

2016

DIVISION OF FORENSIC TOXICOLOGY

Forensic Toxicology Laboratory

- Post-Mortem Toxicology
- Human Performance Toxicology
- Drug Facilitated Sexual Assault Toxicology (DFSA)
- Other Submissions

DIVISION OF FORENSIC TOXICOLOGY

Forensic Toxicology Laboratory

Qualitative and quantitative chemical analyses of tissues and bodily fluids to determine the presence or absence of toxic or drug substances comprise the work of Toxicology. Samples are submitted for analysis from Medical Examiner cases as well as from county police agencies. These Forensic Toxicology analyses fall into three categories: post-mortem, human performance testing, and drug facilitated sexual assault testing.

Post-Mortem Toxicology

Under this category are included biological fluid and tissue analyses of specimens collected during Medical Examiner autopsies. Such analyses are vital in aiding the Medical Examiner in the investigation of the cause and manner of death.

Human Performance Toxicology

Blood and urine samples submitted by law enforcement agencies provide necessary information regarding the presence of alcohol and drugs in cases of drivers suspected of driving while chemically impaired or intoxicated.

Drug Facilitated Sexual Assault Toxicology (DFSA)

Blood and urine samples submitted by law enforcement agencies provide the necessary information regarding the presence of alcohol or other drugs that were utilized in a sexual assault.

Other Submissions

Law enforcement agencies and hospitals also submit samples for analysis that may not be blood or urine. In 2016 4 cases were received. More complex testing is required. In addition to the analyses described above, we are also responsible for supporting the Breath Alcohol instruments used by all police agencies in Westchester County, in court.

DIVISION OF FORENSIC TOXICOLOGY

Summary of Forensic Toxicology Performed for Law Enforcement Agencies (DWI)

	2012	2013	2014	2015	2016
DWI/DUID* Cases Received	438	432	457	345	383
DFSA Cases Received	27	13	12	21	27
Blood & Urine Specimens Received	501	493	558	677	535
Serum / Blood Specimens Received	250	238	216	205	258
Blood Found to Contain Alcohol	125	127	98	104	92
% Blood Specimens Containing Alcohol	50%	53%	45%	59%	36%
Blood Found to Contain Drugs	133	139	94	80	132
% Blood Specimens Containing Drugs	53%	58%	44%	45%	51%
Urine Specimens Received	251	255	342	472	259
Urine Found to Contain Alcohol	79	75	120	97	82
% Urine Specimens Containing Alcohol	31%	29%	35%	39%	31%
Urine Found to Contain Drugs	228	199	257	219	186
% Urine Specimens Containing Drugs	91	78%	75%	88%	72%

*DWI: Driving while under the influence (of alcohol)

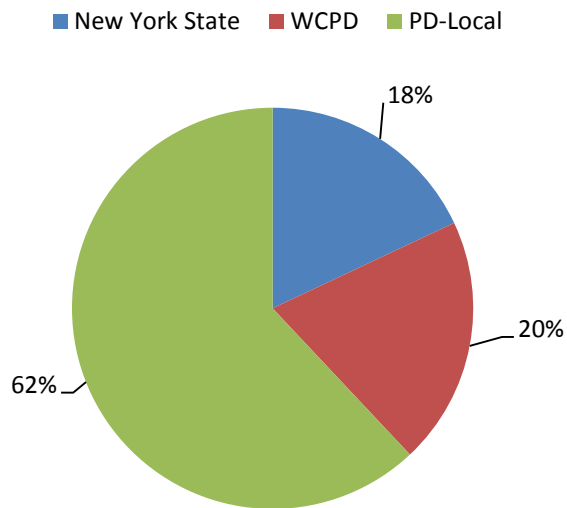
DUID: Driving while under the influence of drugs

DFSA: Drug facilitated sexual assault now (DFC)

