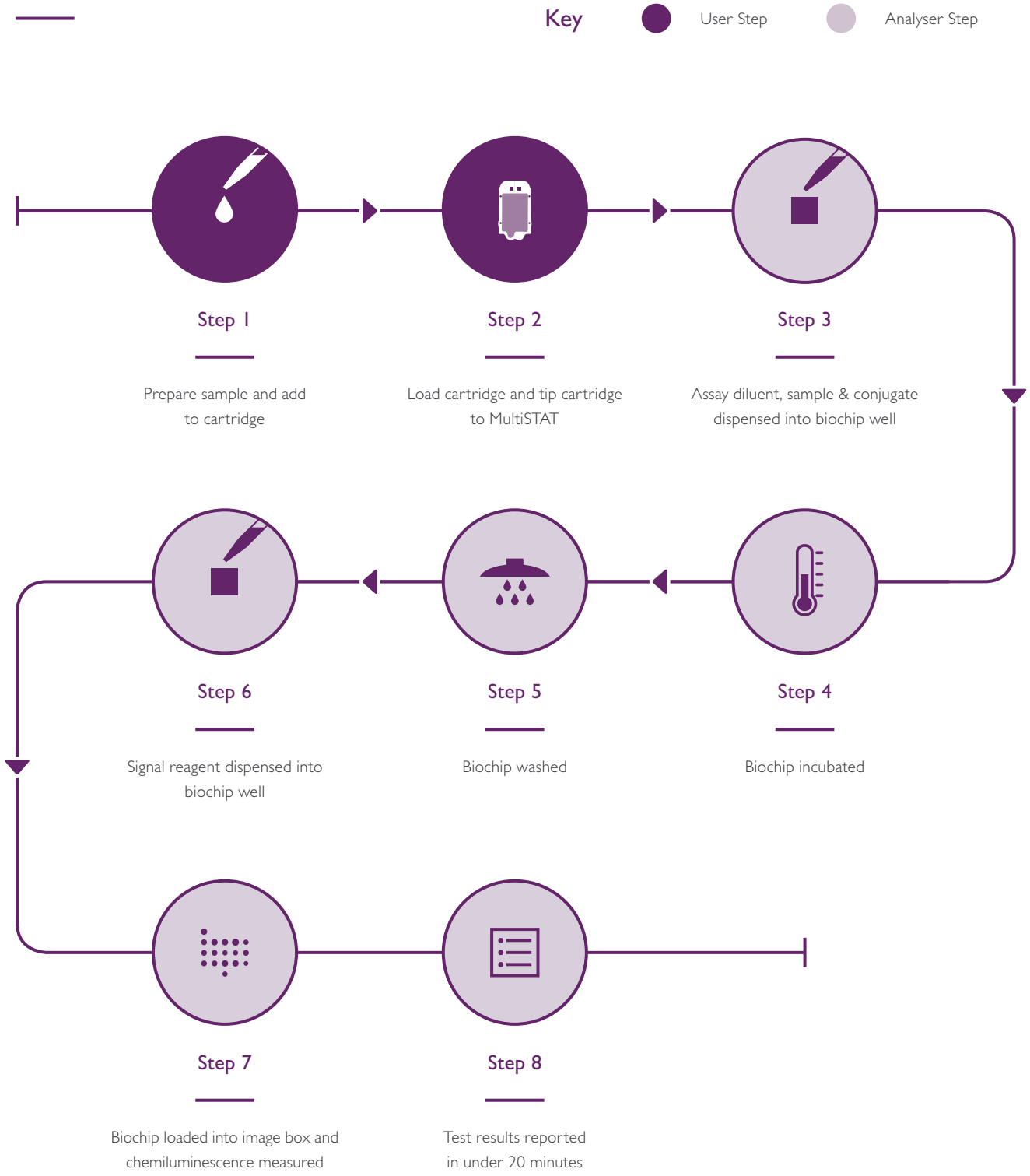
Reliable Results

Using chemiluminesence as a measurement principle, the Evidence MultiSTAT consistently delivers accurate results and offers a highly sensitive way to detect drugs of abuse.

Evidence MultiSTAT Specifications

Analyser Description	Automated biochip array analyser
Biochip Format	Cartridge based system – assay reagents sealed in a pre-filled cartridge
Connectivity	LIMS uni-directional interface
Data Back-up Methods	Data export functionality
Environment	Operating temperature 18°C-32°C, <80% Relative humidity, <2000m Altitude, Pollution: Degree 2 (IEC 664)
Measurement Principal	Competitive techniques with chemiluminescent reaction
Operator Interface	15.6" touch screen
Peripherals	Barcode scanner
Power Requirements	Input Voltage 110-240v
Sample Loading	Single cartridge loading bay

Evidence MultiSTAT Process



Evidence Investigator

Versatile, efficient and comprehensive testing

Dimensions	750 (H) x 480 (D) x 420 (W) mm
Weight	24 kg, 52.9 lbs

World's Most Diverse Test Menu

More tests than any other sole supplier with routine and novel tests available. Randox Toxicology are continually investing in R&D in-line with emerging drug trends.

Multiple Matrices

Testing available across multiple matrices including; whole blood, post-mortem blood, urine, oral fluid, hair, vitreous humor, meconium and tissue to accommodate any laboratory.

Fast Turnaround Time

With a throughput of 54 samples in 70 minutes, the Evidence Investigator is uniquely designed for fast and accurate batch analysis and delivers 702 test results reported in 70 minutes.

Simultaneous Analyte Detection

The multiplex testing capabilities of Biochip Array Technology facilitates accurate simultaneous screening of various drug metabolites across 16 toxicology arrays, with CVs typically <10%.

Small Sample Volume

When using the Evidence Investigator, as little as 10µl is required, leaving more sample remaining for confirmatory testing.

