

# FORENSIC TOXICOLOGY HANDBOOK

*Contents, Foreword and Introduction Only*

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# CONTENTS

## **Introduction**

## **Toxicology Principles**

Poisons, Drugs, Metabolites, Dose

## **Drugs and Poisons**

Common drug types, Other drugs/poisons, Drugs of abuse

## **Toxicological Investigation**

General, Drug-facilitated sexual assault and spiked drinks, Deaths in hospital, Alcohol

## **Specimen Collection**

Sample selection, Post-mortem redistribution, Sample containers, Sample collection, Sample packaging and transport

## **Analysis**

Sample preparation and extraction, Qualitative analysis, Quantitative analysis, Problem compounds for analysis, Analytical techniques and detection methods

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## **Toxicology Interpretation**

Case information, Submitted specimens, Analysis, Fatal and non-fatal ranges, Tolerance, Pharmacogenomics, Drug combinations, Drug stability, In vitro and post-mortem production

## **Toxicology Reporting**

## **Case Submission**

## **Worked Examples**

## **Bibliography**

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## Foreword

Forensic toxicology is the science behind the detection and interpretation of drugs and poisons in a medico-legal context. It is an important component of the investigation of road traffic incidents, assaults and deaths and in the UK is an under-utilised resource. The media and TV programmes in particular, perpetuate the myths that merely 'sending a sample to the lab' will provide the answer and that 'the result' will be available within a few hours. In real life of course things are a little more complicated.

This handbook provides a useful service by indicating that there are many parts of the process - from sample collection to report production - where problems can occur. The importance of optimal sampling, accurate labelling of specimens, careful packaging and appropriate transport are stressed. It is clear therefore that many individuals have a role to play in making sure that the investigation is not compromised by poor procedure; quality control and a chain of evidence are also paramount.

Analysis of a wide range of bodily fluids is technically complex and involves expensive equipment but the real skill of the forensic toxicologist lies in interpretation of the findings. It is not just a case of placing blood or urine in a machine and reading off the printout. As a forensic pathologist I want to have confidence that the samples have been competently analysed but I also want guidance as to what the findings might mean.

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Formulating a cause of death for the appropriate judicial officer is ultimately a role for the pathologist but there is no doubt that a high quality toxicology report is in many cases essential.

It would be naïve and dangerous for the reader to assume that this handbook will turn them into experts in forensic toxicology. The astute investigator will quickly realise what a minefield this speciality can be and will use it to answer some of the more commonly raised questions. As such I believe this handbook will be of great assistance to a wide spectrum of medico-legal investigators, particularly HM Coroners and their officers, police officers, pathologists and solicitors. If in doubt though, the best advice remains: pick up the telephone and speak to the toxicologist. The quality of your investigation may well depend upon that simple act.

Dr Andrew Davison, Forensic Pathologist, Cardiff.

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## INTRODUCTION

This handbook has been produced to provide some theoretical and practical background for the investigation of post-mortem or criminal cases where drugs or poisons may be involved. It also serves as reference material for the toxicology training offered by (ROAR) Forensics Ltd.

Toxicology is a branch of science concerning the study of the effects, nature and detection of drugs and poisons and their dose. It is one of few forensic disciplines which may assist in determining the cause of death or an incident, as well as providing some indication of explaining an individual's actions. However, the involvement of drugs or poisons may not always be immediately obvious to investigators and can often be regarded as an "invisible weapon". Even in instances where there is significant evidence to suggest the ingestion of drugs has occurred, the exact drug (or more usually drugs) may not be known. Furthermore, even if a drug has been detected, the interpretation of its presence or amount can depend on many factors. Not least the type, nature and actions of the drugs themselves. It is also important to be aware of the wider issues that impact on toxicology, including; appropriate sample collection, analysis, drug stability and possible endogenous production of compounds. It is hoped this handbook can assist in providing some of this information.

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Table. Common instances where toxicological investigation is required or requested.

<b>Suspicious/Sudden deaths</b>	Overdose or poisoning, hanging, gunshot, fire, fumes, solvents, drowning, fall.
<b>Road traffic accidents</b>	Analysis of driver and/or passengers.  e.g. passenger(s) may have distracted driver. Alcohol in particular but drugs of abuse analysis now commonly requested.
<b>Criminal investigations</b>	The deceased, victim or suspect may require toxicological investigation.  e.g. determine state of mind, may have been under the influence.
<b>Drug facilitated sexual assault (DFSA)</b>	Analysis of victim's blood and/or urine to determine the presence or absence of drugs and alcohol.
<b>Animal deaths/poisonings</b>	Accidental or criminal poisoning.

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