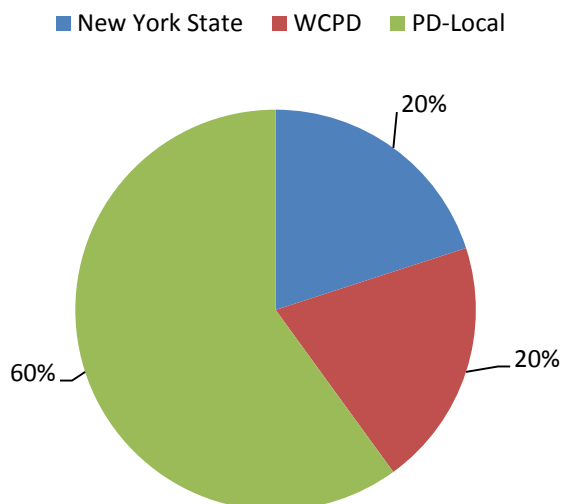
In 2016, 48% of all samples were positive for marijuana. 93% of all cases tested were positive for alcohol and/or drugs. 19% of all samples were positive for alcohol only, while 37% of all samples tested were positive for alcohol, down from 47% in 2016. 15% of all cases had cocaine and/or benzoylecgonine and more than 20% had one or more benzodiazepines. Phencyclidine (PCP) is detected regularly. In 2016 4% of all cases had PCP.

This data may be misleading. If the alcohol is above a 0.08% alcohol level in blood/serum, the lab does not evaluate the case for any other drugs, unless they are requested. Only 7% of all the case work was negative for alcohol or drugs and this includes the DFSA cases. Marijuana continues to be the drug of choice in DWAI cases. Poly drug use, use of more than one drug, continues to increase in all of the cases received. Several cases were positive for fentanyl analogues and bath salts. It is very difficult to detect, screen, and confirm these compounds. The lab continues to add new drugs to our test panels for screening and confirmations. Other drugs detected in drivers include butylone, ethylone, etizolam, ketamine and U-47700.

DWI/DUID/DFSA Cases Sources of Cases as a Percentage of Total Cases for 2016



DWI/DUID/DFSA Cases Sources of Cases as a Percentage of Total Cases for 2015



DIVISION OF FORENSIC TOXICOLOGY

Summary of Forensic Toxicology Performed for Office of the Medical Examiner

	2012	2013	2014	2015	2016
Autopsies From Which Samples Were Submitted	576	583	525	557	629
Samples Analyzed From Autopsies	2189	2128	1995	2115	2650
Average Number of Samples Analyzed/Autopsy	3.8	3.7	3.8	3.8	4.2
ALCOHOL					
Autopsies Tested For Alcohol	576	583	525	557	629
Autopsies Found to Contain Alcohol	149	149	127	148	151
% Autopsies Found to Contain Alcohol	26%	26%	24%	26%	24%
DRUGS					
Autopsies Tested With Drug Screen	576	583	525	557	629
Autopsies Found to Contain Drugs (other than alcohol)	349	493	356	419	508
% Autopsies Found to Contain Drugs (other than alcohol)	60%	85%	68%	75%	81%
CARBON MONOXIDE					
Autopsies Tested For Carbon Monoxide	17	29	13	31	9
Autopsies Found Positive, i.e., Toxic Concentrations (>10% saturation)	6	14	6	9	5
Autopsies Found Negative, i.e., Nontoxic Concentrations (<10% saturation)	11	15	7	22	4

Testing for alcohol and other drugs in Post Mortem, Human Performance and DFSA cases require an initial screen for alcohol and 11 major drugs of abuse. Another test (LC/MS/TOF), requires several days to evaluate the screens for several hundred drugs simultaneously. Many classes of drugs are evaluated and very low levels of detection are required. Positive drug findings are then scheduled for confirmation which includes quantitation of the results. Confirmation testing is more specific and complicated. Drugs like phencyclidine (PCP) or barbiturates are faster, but still require standards and controls for evaluation of the work. Opiate testing takes 3 days to complete, and includes seven components. This does not include the time required to evaluate the data. Morphine, codeine, 6-MAM, oxycodone, oxymorphone, hydrocodone, and hydromorphone require several complicated steps to confirm and quantitate the final results. With the addition of state of the art equipment, LC/MS/MS, the analytical demands of the newer drugs can be met. Fentanyl and the analogues are being analyzed on this instrument. As new fentanyl analogues are being found, the lab incorporates them into the screening and confirmation procedures. Many analogues were found in the 2016 casework.