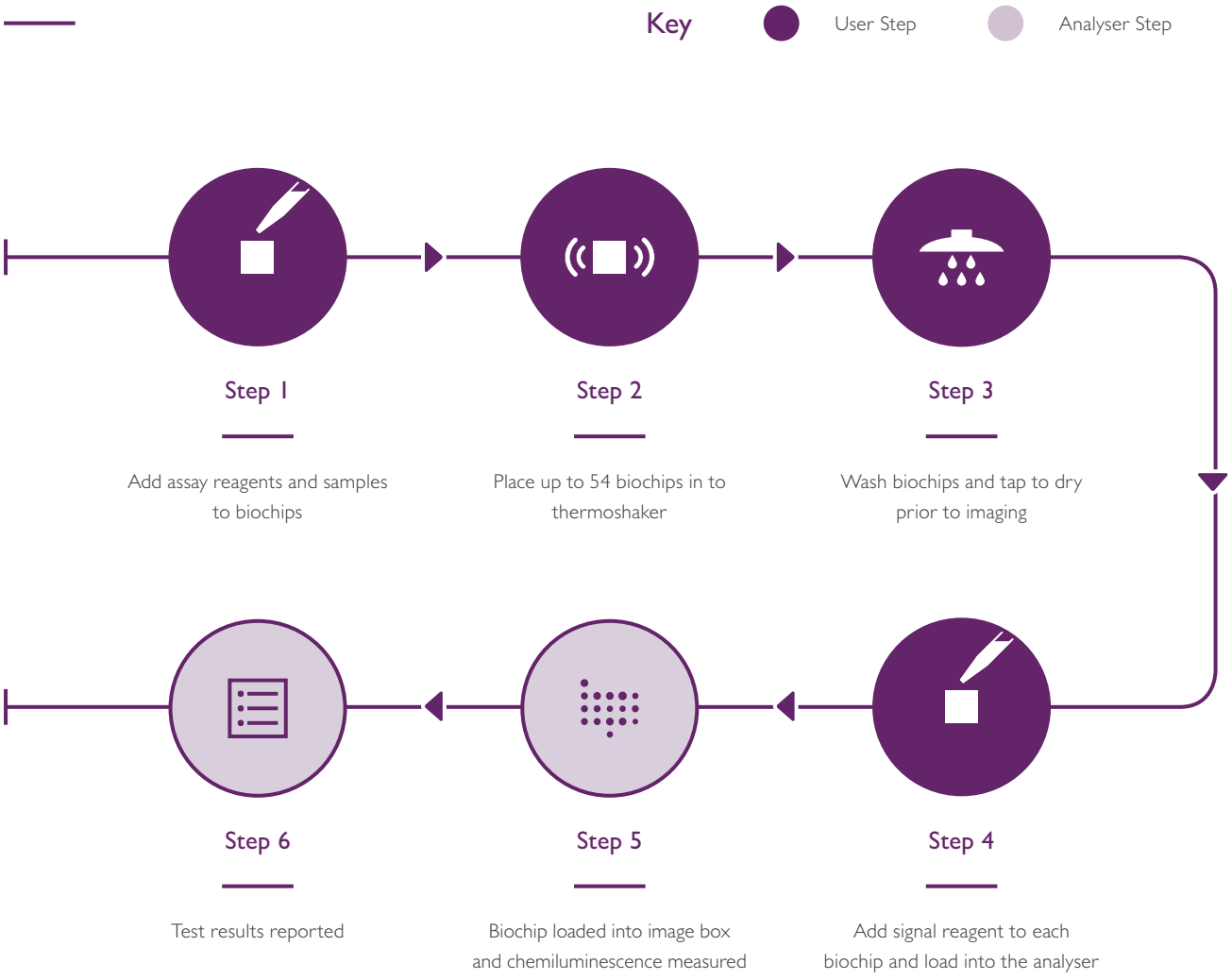
Optimum Efficiency

Multi-analyte controls and calibrators and multiplex testing capabilities facilitate laboratory efficiency and deliver a cost consolidating solution for the toxicology laboratory.

Evidence Investigator Specifications

Accreditation	Internally accredited to full CE and UL certification
Analyser Description	Semi-automated biochip array analyser
Biochip Capacity	Nine biochips on Evidence Investigator, 54 biochips on thermoshaker
Biochip Format	Biochip carrier holds nine individual biochips
Calibration Method	Nine point calibration
Connectivity	LIMS integration
Data Back-up Methods	Via writable DVD, CD, USB mass-storage or network folder
Environment	Operating temperature 16°C - 25°C, <80% Relative humidity, <2000m Altitude, Pollution; Degree 2 (IEC 664)
Fuses	Mains Inlet Fuse (F1) T 2 A H 250V (20mm x 5mm) Motor Control Board (F1) T 1 A L 250V (20mm x 5mm)
Measurement Principal	Competitive and sandwich techniques with chemiluminescent reaction
Network Services	Highly secure remote diagnostics, automated software and array updates
Peripherals	Printer, barcode scanner, carrier handling tray and thermoshaker
Quality Control	Levey-Jennings, user definable multipoint rules
Sample Loading	Single carrier loading bay

Evidence Investigator Process



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ELISA

ELISA

Randox Toxicology's ELISA kits provide a highly sensitive solution for the rapid detection of drugs in various biological specimens. Our expanding test menu includes a range of New Psychoactive Substances, common drugs of abuse, stimulants, analgesics and sedatives. We recommend two compact and robust ELISA readers, offering optimal performance with every test.

DS2 Plate Reader

DS2 is a compact, easy to use and innovative microplate reader designed with full walkaway capability. DS2 quickly and easily processes two 96-well microplates and up to 12 different assays simultaneously.

- Compact system
- Fully automated
- Fully integrated washing
- Instrument diagnostics
- Automated barcode reading
- Extensive on-board software

ELx800 Plate Reader

The ELx800 is a compact, robust microplate reader ideally suited for routine drug detection in the laboratory. When space or budget is limited, the ELx800 offers extensive on-board software, complete with multiple curve fit options, data transformations, cut off and assay validation calculations.

- Compact system
- Speed reading
- Multiple plate formats
- Optimal performance
- High accuracy
- On board Gen5™ software

Test Menu

For Forensic Use Only

New Psychoactive Substances

Product	Cat. No.
Synthetic Cannabinoids (JWH-018/AM-220I)	SC3474
Synthetic Cannabinoids (UR144/XLR11)	SC3488
Synthetic Cannabinoids (JWH-250/RCS-8)*	SC3503
Synthetic Cannabinoids (AB-PINACA)*	PAC10046
α-PVP/MDPV (Flakka)*	PVP10048
MDPV (Bath Salts)*	MD3476
Mephedrone/Methcathinone (Bath Salts)	MD3475
Mitragynine (Kratom)*	MT3489
DOx Series*	DOX3501
NBOMe*	NBM10042

Analgesics

Product	Cat. No.
Buprenorphine	BUP3508
Fentanyl	FE3505
Methadone	MTD10012
Opiate	OPI10014
Oxycodone	OXY10114
Pregabalin	PGB10082
Tramadol	TRM3499

Stimulants

Product	Cat. No.
Amphetamine	AMP10002
BZG/Cocaine Metabolite	BZG10010
Methamphetamine	MTH10000
THC (Cannabis)	THC10008

Sedative Hypnotics

Product	Cat. No.
Barbiturates	BAR10004
Benzodiazepines	BNZ10006
Meprobamate	MPB10020
Zaleplon*	ZD3487
Zolpidem	ZD3485
Zopiclone	ZD3486

Others

Product	Cat. No.
Tricyclic Antidepressants (TCA)	TCA10016
Ketamine	KT3459
Phencyclidine (PCP)	PCP10018
Dextromethorphan	DX3497

*Exclusive to Randox Toxicology

03

Clinical Chemistry

Reagents

Randox Toxicology Drugs of Abuse (DoA) and Therapeutic Drug Monitoring (TDM) assays, together with the RX series analysers, provide a total package for toxicology testing. RX series DoA screening employs tried and tested enzyme immunoassay techniques, while the TDM assays use latex enhanced immunoturbidimetric reagents which offer excellent performance on a variety of platforms. To complete the package, Randox Toxicology offer a range of calibrators, quality control sera and EQA schemes for DoA and TDM screening (see p58).

Benefits

Exceptional correlation

Excellent correlation with GC/MS provides a highly accurate solution for toxicology screening.

SciTeck® compatibility

Compatibility with SciTeck® applications ensures adulterated samples do not evade detection.

Ease of use

Liquid ready-to-use reagents, calibrators and controls offer a convenient and simple to use solution.

Applications available

Instrument specific settings for a wide range of clinical chemistry analysers are also available.

Internationally recognised

Randox reagents are globally recognised as being of the highest quality, continually providing reliable results.

Extensive measuring range

Ensures accurate detection of therapeutic and toxic drug concentrations in a variety of samples.

Drug of Abuse Reagents

DoA Reagent	Cat. No.	Method	No of Tests (RX imola)	No of Tests (RX daytona+)
Barbiturates	DA4008	Enzymatic	234	190
Benzodiazepines	DA4009	Enzymatic	234	190
Cannabinoids	DA4010	Enzymatic	234	190
Cocaine Metabolite (Benzoylecgonine)	DA4011	Enzymatic	234	190
Ecstasy	DA4014	Enzymatic	234	190
EDDP	DA4013	Enzymatic	234	190
Ethanol	DA4015	Enzymatic	218	190
Methadone	DA4016	Enzymatic	234	190
Methamphetamine	DA4007	Enzymatic	234	190
Opiates	DA4012	Enzymatic	234	190

Therapeutic Drug Monitoring Reagents

TDM Reagent	Cat. No.	Method	No of Tests (RX imola)	No of Tests (RX daytona+)
Acetaminophen	ACE4023	L.E.I	100	100
Carbamazepine	TD3416	L.E.I	100	100
Digoxin	TD3410	L.E.I	106	106
Gentamicin	TD3413	L.E.I	106	104
Lithium	LM4005	COLOR	138	100
Phenobarbital	TD3408	L.E.I	100	100
Phenytoin	TD3409	L.E.I	100	100
Salicylate	SAL4024	L.E.I	100	100
Valproic Acid	TD3413	L.E.I	100	100

RX daytona+

A fully automated, clinical chemistry analyser
with unrivalled performance

Dimensions	625 (H) x 670 (D) x 870 (L) mm
Weight	120 kg

Highly Accurate Testing

The RX daytona+ uses separate sample and reagent pipettes minimising carryover. The serum indices detect lipaemic, icteric and haemolytic samples, building confidence in results.

