2017

DIVISION OF FORENSIC TOXICOLOGY

Forensic Toxicology Laboratory

- Post-Mortem Toxicology
- Human Performance Toxicology
- Drug Facilitated Crime (DFC)
- 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

This category includes biological fluids 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 other drugs in cases of drivers suspected of driving while chemically impaired or intoxicated.

Drug Facilitated Sexual Assault Toxicology (DFSA) is now Drug Facilitated Crime (DFC)

Blood and urine samples submitted by law enforcement agencies provide the necessary information regarding the presence of alcohol or 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 2017 2 cases were received that were not biological samples. An additional, 6 other cases did no fall into the categories above. 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)

	2013	2014	2015	2016	2017
DWI/DUID* Cases Received	432	457	345	383	386
DFSA Cases Received	13	12	21	27	23
Blood & Urine Specimens Received	493	558	677	535	709
Serum / Blood Specimens Received	238	216	205	258	339
Blood Found to Contain Alcohol	127	98	104	92	109
% Blood Specimens Containing Alcohol	53%	45%	59%	36%	32%
Blood Found to Contain Drugs	139	94	80	132	269
% Blood Specimens Containing Drugs	58%	44%	45%	51%	79%
Urine Specimens Received	255	342	472	259	364
Urine Found to Contain Alcohol	75	120	97	82	60
% Urine Specimens Containing Alcohol	29%	35%	39%	31%	16%
Urine Found to Contain Drugs	199	257	219	186	330
% Urine Specimens Containing Drugs	78%	75%	88%	72%	91%

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

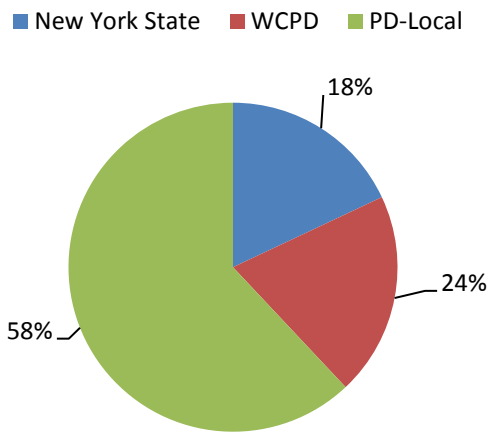
DUID: Driving while under the influence of drugs

DFSA: Drug facilitated sexual assault now (DFC)

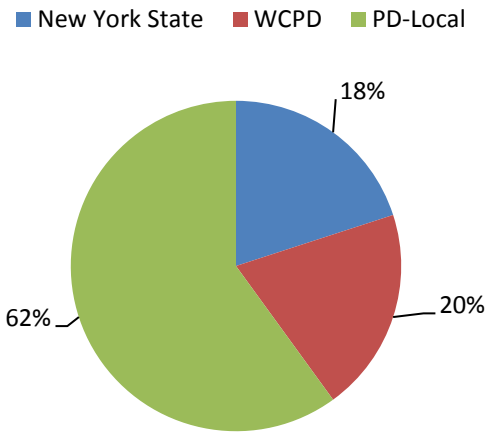
In 2017, 47% of all samples were positive for marijuana. 93% of all cases tested were positive for alcohol and/or drugs. 19% of all samples were positive for alcohol only, while 41% of all samples tested were positive for alcohol, up from 37% in 2016. 16% of all cases had cocaine and/or benzoylecgonine and more than 30% had one or more benzodiazepines. Phencyclidine (PCP) is detected regularly, and in 2017, 4% of all cases had PCP.

Only 8% of all the case work was negative for alcohol or drugs and this includes the DFC 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. 4% cases were positive for fentanyl and in addition; several analogues were detected 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, dibutylone, ethylone, etizolam, ketamine and 4-ANPP, difluoroethane and zolpidem. 4% of all cases had bupreronphine/norbupreoyphee. The number of drugs detected have continued to increase per case due to the expanded screening that occurs with all casework.

DWI/DUID/DFSA Cases
Sources of Cases as a Percentage of Total Cases for 2017



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



DIVISION OF FORENSIC TOXICOLOGY

Summary of Forensic Toxicology Performed for
Office of the Medical Examiner

	2013	2014	2015	2016	2017
Autopsies From Which Samples Were Submitted	583	525	557	629	605
Samples Analyzed From Autopsies	2128	1995	2115	2650	2691
Average Number of Samples Analyzed/Autopsy	3.7	3.8	3.8	4.2	4.4
ALCOHOL					
Autopsies Tested For Alcohol	583	525	557	629	605
Autopsies Found to Contain Alcohol	149	127	148	151	149
% Autopsies Found to Contain Alcohol	26%	24%	26%	24%	25%
DRUGS					
Autopsies Tested With Drug Screen	583	525	557	629	605
Autopsies Found to Contain Drugs (other than alcohol)	493	356	419	508	497
% Autopsies Found to Contain Drugs (other than alcohol)	85%	68%	75%	81%	82%
CARBON MONOXIDE					
Autopsies Tested For Carbon Monoxide	29	13	31	9	19
Autopsies Found Positive, i.e., Toxic Concentrations (>10% saturation)	14	6	9	5	11
Autopsies Found Negative, i.e., Nontoxic Concentrations (<10% saturation)	15	7	22	4	8

Testing for alcohol and other drugs in Post Mortem, Human Performance and DFC 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 new analogues were found in the 2017 casework.