The Medical Examiner post-mortem toxicology is performed as part of the investigation for cause and manner of death. In 2012, 576 cases were received and in 2013, 583 cases were received, in 2014 525 cases were received. In 2015 577 cases were received. In 2016 the lab received 629 cases, a 9% increase over the previous year. The overall complexity of the cases increases the turnaround time for completion. Multiple drug use and abuse continues to occur. The number of samples tested and the percentage of cases containing drugs continues to increase. The prescription use and abuse, especially of oxycodone and benzodiazepines has increased the workload. The availability and increase in new illegal drugs makes the evaluation of Medical Examiner and DWAI casework more difficult and time consuming.

Drug Facilitated Sexual Assault cases require the more selective and sensitive confirmation testing rather than simple screening. Routine screening tests are not sensitive enough to detect a one-time use of the benzodiazepines that could be used in this assault. GHB (gammahydroxybutyrate) is a special test that must be run on all victims. The additional LC/MS/TOF screening for hundreds of drugs must occur in all cases, regardless of other drugs or alcohol found. This protocol is required by NYS and the Forensic Toxicology community.

New drugs and drugs of abuse are being introduced to the public on a regular basis. The lab is aware of this and adds them to screens for all casework. Bath salts and synthetic cannabinoid abuse has occurred throughout the county. It is very difficult to screen for these compounds and the testing cannot be done easily on a routine basis. The lab has found several DWAI cases containing these compounds. The lab detected the active ingredient in "Dust-Off", difluoroethane, in several ME cases. Many deaths occurred from the combination of heroin and fentanyl, oxycodone and benzodiazepines. 57 of all Medical Examiner cases (9%) contained fentanyl. In addition many cases had fentanyl analogues. The lab detected U-47700, an illegal synthetic opioid, and mitragynine (Kratom) in several cases.

DIVISION OF FORENSIC TOXICOLOGY**Law Enforcement Agency Submissions**

	2012	2013	2014	2015	2016
Ardsley	1			1	
Bedford	12	7	12	4	7
Briarcliff Manor	1	5	1	4	
Bronxville		1	1		
Buchanan		5	3	1	
Croton	9	10	3	6	2
Dobbs Ferry	4		4		1
Eastchester	3	5	6	2	8
Elmsford					4
Greenburgh	11	17	20	10	29
Harrison	8	21	12	17	15
Hastings	5	5	5	3	2
Irvington			1		2
Larchmont		1	2	1	2
Lewisboro		1			
Mamaroneck Town	1		4	3	1
Mamaroneck Village	12	2	4	2	2
Mount Kisco	18	10	5	3	
Mount Pleasant	4	8	3	2	9
Mount Vernon	8	8	8	7	5
New Castle	8	2	1	3	2
New Rochelle	26	24	27	31	39
NYC DEP		1	2	1	
NY State Police	84	73	63	72	76
North Castle	7	5	1		6
Ossining Town					
Ossining Village	7	5	9	17	9
Peekskill	8	2	4	7	4
Pelham	4	5	1		4
Pleasantville		3	1		1
Port Chester	7	9	11	4	13
Pound Ridge	4	2	5		
Rye Brook	2	3	2		2
Rye City	1	4	1	3	6
Scarsdale	4	2	2	1	1
Sleepy Hollow	5	7	3		3
Tarrytown	7	3	2	3	5
Tuckahoe	5	2		3	2
West. Co. PD	129	103	172	76	84
White Plains	9	14	10	16	11
Yonkers	52	51	48	54	40
Yorktown	12	7	7	7	11
Westchester ME	2				
West. Medical Center					
DA's Office					
Metro North					
Other (SUNY – Purchase)			2		1
Div. of Forensic Science	1		1	2	2
TOTAL	481	433	469	366	410

DIVISION OF FORENSIC TOXICOLOGY

Professional Society Memberships

<u>Organization</u>	<u>Members</u>
American Academy of Forensic Sciences	E. Spratt
American Association of Certified Chemists	E. Spratt
Northeastern Association of Forensic Scientists	S. Viens
Society of Forensic Toxicologists	T. Camporese, E. Scuderi C. Cording, E. Spratt, M. Trauzzi, S. Viens
The International Association of Forensic Toxicologists	E. Spratt
Society of Toxicology	O. Sparavalo