Superior Performance

Features such as the sensitive clot detection sensor and the built in inventory management system ensures optimum laboratory efficiency.

Flexibility

The RX daytona+ is capable of running monochromatic, bi-chromatic, endpoint, kinetic, ISE and reagent blanking assays and also has 7 different calibration options available.

Ease of Use

Utilising Windows® based software, the RX daytona+ is user friendly, with just one click opening the emergency sample ordering screen and barcode readers for sample identification.

Extensive Test Menu

The RX daytona+ utilises the largest range of tests available from a sole supplier, including routine and unique assays optimised for superior performance.

Time and Cost Savings

With minimal maintenance required, consolidation of testing and a low water consumption, the RX daytona+ offers a cost effective toxicology solution for any laboratory.

RX daytona+ Specifications

Performance Characteristics

Throughput	270 tests per hour, 450 tests per hour with optional ISE unit
Analyser Type	Compact fully automated random access benchtop clinical analyser
Assay Tests	Monochromatic, bi-chromatic, endpoint, kinetic, sample and reagent blanking and ISE

Reagent & Sample System

Data Management	Storage of up to 30,000 patient reports, with a search facility
Test Channels	50 photometric channels, 3 direct ISE
Sleep Mode	User defined sleep mode capabilities with automatic wash and instrument preparation
Maintenance	Minimal daily maintenance, no rear access required, simple twice yearly preventative maintenance
Reagent Pipette	Dedicated reagent micropipette with liquid level sensor and crash detection
Reagent Capacity	Removable turntable with 50 cooled positions for 20ml and 70ml bottles
Reagent Cooling	8°C to 15°C
Reagent Identification	Barcode reagent identification
Reagent Inventory	Calculation of remaining reagent volume and tests available, alert for shortage, expired reagent and expired calibration
Sample Capacity	Removable turntable with 40 positions for samples, calibrators and controls
Sample Dead Volume	150µl in standard or primary tubes. 100µl in paediatric cups
Sample Dilution	Pre-dilution and automatic reassay with diluted, reduced or increased sample volume
Sample Identification	Barcode sample identification
Sample Type	Serum, plasma, urine & supernatents
STAT Sampling	STAT samples can be added immediately via the emergency loading port

Reaction system

Reaction Time	10 minutes (r1: 5 minutes + r2: 5 minutes)
Reaction Volume	100µl - 350µl
Stirring Speed	5 speed levels available
Stirring System	Dual 5 speed stick type rotating stirrers
Water Consumption	Maximum 5 litres per hour
Wash Unit	12 stage washing process
Cuvettes	72 semi-permanent cuvettes
Incubator Temperature	37°C ± 0.1°C
Cycle Time	13 seconds

Optical system

Detector Method	Direct absorbance in cuvette (bi-chromatic and monochromatic)
Detection Principal	12 wavelengths generated via diffraction grating: 340, 380, 415, 450, 510, 546, 570, 600, 660, 700, 750 and 800nm
Light Source	Halogen tungsten lamp air cooled by fan

Operating system

Operator Interface	Windows® based software

RX imola

Rapid, comprehensive clinical chemistry analyser testing on a superior fully automated analsyer

Dimensions	690 (H) x 582 (D) x 970 (L) mm
Weight	150 kg 331 lbs

Low Reagent Volume

The RX imola requires a low reagent volume: R1: 150µl - 350µl (1µl increments) R2: 20µl - 250µl (1µl increments) and sample volume of just 2µl - 35µl (0.1µl increments).

Emergency Samples

The unique loading hatch of the RX imola allows emergency samples to be analysed quickly and easily at any time if required.

Multiple Calibration Options

Up to 10 user defined multipoint rules with 6 different calibration options available to ensure the most accurate results.

Laboratory Efficiency

With a liquid level sensor, crash, bubble and clot detection system on board, the RX imola ensures laboratory efficiency with minimal disruption.

Reusable Pyrex® Cuvettes

The RX imola uses 90 permanent Pyrex® cuvettes with cuvette check function ensuring only clean and viable reaction vessels are reused.

Cost Consolidation

The RX imola is a cost effective system that delivers consistently high quality results, ideal for the workload of a medium to high throughput laboratory.

RX imola Specifications

Performance Characteristics

Throughput	400 photometric tests per hour, 240 tests per hour including ISE
Analyser Accreditation	CE marking in compliance with In Vitro Diagnostic Medical Device Directive 98/79/EC, FDA 510k cleared and UL certification
Analyser Type	Compact, fully automated random access benchtop clinical analyser
Assay Tests	Endpoint, kinetic, biochromatic, turbidimetric, sample blanking, reagent blanking and ISE
Maintenance	Daily maintenance - less than 5 minutes. No rear access required. Simple twice yearly preventative maintenance service.
Data Management	Storage of up to 30,000 patient reports, search facility, test counter
Test Channels	60 photometric channels, 3 direct ISE tests - sodium, potassium and chloride
Sleep Mode	User defined sleep mode capabilities with automatic wash and instrument preparation

Reagent & Sample System

Reagent & Sample Capacity	Removable tray with 60 cooled positions (30 positions for 100ml or 50ml bottles and 30 positions for 20ml bottles)
Reagent Cooling	8°C to 15°C
Reagent Identification	Automatic barcode reagent identification
Reagent Inventory	Calculation of remaining reagent volume and tests available, alert for shortage, expired reagent and expired calibration
Reagent Pipette	Dedicated twin reagent micropipette with liquid level sensor and crash detection, rinsed inside and outside with purified water
Sample Addition	Immediate sampling interruption for addition of samples via removable panel
Sample Capacity	Removable tray with 72 positions for samples, 20 cooled position for controls and calibrators
Sample Dead Volume	150µl in primary tubes
Sample Dilution	Pre-dilution and automatic re-assay with diluted, reduced or increased sample volume; dilution mixture 100-350µl consisting of 2-35µl of sample and 20-350µl of diluent
Sample Identification	Barcode sample identification
Sample Type	Serum, plasma, urine, CSF and supernatant
Sample Volume	2µl-35µl (0.1µl increments)

Reaction System

Minimum Reaction Volume	150µl
Stirring Speed	Dual 5-speed rotating stirrers rinsed with purified water
Stirring System	Paddle type rotating stirrer cleaned with purified water
Temperature	37°C ± 0.3°C
Cuvettes	90 reusable Pyrex® cuvettes with 5-year lifespan, minimum volume 150µl, maximum volume 450µl, 8-stage cuvette washing system
Cycle Time	9 seconds
Water Consumption	18L per hour
Water Requirements	NCCLS type 1 or 2 purified water supply at pressure [0.15-0.34mpa]

Optical System

Detector Method	Direct absorbance in cuvette (bichromatic and monochromatic)
Detection Principal	12 wavelengths: 340, 380, 415, 450, 510, 546, 570, 600, 660, 700, 750 and 800 nm
Light Source	Halogen tungsten lamp (air-cooled, 6 months service life)

Operating System

Operator Interface	15" LCD display and printer externally connected. Windows® XP based user Interface 100-249 vac, 1230 watt approximately

04
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Quality Control

Quality Control Material

Our world renowned Quality Control (QC) material offers straight forward assessment of your laboratory performance, creating confidence in results and adherence to quality accreditation standards. Our rigorous quality manufacturing regime allows us to provide you with a superior solution for effective Internal Quality Assessment. To build a QC material that is relevant to your testing, refer to our extensive range of controls and calibrators.