The Medical Examiner post-mortem toxicology is performed as part of the investigation for cause and manner of death. 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. In 2017, 605 cases were received. 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. An average of 5 drugs and metabolites were reported in the positive cases. 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 Crime (DFC) 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 when drug standards become available. Bath salts and synthetic cannabinoid abuse has occurred throughout the country. 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 a DWI case. Many deaths occurred from the combination of heroin and fentanyl, oxycodone and benzodiazepines. 47 of all Medical Examiner cases (8%) 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

	2013	2014	2015	2016	2017
Ardsley			1		2
Bedford	7	12	4	7	9
Briarcliff Manor	5	1	4		
Bronxville	1	1			
Buchanan	5	3	1		
Croton Village	10	3	6	2	4
Dobbs Ferry		4		1	5
Eastchester	5	6	2	8	4
Elmsford				4	4
Greenburgh	17	20	10	29	15
Harrison	21	12	17	15	5
Hastings	5	5	3	2	1
Hastings Village					1
Irvington		1		2	
Larchmont	1	2	1	2	
Lewisboro	1				
Mamaroneck Town		4	3	1	1
Mamaroneck Village	2	4	2	2	7
Mount Kisco	10	5	3		
Mount Pleasant	8	3	2	9	5
Mount Vernon	8	8	7	5	6
New Castle	2	1	3	2	3
New Rochelle	24	27	31	39	37
NYC DEP	1	2	1		1
NY State Police	73	63	72	76	71
North Castle	5	1		6	9
Ossining Town					
Ossining Village	5	9	17	9	22
Peekskill	2	4	7	4	12
Pelham	5	1		4	2
Pelham Manor					1
Pleasantville	3	1		1	
Port Chester	9	11	4	13	12
Pound Ridge	2	5			
Rye Brook	3	2		2	
Rye City	4	1	3	6	1
Scarsdale	2	2	1	1	1
Sleepy Hollow	7	3		3	
Tarrytown	3	2	3	5	4
Tuckahoe	2		3	2	2
West. Co. PD	103	172	76	84	94
White Plains	14	10	16	11	7
Yonkers	51	48	54	40	31
Yorktown	7	7	7	11	6
Westchester ME					
West. Medical Center					
DA's Office					
Metro North					1
Other (SUNY – Purchase)		2		1	2
Div. of Forensic Science		1	2	2	
TOTAL	**433**	**469**	**366**	**410**	**388**

DIVISION OF FORENSIC TOXICOLOGY

Professional Society Memberships

Organization	Members
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, S. Viens
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. Scuderi

Training

Shipping of Dangerous Goods Diane Anton/Labs and Research (July 21, 2017)	T. Camporese, C. Cording, T. Baker, E. Scuderi, M. Trauzzi, J. Masih, D. Miller, V. Radkar, O. Sparavalo, S. Viens, D. Miller
Overview of Qtrap 4500 & 500XR A.B. Sciex Framington, MA (10/11/2017)	E. Scuderi, M. Trauzzi

SEMINARS

Latent Cause Analysis Albany, New York (March 13 – March 16, 2017)	M. Trauzzi
DCJS	E. Spratt (March 13, 2017 Only)
The Emerging Drug Situation and Spectral Interpretation of Designer Drugs Cedar Crest College Allentown, PA (June 7-June 8, 2017)	S. Viens

Mass Hunter Software for Agilent Instruments — C. Cording, J. Masih
Agilent
Tarrytown, New York
(December 5 – December 6, 2017)

WEBINAR TRAINING

Forensic Pharmacology — J. Masih, T. Baker
Center for Forensic Science Research
And Education
(June, 26 – June 28, 2017)

LCMS Web Session Training — C. Cording, J. Masih
Agilent
(July 12, 2017)

Fentalogs: Pharmacology, Toxicology — T. Baker, J. Masih,
And Analytical Approaches — O. Sparavalo, E. Scuderi
RTI International
(August 8, 2017)

Interrupting Blood Cannabinoids: — E. Spratt
Markers of Recent Use
National Medical Services
(August 22, 2017)

DIVISION OF FORENSIC TOXICOLOGY

Laboratory Accreditation

Accreditation
American Board of Forensic Toxicology (ABFT) — Mid-Cycle Review

Meetings

New York State Crime Laboratory Advisory Committee — E. Spratt (2)
Albany, NY

New York State Technical Working Group - Toxicology — E. Spratt (2)
Albany, NY

New York State Technical Working Group - Quality Assurance — C. Cording (2)
Albany, NY

New York State Forensic Commission Meeting Albany, NY and New York City	E. Spratt (2)

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

LECTURE/SPEAKER

Trends in Westchester County — E. Spratt
And The Diane Schuler Case
New Rochelle High School
(April 27, 2017)

Toxicology Update in Westchester County — E. Spratt
Student Assistance Services Corporation
White Plains, New York
(August 15, 2017)

Heroin Overdoes Response Initiative — E. Spratt
Westchester County
Westchester County Police Academy
(October 23, 2017)

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 2017).

Rye Country Day School (9 Attendees)
Carmel High School Teachers (5 Attendees)
WCC Forensic Science Club (22 Attendees)
Pace University (25 Attendees)
Mahopac High School (2 Attendees)
Dr. DeForest and Student (3 Attendees)
SAFEs (10 Attendees)
Panas High School (1 Attendee)
Her Honor Mentoring Program (5 Attendees)
Legal Aid Society (14 Attendees)
Faith Preparatory High School (12 Attendees)
State Court Judges and Interns (14 Attendees)
NRPD Interns (4 Attendees)
Berkeley College (20 Attendees)
Warwick Valley High School (2 Attendees)
Yonkers Girl Scout Troop (10 Attendees)

Assigned Counsel Resource Center Mentoring Program (15 Attendees)
WCC (Department of Chemistry) (18 Attendees)
Concordia College (6 Attendees)
WCC (Forensic Science Class) (10 Attendees)