Westchester Government Committees

Department EMS	C. Cording, M. Trauzzi
Department EPA Management Committee	E. Spratt
Department EPA Core Committee	E. Spratt
Department Safety Committee	C. Cording, O. Sparavalo,
Division Fire Warden	T. Camporese, T. Baker
Division Internship Coordinator	C. Cording

DIVISION OF FORENSIC TOXICOLOGY

Other Committees

ABFT Board of Directors 2008-2017	E. Spratt
New York State Crime Laboratory Advisory Committee	E. Spratt
New York State Division of Criminal Justice Services Technical Working Group - Quality Assurance	C. Cording
New York State Division of Criminal Justice Services Technical Working Group - Toxicology	E. Spratt
NYS DCJS Technical Working Group – Backlog	T. Camporese, E. Adorno
NY State – Impaired Driving Advisory Council	E. Spratt

Workshops

Opioids in DUID Investigations SOFT Annual Meeting Dallas, TX	E. Spratt
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Training

NLCP Inspectors Training Society of Forensic Toxicologists Annual Meeting Dallas, TX	E. Spratt
Statistics Training DCJS - Mandatory Labs & Research Webinar (3)	T. Camporese, C. Cording, T. Baker, E. Adorno, M. Trauzzi, J. Masih, S. Viens, O. Sparavalo, V. Radkar, E. Spratt
Forensic Laboratory Management DCJS March, 2016	M. Trauzzi, V. Radkar S. Viens

Webinar Training

Designer Drugs of Abuse: the Science Behind the Headlines National Drug Early Warning System April 27, 2016	J. Masih, S. Viens
The Abuse of E-Cigarettes, the Impact on Criminal Justice National Institute of Justice August 18, 2016	S. Viens

DIVISION OF FORENSIC TOXICOLOGY

Laboratory Accreditation

Accreditation

American Board of Forensic Toxicology (ABFT)

Mid-Cycle Submission

Meetings

New York State Crime Laboratory Advisory Committee
Albany, NY

E. Spratt (2)

New York State Technical Working Group - Toxicology
Albany, NY

E. Spratt (2)

New York State Technical Working Group - Quality Assurance
Albany, NY

C. Cording (2)

New York State Forensic Commission Meeting
Albany, NY and New York City

E. Spratt (4)

Annual Meeting
Society of Forensic Toxicologists
Dallas, TX

E. Spratt

Professional Certification

American Board of Forensic Toxicology
Fellow – ABFT

E. Spratt

Diplomate- ABFT- FTS

C. Cording, M. Trauzzi
S. Viens

American Society of Clinical Pathologists

T. Camporese

National Registry in Certified Chemists
Toxicological Chemist

E. Spratt

New York State Department of Health
Clinical Laboratory Technologist License

T. Camporese, E. Spratt
O. Sparavalo

New York State Division of Criminal Justice Services
Bureau for Municipal Police
Operator Certified Infrared Breath Alcohol Instrument

E. Adorno, E. Spratt,
S. Viens

U.S. Department of Health and Human Services
HHS National Laboratory Certificate Program
Inspector

E. Spratt

New York State Department of Health
Blood and Urine Alcohol Analyst Permit

E. Adorno, T. Baker,
T. Camporese, C. Cording,
M. J. Masih, V. Radkar,
E. Spratt, M. Trauzzi,
S. Viens, O. Sparavalo

DIVISION OF FORENSIC TOXICOLOGY

Tours Given

Students enrolled in Forensic Science courses at the following high schools and colleges were given lectures/tours of the Forensic Sciences and Toxicology Laboratories: (Total number of students for the year 148).

Legal Aid attorneys
Ethical Culture Fieldston HS
Eastchester PD
French American School of NY
Iona Prep
Iona STEP program
Port Chester PD interns
PS89 The Williamsbridge School
SAFE Nurses
Soundview Prep
Rockland Retired Teachers
WCDA's office new ADA tour
WCDA's office interns and ADA Keary Neary
County Administration