Randox Toxicology provide customers with customised multi-analyte QC material; instilling confidence in results whilst eliminating wastage. In addition we offer External Quality Assessment / Proficiency Testing programmes, as a means of assessing the analytical laboratory performance.

Benefits

Flexible design

Test menu consolidation can reduce costs and eliminate waste without compromising quality.

Consistent material

100% human material used in the production of QC controls has no preservatives or additives.

Third party controls

True third party controls provide an unbiased assessment across a range of instruments and methods.

Accurately assigned values

Quantified with LC/MS, no manual value assignment is required providing accuracy and reliability.

Excellent stability

Lyophilised quality controls generally have a shelf life of up to 4 years from date of manufacture.

Leading quality

All QC products are manufactured to the highest possible standard, delivering unrivalled quality.

Controls and Calibrators

Biochip Controls and Calibrators*

Product	Control Cat No	Calibrator Cat No
DoA Array I (Oral Fluid)	EV3649	EV3648
DoA Array I (Urine qualitative)	EV3551	EV3550
DoA Array I + (Urine)	EV3745	EV3744
DoA Array I + (Whole Blood)	EV3750	EV3749
DoA Array II (Urine)	EV3657	EV3656
DoA Array II (Whole Blood)	EV3682	EV3687
DoA Array III (Urine)	EV3830	EV3829
DoA Array III (Whole Blood)	EV3798	EV3797
DoA Array IV (Urine)	EV3835	EV3834
DoA Array IV (Whole Blood)	EV3809	EV3808
DoA Array V (Urine)	EV3814	EV3815
DoA Array V (Whole Blood)	EV3848	EV3847
DoA ULTRA/DUID Array (Urine)	EV4105	EV4104
DoA ULTRA/DUID Array (Whole Blood)	EV4058	EV4057
DoA Evolution Array (Urine)	EV4228	EV4227

*For Evidence Investigator, calibrators are included in kit

Single Analyte Controls and Calibrators

Product	Cat No
Benzodiazepines Control Level 1	DA3130
Benzodiazepines Control Level 2	DA3131
Cannabinoid Control Level 1	DA3127
Cannabinoid Control Level 2	DA3128
Ecstasy Control Level 1	DA3125
Ecstasy Control Level 2	DA3126
EDDP Control Level 1	DA3123
EDDP Control Level 2	DA3124
Ethanol Calibrator/Control Set	DA2703
Benzodiazepines Calibrator Set	DA3129
Cannabinoid Calibrator Set	DA2700
Ecstasy Calibrator Set	DA2701
EDDP Calibrator Set	DA2702
Ethanol Calibrator/Control Set	DA2703

ELISA Controls

Product	Cat No
Amphetamine	AMP10003
Barbiturates	BAR10005
Benzodiazepines	BNZ10007
Buprenorphine	BUP3509
BZG / Cocaine Metabolite	BZG10011
Dextromethorphan	DX3494
DOx Series	DOX3502
Fentanyl	FE3506
Ketamine	KT3510
Meprobamate	MPB10021
Methadone	MTD10013
Methamphetamine	MTH10001
Mitragynine	MT3498
NBOMe	NBM10043
Opiates	OPI10015
Oxycodone	OXY10115
Phencyclidine (PCP)	PCP10019
Pregabalin	PGB 10083
Synthetic Cannabinoids AB-PINACA	PAC10047
Synthetic Cannabinoids JWH-250/RCS-8	SC3504
Synthetic Cannabinoids UR144/XLRII	SC3493
THC (Cannabis)	THC10009
Tramadol	TRM3500
Tricylic Antidepressants (TCA)	TCA10017
Z Drugs	ZD3490
α-PVP/MDPV	PVP10049

Multi-Analyte Controls and Calibrators

Product	Cat No
Multidrug Control Level 1	DA3121
Multidrug Control Level 2	DA3122
Multidrug Calibrator Set	DA2704t

Therapeutic Drug Monitoring Controls and Calibrators

Product	Cat No
Therapeutic Drug Control Level 1	HD1667
Therapeutic Drug Control Level 2	HD1668
Therapeutic Drug Control Level 3	HD1669
Therapeutic Drug Calibrator	TD3417

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Index

DoA 1

Amphetamine

Compound	Urine CR%	Oral Fluid CR%
d-Amphetamine	100	100
MDA	544	311
MBDB	189	<0.1
BDB	<0.2	250
dl-Amphetamine	55	35.2
Phentermine	32	23.2
MDEA	0.4	2.8

Barbiturates

Compound	Urine CR%	Oral Fluid CR%
Phenobarbital	100	100
Secobarbital	512	298.2
Butabarbital	429	307.7
Alphenal	257	142.9
Cyclopentobarbital	251	280.8
Pentobarbital	183	210.6
Butalbital	172	96.9
Amobarbital	84	77.8
p-Hydroxyphenobarbital	69	90.2
Barbital	40	35.1

Benzodiazepines I (Oxazepam)

Compound	Urine CR%	Oral Fluid CR%
Oxazepam	100	100
Alprazolam	1818.2	335
Estazolam	1538.5	432
α-OH-Alprazolam	952.4	525
Diazepam	512.8	370
Temazepam	444.4	643
Clobazam	416.7	229
Prazepam	277.8	168
Nordiazepam	250	159
Nitrazepam	241	42.7
Midazolam	227.3	551
Flurazepam	181.8	402
Flunitrazepam	119.8	34.9
Chlordiazepoxide	99.5	27.2
Bromazepam	47.7	4.9
Lormetazepam	47.5	61.3
Triazolam	37.5	108
Desalkylflunitrazepam	29.5	22.6
2-OH-Ethylflurazepam	25.6	88.5
Clonazepam	8.4	3.4
Oxazepam glucuronide	7.3	2.4
Lorazepam	6.7	4.4
4-OH-Nordiazepam	4.2	N/A
7-Aminonitrazepam	3.4	N/A
Temazepam glucuronide	3	13.5

Benzodiazepines II (Lorazepam)

Compound	Urine CR%	Oral Fluid CR%
Lorazepam	100	100
Clonazepam	68.7	80.5
Desalkylflunitrazepam	29.9	6
Lorazepam glucuronide	23.9	37.9
7-Aminoclonazepam	5.5	N/A
Bromazepam	3.7	<0.1
Oxazepam glucuronide	2.9	5.8
Nordiazepam	2	0.2
Oxazepam	2	<0.1
Nitrazepam	1.2	0.1

Benzoylecgonine (Cocaine Metabolite)

Compound	Urine CR%	Oral Fluid CR%
Benzoylecgonine	100	100
Cocaine	6.4	<0.1
Cocaethylene	4.1	0.1
Ecgonine methyl ester	<3.0	<0.1

Cannabinoids (THC)

Compound	Urine CR%	Oral Fluid CR%
11-nor-Δ^9-THC-9-carboxylic acid	100	324
(-) Δ^9-THC	N/A	100
11-nor-Δ^8-THC-9-carboxylic acid	49	179
11-hydroxy-Δ^9-THC	3	114
11-hydroxy-Δ^8-THC	<5	N/A
Cannabinol	<0.5	41

Methamphetamine

Compound	Urine CR%	Oral Fluid CR%
(+) Methamphetamine	100	100
MBDB	89	58
MDMA	36	32
Fenfluramine	19	18.7
MDEA	6.1	5.2
BDB	<11	0.6

Methadone

Compound	Urine CR%	Oral Fluid CR%
Methadone HCl	100	100

Opiates

Compound	Urine CR%	Oral Fluid CR%
Morphine	100	100
6-MAM	1500	470
Codeine	115	90.9
Morphine-3-glucuronide	67	8.5
Hydromorphone	27	7.8
Hydrocodone	17	7.5
Dihydrocodeine	13	16.1

Phencyclidine (PCP)

Compound	Urine CR%	Oral Fluid CR%
Phencyclidine	100	100
TCP	90	N/A

DoA I+

Amphetamine

Compound	Whole Blood CR%	Urine CR%
d-Amphetamine	100	100
MDA	426	646
BDB	177	155
4-Methoxyamphetamine (PMA)	138	199
Phentermine	35.2	30.5
dl-Amphetamine	29.5	54.3
MDEA	1.4	1.6
MDMA	0.4	1.3

Barbiturates

Compound	Whole Blood CR%	Urine CR%
Phenobarbital	100	100
Secobarbital	371	315.6
Butabarbital	166	215
Pentobarbital	151	130
Alphenal	117	280.8
Cyclopentobarbital	70.1	162
p-Hydroxyphenobarbital	64	106.3
Butalbital	51.1	64.3
Amobarbital	44	76
Barbital	33.3	31.4

Benzoylecgonine (Cocaine Metabolite)

Compound	Whole Blood CR%	Urine CR%
Benzoylecgonine	100	100
Cocaine	84.8	3
Cocaethylene	56.8	2.2

Benzodiazepines I (Oxazepam)

Compound	Whole Blood CR%	Urine CR%
Oxazepam	100	100
Temazepam	382	417
Nordiazepam	317	482
α-OH-Alprazolam	310	2274
Alprazolam	258	3001.2
Diazepam	256	1059
Estazolam	253	1033.1
Clobazam	203.6	698.8
Nitrazepam	194	203
2-OH-Ethylflurazepam	188.1	246.9
Prazepam	172	475
Midazolam	115.5	187
Flunitrazepam	114.1	99.4
Flurazepam	N/A	373.6
Phenazepam	61.2	N/A
Desalkylflunitrazepam	54.4	114.4
Lormetazepam	50.2	29.6
Chlordiazepoxide	46.8	54.7
Triazolam	29.6	340
Bromazepam	21.6	16.3
Lorazepam	13	7.7
Clonazepam	6.9	13.4
Temazepam glucuronide	6.8	5.1
7-Aminonitrazepam	2.4	1
Oxazepam glucuronide	2	0.2

Benzodiazepines II (Lorazepam)

Compound	Whole Blood CR%	Urine CR%
Lorazepam	100	100
Phenazepam	72.8	N/A
Clonazepam	28.2	36.4
Lorazepam glucuronide	24.8	17.2
Desalkylflunitrazepam	8.3	12.6
Oxazepam	5	<0.1
Oxazepam glucuronide	3.5	0.1
Nordiazepam	1.9	<0.1
Nitrazepam	0.8	1
7-Aminonitrazepam	<0.1	2

Buprenorphine

Compound	Whole Blood CR%	Urine CR%
Buprenorphine	100	100
Buprenorphine Glucuronide	51.7	20.9

Cannabinoids (THC)

Compound	Whole Blood CR%	Urine CR%
11-nor-D⁹-THC-9-carboxylic acid	100	100
11-hydroxy-Δ⁹-THC	4.5	2.2
11-hydroxy-Δ⁸-THC	N/A	1.1
(-) Δ⁹-THC	1	N/A

Methadone

Compound	Whole Blood CR%	Urine CR%
Methadone HCl	100	100
LAAM	0.7	0.2
EDDP	<0.1	<0.1
EMDP	<0.1	<0.1

MDMA

Compound	Whole Blood CR%	Urine CR%
MDMA	100	100
MDEA	384	402
MBDB	123	92
PMMA	30.5	20.3
MDA	5.5	8.4
d,l,BDB	4.8	6.2
Ethylone HCl	4.6	4.6
Methylone HCl	3.9	3.9
MDPPP HCl	2.4	2.4

Methamphetamine

Compound	Whole Blood CR%	Urine CR%
(+) Methamphetamine	100	100
MBDB	96	113
Para-Methoxy-Methamphetamine (PMMA)	70.7	50.4
MDMA	38	30.1
3-Trifluoromethyl-Phenylpiperazine (TFMPP)	23.5	15.2
Fenfluramine	12.4	11
Buphedrone HCl	7	7
N-Ethylcathinone HCl	5.6	5.6
MDEA	N/A	5.3
R(+)-Methcathinone HCl	3.4	3.4
3-Fluoromethcathinone HCl	3.3	3.3
Ethylone HCl	3	3
Methcathinone	2.4	2.4
S(-) Methcathinone HCl	2.1	2.1
Mephedrone HCl	N/A	1.8
Methylethcathinone	1.7	1.7
Methylone HCl	1.6	1.6

Opiate

Compound	Whole Blood CR%	Urine CR%
Morphine	100	100
6-MAM	1214	730
Codeine	106.6	69.5
Hydromorphone	27.2	7.5
Morphine-3-glucuronide	16.2	20
Hydrocodone	6	3.3
Dihydrocodeine	5	5

DoA II

Phencyclidine (PCP)

Compound	Whole Blood CR%	Urine CR%
Phencyclidine	100	100

Tricyclic Antidepressants (TCA)

Compound	Whole Blood CR%	Urine CR%
Nortriptyline	100	100
Imipramine N Oxide	1127	1335.7
Imipramine	294	217.4
Trimipramine	238	375
Desipramine	206	131.2
Cyclobenzaprine	201	170.6
Amitriptyline	190	71.8
Opipramol	167	386
Promazine	117	48.7
Maprotiline	96	28.3
Doxepin	95	71.4
Clomipramine	76	12.4
Protryptiline	67	49.9
Cyproheptadine	61	20.2
Lofepramine	58	16
Dothiepin	50	39.4
Chloropromazine	24.3	10.8
2-Hydroxylmipramine	19.5	11.3
Nordoxepin	19.4	12.3
Perphenazine	17.3	10.4
Prochlorperazine	9.3	N/A
2-hydroxydesipramine	N/A	7
Norclomipramine	N/A	6.4
10-hydroxyamitriptyline	N/A	3.5
10-hydroxynortriptyline	N/A	1.1

Buprenorphine

Compound	Whole Blood CR%	Urine CR%
Buprenorphine	100	100
Buprenorphine Glucuronide	27	21

Fentanyl

Compound	Whole Blood CR%	Urine CR%
Fentanyl	100	100
Norfentanyl	6.4	6.35
Sufentanyl	1.7	1.7

Generic Opioids

Compound	Whole Blood CR%	Urine CR%
Oxycodone	100	100
Hydrocodone	1774	3040.6
Ethylmorphine	1308.3	1939.4
Codeine	763.6	497.8
Dihydrocodeine	326.8	471.1
Hydromorphone	180.1	261.3
Heroin	124.3	105.5
Thebaine	110.9	118.4
6 Monoacetylmorphine	36.2	35.1
Levorphanol	33.6	72
Morphine	28.1	21.8
Morphine-3B-D-Glucuronide	9.7	5.3
Norcodeine	9.5	7.8
Oxymorphone	6.8	6.9

Ketamine

Compound	Whole Blood CR%	Urine CR%
Norketamine	100	100
Ketamine	2.4	<0.1
s Ketamine	4.5	<0.1

LSD

Compound	Whole Blood CR%	Urine CR%
LSD	100	100
Nor-LSD	26.1	27.7
2-oxo-3hydroxy-LSD	2.3	13

MDMA

Compound	Whole Blood CR%	Urine CR%
MDMA	100	100
MDEA	321.7	328.2
PMMA	23.75	12
MDA	5.5	7.8
d,l,BDB	4.8	4.8
MBDB	N/A	62.8

Methaqualone

Compound	Whole Blood CR%	Urine CR%
Methaqualone	100	408.9
2'OH Methaqualone	3.4	100
6-hydroxymethaqualone	3.9	45.3

Oxycodone I

Compound	Whole Blood CR%	Urine CR%
Oxycodone	100	100
Hydrocodone	38.6	62.2
Noroxycodone	19	27.5

Oxycodone II

Compound	Whole Blood CR%	Urine CR%
Oxycodone	100	100
Oxymorphone	88	73.8
Dihydrocodeine	5.3	3.3
Thebaine	3.6	2.2
Hydrocodone	3.4	3.4
Codeine	0.8	2
Ethylmorphine	0.4	1

Propoxyphene

Compound	Whole Blood CR%	Urine CR%
Norpropoxyphene	100	100
Propoxyphene	1521.9	1921

DoA III

Chloral Hydrate Metabolite

Compound	Whole Blood CR%	Urine CR%
Urochloralic acid (Trichlorethyl-β-D-glucuronide)	**100**	**100**

Ethyl Glucuronide

Compound	Whole Blood CR%	Urine CR%
Ethyl glucuronide	100	100
Methylethyl glucuronide	9	11.7
Methyl glucuronide	5	7.5

Fentanyl

Compound	Whole Blood CR%	Urine CR%
Fentanyl	100	330.5
Norfentanyl oxalate	N/A	100
Benzylfentanyl	60	425.5
Thienyl fentanyl HCl	23.9	191.8
N-acetyl fentanyl	9.3	33.9
cis-mefentanyl HCl salt	1.9	25.3
Norfentanyl	3	N/A
ω-Hydroxy norfentanyl	N/A	1.4

Flunitrazepam

Compound	Whole Blood CR%	Urine CR%
7-aminoflunitrazepam	**100**	**100**
Flunitrazepam	**79**	**58.6**
Diazepam	**7**	**12.7**
Triazolam	**3**	**2.1**

Ketamine Metabolite

Compound	Whole Blood CR%	Urine CR%
Norketamine	100	100
Ketamine	2	3.3
Dehydronorketamine	1	1.7

Meperidine

Compound	Whole Blood CR%	Urine CR%
Normeperidine	100	100
Meperidine	182	149.2

Meprobamate

Compound	Whole Blood CR%	Urine CR%
Meprobamate	100	100
Carisoprodol	88	76.6
Mebutamate	8	8.3
Meprobamate N-β-D-glucuronide	3	4.1

Zaleplon

Compound	Whole Blood CR%	Urine CR%
Zaleplon	100	100

Zolpidem

Compound	Whole Blood CR%	Urine CR%
Zolpidem	100	100
Zolpidem Metabolite (Phenyl-4-carboxyzolpidem)	31	27.2

Zopiclone

Compound	Whole Blood CR%	Urine CR%
Zopiclone	100	100
N-desmethylzopiclone	141	120.5
Zopiclone N-oxide	135	111.6
Eszopiclone	22	25.4

DoA IV

Acetaminophen

Compound	Whole Blood CR%	Urine CR%
Acetaminophen	100	100
N-acetylbenzoquinomeimine	27.6	37.3
Benorylate HCl	7.3	16
3-cysteinylacetaminophen Trifluoroacetic acid salt	4.8	<2.0
Phenacetin	1.4	1.3
Methacetin	<2	2.3

Dextromethorphan

Compound	Whole Blood CR%	Urine CR%
Dextromethorphan hydrobromide monohydrate	100	N/A
Dextromethorphan	N/A	100
Dextrorphan tartrate salt	32	19.6
(±)-nordextromethorphan	20.4	16.4

Ethyl Glucuronide

Compound	Whole Blood CR%	Urine CR%
Ethyl-β-D-glucuronide	100	100
Methylethyl glucuronide	21.2	18.3
Methyl-β-glucuronide sodium salt	7.5	5.5

Escitalopram

Compound	Whole Blood CR%	Urine CR%
N-desmethyl escitalopram	N/A	100
Escitalopram oxalate	126.8	94.4
Citalopram hydrobromide salt	40.3	52.6
(R)-citalopram oxalate	7.4	6.9

Fluoxetine

Compound	Whole Blood CR%	Urine CR%
Fluoxetine	100	100
Norfluoxetine	90.6	76.3

Haloperidol

Compound	Whole Blood CR%	Urine CR%
Haloperidol	100	100
Reduced haloperidol	148.4	164.2
Bromperidol	35.1	52.2
Moperone	24.4	23.9
4-(4-Chlorophenyl)-4-hydroxypiperidine	2.8	1.7
Trifluperidol HCl	1.5	1.5

Ibuprofen

Compound	Whole Blood CR%	Urine CR%
Ibuprofen	100	100
S-(+)-ibuprofen	154.4	95.4
Iso-propyl phenyl acetic acid	64.5	84.8
(R)-(-)-ibuprofen	37.4	24
Ibufenac	23.7	30.2
Rac-2-hydroxy ibuprofen	3.5	3.7
Phenacetin	N/A	3.4
Methacetin	N/A	0.5
Naproxen	<2	<2

Methylphenidate / Ritalinic Acid

Compound	Whole Blood CR%	Urine CR%
Methylphenidate HCl	100	0.6
Ritalinic acid	1	100
Rac-erythro-ethylphenidate HCl	1.9	N/A

Salicylate

Compound	Whole Blood CR%	Urine CR%
Salicylic acid	100	100
4-aminosalicylic acid	481.4	326.5
2,3-dihydroxy benzoic acid	103.2	97
Gentisic acid	15.7	N/A
Salicyluric acid	5	2.9
Aspirin	2.9	1.2
Diflusinal	1.5	N/A

Sertraline

Compound	Whole Blood CR%	Urine CR%
N-desmethyl sertraline HCl	100	100
Sertraline HCl	21.8	17.8
Sertraline carbamoyl glucuronide methyl ester	N/A	23.2

Tramadol

Compound	Whole Blood CR%	Urine CR%
Tramadol HCl	100	100
O-desmethyl-tramadol	34.8	26.4
(+/-) N-desmethyl-tramadol	1.8	1.6

Trazodone

Compound	Whole Blood CR%	Urine CR%
Trazodone	100	N/A
Etoperidone HCl	73.1	N/A
Nefazodone HCl	25.1	N/A
M-CPP HCl	2.3	100
Trazodone N-oxide	1.7	N/A
1-(3-hydroxyphenyl)-piperazine	N/A	84.8
1-[3-(trifluoromethyl)phenyl]piperazine	N/A	54.7

Tricyclic Antidepressants (TCA)

Compound	Whole Blood CR%	Urine CR%
Nortriptyline	100	100
Imipramine N oxide	1127	1127
N-desmethyl trimipramine	N/A	396.5
Imipramine	294	294
Trimipramine	238	238
Desipramine	206	206
Cyclobenzaprine	201	201
Amitriptyline	190	190
Opipramol	167	167
Promazine	117	117
Maprotiline	96	96
Doxepin	95	95
Clomipramine	76	76
Protriptyline	67	67
Northiaden (nordothiepin)	N/A	63.2
Cyproheptadine	61	61
Lofepramine	58	58
Dothiepin	50	50
Chlorpromazine	24.3	24.3
Norclomipramine HCl	N/A	22.1
2-hydroxyimipramine	19.5	19.5
Nordoxepin	19.4	19.4
Perphenazine	17.3	17.3
Prochlorperazine	9.3	9.3
10-OH amitriptyline	6.4	6.4
2-OH desipramine	5.1	5.1
quetiapine fumerate	N/A	4.5

DoA V

CR% values represent both Whole Blood and Urine

Synthetic Cannabinoids (JWH-018)

Compound	CR%
JWH-018	100
AM1220	238.6
JWH 018 N-(5-hydroxypentyl) metabolite	227.1
AM2201	219.1
(1-(4-Carboxybutyl)-1H-indol-3-yl) (naphthalen-1-yl)methanone (N-carboxybutyl) JWH-018	179.8
JWH 200 6-hydroxyindole metabolite	146.1
(5'-Carboxy) JWH-018	144.7
JWH-073 N-Butanol	143
JWH 073 N-(4-hydroxybutyl) metabolite	138.1
JWH 019 N-(6-hydroxyhexyl) metabolite	131.1
JWH-073	127.5
(±)-JWH 018 N-(4-hydroxypentyl) metabolite	126.8
AM2201 N-(4-fluoropentyl) isomer	117.9
JWH-200	115
(±)-JWH 073 N-(3-hydroxybutyl) metabolite	111.7
JWH 018 N-(3-methylbutyl) isomer	95.9
JWH 073 6-hydroxyindole metabolite	86
JWH-019	82
JWH 018 6-methoxyindole analog	81.3
JWH-022	69.6
AM2201 N-(4-hydroxypentyl) metabolite	68.4
JWH 018 5-hydroxyindole metabolite	65.5
JWH 018 N-(5-hydroxypentyl) β-D-glucuronide	65.3
JWH 018 6-hydroxyindole metabolite	62.7
JWH 018 N-pentanoic acid metabolite	58.7
JWH 073 5-hydroxyindole metabolite	58.4
JWH 018 N-(2,2-dimethylpropyl) isomer	56.4
AM2201 6-hydroxyindole metabolite	54.2
JWH 073 N-(2-methylpropyl) isomer	51.1
JWH 073 7-hydroxyindole metabolite	49.1
JWH 018 7-hydroxyindole metabolite	45.2
JWH 018 N-(2-methylbutyl) isomer	44.7
JWH-073 4-butanoic acid metabolite	28.1
JWH 019 5-hydroxyindole metabolite	24.8
JWH 018 N-(1-methylbutyl) isomer	24.7
JWH 398 N-(5-hydroxypentyl) metabolite	20.7
JWH 073 N-(1-methylpropyl) isomer	17.6
JWH 200 5-hydroxyindole metabolite	17.1
JWH-020	16.9
JWH-424	13.6
JWH 073 N-butanoic acid metabolite	12.1

Compound	CR%
JWH 122 N-(5-hydroxypentyl) metabolite	11.6
JWH 018 N-(1,2-dimethylpropyl) isomer	11.1
JWH 018 4-hydroxyindole metabolite	10.7
JWH-122	9.8
JWH 073 4-hydroxyindole metabolite	9.5
Win 55, 212-3 mesylate	8
JWH 081 5-methoxynaphthyl isomer	6.5
JWH 122 7-methylnaphthyl isomer	6.2
JWH 073 2-methylnaphthyl analog	6
JWH 122 6-methylnaphthyl isomer	5.7
JWH-398	5.6
JWH-147	5.4
N-desalkyl JWH-018	5.4
JWH-015	5.1
JWH 073 4-methylnaphthyl analog	4
JWH 122 2-methylnaphthyl isomer	3.9
JWH 210 7-ethylnaphthyl isomer or JWH-234	3.8
AM2233	3.6
JWH-030	3.2
AM694	3.1
JWH 398 5-chloronaphthyl isomer	2.6
JWH 081 N-(5-hydroxypentyl) metabolite	2.5
JWH-016	2.5
JWH-307	2.3
JWH 018 2'-naphthyl-N-(2-methylbutyl) isomer	2
JWH-007	2
RCS-4 2-methoxy isomer	2
JWH 081 2-methoxynaphthyl isomer or JWH-267	1.9
JWH 081 7-methoxynaphthyl isomer or JWH-164	1.7
JWH 200 4-hydroxyindole metabolite	1.5
RCS-4 3-methoxy isomer	1.5
JWH-210	1.4
AM694 3 iodo Isomer	1.2
(+)-WIN 55,212-2 (mesylate)	0.9
JWH 210 5-hydroxyindole metabolite	0.8
(R)-AM1241	0.2
AM694 4 iodo Isomer	<5
JWH 073 2'-naphthyl-N-(2-methylpropyl) isomer	<5
JWH 210 2-ethylnaphthyl isomer	<5
JWH 210 N-(5-carboxypentyl) metabolite	<5
JWH-030	<1

Synthetic Cannabinoids (UR144/XLR11)

Compound	CR%
UR144 N-Pentanoic Acid	100
A-834735	111
UR144 N-(5-hydroxypentyl metabolite	110
UR144 N-(4-hydroxypentyl) metabolite	107
A796260	88
UR144 N-(5-hydroxypentyl) β-D-Glucuronide	81
AB-005	47
XLR11 N-(3-fluoropentyl) isomer	29
XLR11	29
XLR11 N-(4-pentenyl) analog	26
UR144	19
XLR11 N-(2-fluoropentyl) isomer	16
UR144 N-(5-bromopentyl) analog	15
UR144 N-(5-chloropentyl) analog	13
UR144 Desalkyl	13
UR144 N-(heptyl) analog	6
XLR11 Degradant	3
UR144 degradant	2
XLR11 N-(4-hydroxypentyl) metabolite	2

Synthetic Cannabinoids (AB-PINACA)

Compound	CR%
AB-PINACA N-Pentanoic acid	100
5-Fluoro AB-PINACA	98.9
5-Hydroxypentyl AB-PINACA	83.8
4-Hydroxypentyl AB-PINACA	85.2
AB-PINACA	52.4
AB-FUBINACA	35.3
AB-FUBINACA carboxylic acid	4.5

Bath Salts I (Mephedrone / Methcathinone)

Compound	CR%
Mephedrone HCl	100
Methylone HCl	80
Methedrone HCl	78.2
Flephedrone HCl	46.6
Methcathinone HCl	42.7
R(+)-Methcathinone HCl	38.3
3-Fluoromethcathinone HCl	21.3
3-Methoxymethcathinone (3-MeOMC) HCl	13.5
4-Methylethcathinone HCl	11.3
S(-) Methcathinone HCl	8.9
Ethylone HCl	6.5
N-Ethylcathinone HCl	5.7
Buphedrone HCl	5.3
Butylone HCl	3.5

Bath Salts II (α-PVP / MDPV)

Compound	CR%
Desmethyl Pyrovalerone (α-PVP)	100
Pyrovalerone	125.4
3,4-Methylenedioxypyrovalerone (MDPV)	93.3
α-Pyrrolidinopentithiophenone HCl	73.2
Naphyrone	70.2
4-methyl-α-pyrrolidinohexanophenone (4-MPHP)	38.1
4'-Methyl-α-pyrrolidinobutiophenone (MPBP)	23.2
MDPBP HCl	17.2
4-Methoxy-PV8 HCl	11.7
4-Fluoro-PV9 HCl	3.2
4'-Methyl-α-Pyrrolidinopropiophenone HCl	1.8
3,4-Methylenedioxy-α-pyrrolidinopropiophenone (MDPPP)	0.8
Pyrrolidinopropiophenone	0.8

Mescaline

Compound	CR%
Mescaline HCl	100
(+/-)-3,4,5-Trimethoxyamphetamine hydrochloride (TMA)	36.3
N-Acetyl mescaline	14.7
3,4,5 Trimethoxybenzylamine	6.5

Benzylpiperazines

Compound	CR%
1-Benzylpiperazine	100
1-[4-(Trifluoromethyl)benzyl]piperazine	328.7
4-Hydroxy-benzylpiperazine (p-OH-BZP)	172.1
3-(Piperazin-1yLmethyl)phenol diHCl	123.7
1-Piperonylpiperazine	101.5
N-(3-Methylbenzyl)piperazine diHCl	52.9
1-[3-(Trifluoromethyl)benzyl]piperazine	12.3
1-(3-Methylphenyl)piperazine	3.9
1-Phenylpiperazine	3.4
1-(2-Methoxyphenyl)piperazine diHCl	3.2
1-(3-Trifluoromethylphenyl)piperazine HCl	1.9
1-(4-Methylphenyl)piperazine	1.3
1-(3-Hydroxyphenyl)piperazine	1.0

Phenylpiperazines I

Compound	CR%
1-(3-Chlorophenyl)piperazine monohydrochloride (mCPP)	100
1-(2-Chlorophenyl)piperazine HCl	122.4
1-(3-Methylphenyl)piprazine	119.5
1-(4-Methoxyphenyl)piperazine DiHCl	99.4
1-(4-Chlorophenyl)piperazine	76.2
Para-Fluorophenyl piperazine DiHCl	72.2
1-Phenylpiperazine	64.9
1-(4-Methylphenyl)piperazine	60.9
1-(4-Hydroxyphenyl)piperazine	35
1-(3-Hydroxyphenyl)piperazine	28.7
1-(3-Trifluoromethylphenyl)piperazine HCl	12.5
1-[4-Trifluoromethyl)phenyl]piperazine	5.3

Phenylpiperazines II

Compound	CR%
1-(3-Chlorophenyl)piperazine monohydrochloride (mCPP)	100
1-(3-Methylphenyl)piprazine	196.2
1-(2-Chlorophenyl)piperazine HCl	159.0
1-(3-Hydroxyphenyl)piperazine	119.4
1-Phenylpiperazine	112.0
1-(4-Methoxyphenyl)piperazine DiHCl	16.2
1-(4-Chlorophenyl)piperazine	23.7
Para-Fluorophenyl piperazine DiHCl	32.4
1-(4-Methylphenyl)piperazine	25.5
1-(3-Trifluoromethylphenyl)piperazine HCl	48.0
1-(4-Hydroxyphenyl)piperazine	10.0
1-(2-Methoxyphenyl)piperazine DiHCl	31.0
1-[4-Trifluoromethyl)phenyl]piperazine	2.4

Salvinorin

Compound	CR%
Salvinorin A	100
Salvinorin B	27.5

DoA ULTRA / DUID

CR% values represent both Whole Blood and Urine unless specified

Amphetamine

Compound	CR%
S(+)-Amphetamine	100
(±)-MDA	323.3
PMA HCl	292.8
BDB	120.6
(±)-Amphetamine	49.6
Phentermine	25.4
R(-)-Amphetamine	16.6
MDEA	4

Benzo Fury Compounds	CR%
5-IT	1003
5-APB HCl	491.7
6-APB HCl	418.6
5-APDB HCl	393.5

Barbiturates

Compound	CR%
Phenobarbital	100
Secobarbital	371
Butabarbital	166
Pentobarbital	151
Alphenal	117
Cyclopentobarbital	70.1
p-OH-phenobarbital	64
Butalbital	51.1
Amobarbital	44
Barbital	33.3
(±)-Thiopental	1.1

Benzodiazepines I (Oxazepam)

Compound	CR%
Oxazepam	100
Temazepam	382
Nordiazepam	317
α-OH-Alprazolam	310
Alprazolam	258
Diazepam	256
Estazolam	253
Clobazam	203.6
Nitrazepam	194
2-OH-Ethylflurazepam	188.1
Prazepam	172
Midazolam	115.5
Flunitrazepam	114.1
Flurazepam	93.4
Phenazepam	61.2
Desalkylflunitrazepam	54.4
Lormetazepam	50.2
Chlordiazepoxide	46.8
Triazolam	29.6
Etizolam	28.4
N-Desmethylflunitrazepam	23.6
Bromazepam	21.6
Alpha-OH-Etizolam	19.0
Lorazepam	13
Clonazepam	6.9
Temazepam Glucuronide	6.8
7-Aminoflunitrazepam	2.4
Oxazepam Glucuronide	2

Benzodiazepines II (Lorazepam)

Compound	CR%
Lorazepam	100
Phenazepam	72.8
Clonazepam	28.2
Lorazepam Glucuronide	24.8
N-Desmethylflunitrazepam	9.6
Desalkylflunitrazepam	8.3
Oxazepam	5
Oxazepam Glucuronide	3.5
Nordiazepam	1.9

Benzoylecgonine (Cocaine Metabolite)

Compound	CR%
Benzoylecgonine	100
Cocaine	103.8
m-hydroxybenzoylecoginine	95.6
Cocaethylene	54.4
Ecgonine methyl ester	1.29

Buprenorphine

Compound	Whole Blood CR%
Buprenorphine	100
Buprenorphine-3β-D-Glucuronide	42.8

Buprenorphine

Compound	Urine CR%
Norbuprenorphine	100
Buprenorphine	16.7
Norbuprenorphine-3β-D-Glucuronide	15.0
Buprenorphine-3β-D-Glucuronide	2.0

Cannabinoids (THC)

Compound	Whole Blood CR%
(-)-11-norΔ⁹-Carboxy-Δ9-THC	100
(±)-11-Hydroxy-Δ⁹-THC	25.6
Δ8-THC	13.3
Δ9-THC	10.9

Cannabinoids (THC)

Compound	Urine CR%
11-nor-Δ9-THC-9-carboxylic acid	100
11-hydroxy-Δ9-THC	2.2
11-hydroxy-Δ8-THC	1.1

Dextromethorphan

Compound	CR%
Dextromethorphan	100
Dextrorphan tartrate salt	32
(±)-nordextromethorphan	20.4

Fentanyl

Compound	CR%
Fentanyl	100
α-methylfentanyl	266
p-fluorofentanil	194
Benzylfentanyl	57.1
Butyrylfentanyl HCl	54
Norfentanyl	27
ω-Hydroxy fentanyl	15.2
Thienylfentanyl HCl	8.1
3-methio fentanyl	4.7
Norfentanyl Oxalate	4.2
3-methyl thiofentanyl	3.4
Cis-Mefenatanyl HCl salt	3.3
Acetyl fentanyl	3.1
Ohmefentanyl	3.1

Generic Opioids

Compound	CR%
Oxycodone	100
Hydrocodone	694.9
Ethyl Morphine HCl	206.5
Codeine	174.6
6-Acetyl-Codeine	101.7
Dihydrocodeine	63.2
Hydromorphone	62.4
Desomorphine	25.2
Morphine-3BD-Glucuronide	21.5
Morphine*	16.1
Heroin	15.5
6-MAM	12.9
Levorphanol	9.1
Thebaine	8.9
Norcodeine	5.6
Oxymorphone	3.6
Morphine-6BD-Glucuronide	3.6

*Morphine cross reactivity (CR%) for urine is 35

Meprobamate

Compound	CR%
Meprobamate	100
Carisoprodol	88
Mebutamate	8
Meprobamate-N-β-D-glucuronide	3

Methadone

Compound	CR%
Methadone	100

Methamphetamine

Compound	CR%
S(+)-Methamphetamine	100
PMMA HCl	291
MDMA	114.4
(±)-Methamphetamine	69.8
MDEA	4.3
(±)-N-Ethylamphetamine	3.0

Benzo Fury' Compounds	CR%
5-MAPB HCl	136.1
5-MAPDB HCl	76.6

Opiate

Compound	CR%
Morphine	100
6-MAM	1168
6-Acetyl-Codeine	430.3
Heroin	353.6
Desomorphine	159.9
Codeine	112.2
Morphine-6βD-Glucuronide	68.4
Ethyl Morphine HCl	66.5
Hydromorphone	50.8
Hydrocodone	38.4
Thebaine	19.9
Morphine-3βD-Glucuronide	18
Levorphanol	13.2

Oxycodone I

Compound	CR%
Oxycodone	100
Hydrocodone	132.6
Noroxycodone	29

Oxycodone II

Compound	CR%
Oxycodone	100
Oxymorphone	22.9
6-Acetyl-Codeine	4
Hydrocodone	3.2
Thebaine	2.1
Codeine	1.7
Naloxone	1.4
6-MAM	1.1

Phencyclidine (PCP)

Compound	CR%
PCP	100

Tramadol

Compound	CR%
Tramadol	100
O-Desmethyltramadol	34.8
(±)-N-Desmethyl tramadol	1.39

Tricyclic Antidepressants (TCA)

Compound	CR%
Nortriptyline	100
Imipramine N Oxide	1127
Imipramine	294
Trimipramine	238
Desipramine	206
Cyclobenzaprine	201
Amitriptyline	190
Opipramol	167
Promazine	117
Maprotiline	96
Doxepin	95
Clomipramine	76
Protryptiline	67
Cyproheptadine	61
Lofepramine	58
Dothiepin	50
Chlorpromazine	24.3
2 Hydroxylmipramine	19.5
Nordoxepin	19.4
Perphenazine	17.3
Prochlorperazine	9.3

Zolpidem

Compound	CR%
Zolpidem	100
Metabolite I: (4-carboxyzolpidem)	47.5

Notes

Order Information

UK

Randox Toxicology Ltd.
55 Diamond Road
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