

2015

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 his 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)

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 2015 10 cases were received. More complex testing is required. The lab worked with the environmental lab for analyses required in a complex case. In addition to the analyses described above, we are also responsible for supporting in court, the Breath Alcohol instruments used by all police agencies in Westchester County.

DIVISION OF FORENSIC TOXICOLOGY

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

	2011	2012	2013	2014	2015
DWI/DUID* Cases Received	498	438	432	457	345
DFSA Cases Received	20	27	13	12	21
Blood & Urine Specimens Received	627	501	493	558	677
Serum / Blood Specimens Received	311	250	238	216	205
Blood Found to Contain Alcohol	120	125	127	98	104
% Blood Specimens Containing Alcohol	38%	50%	53%	45%	59%
Blood Found to Contain Drugs	150	133	139	94	80
% Blood Specimens Containing Drugs	48%	53%	58%	44%	45%
Urine Specimens Received	277	251	255	342	472
Urine Found to Contain Alcohol	83	79	75	120	97
% Urine Specimens Containing Alcohol	30%	31%	29%	35%	39%
Urine Found to Contain Drugs	221	228	199	257	219
% Urine Specimens Containing Drugs	80%	91	78%	75%	88%

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

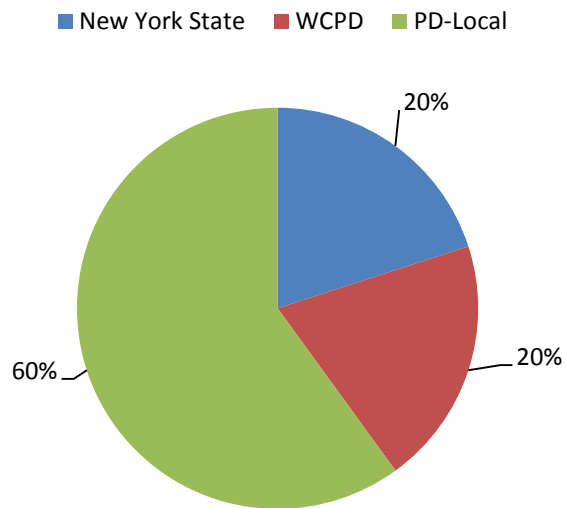
DUID: Driving while under the influence of drugs

DFSA: Drug facilitated sexual assault

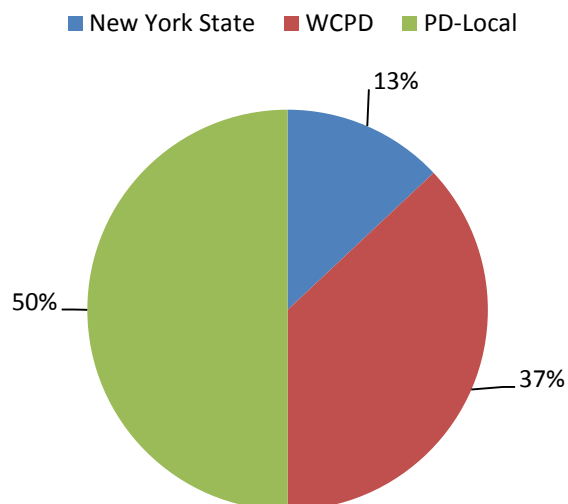
In 2015, 46% of all samples were positive for marijuana down from 62% in 2014. 88percent of all urine cases tested were positive for drugs and/or alcohol. 60% of all urines positive for drugs had marijuana. 26% of all blood/serum samples with drugs were positive for marijuana. 20% of all samples were positive for alcohol only, while 47% of all samples tested were positive for alcohol.

This may be misleading, because 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 synthetic cannabinoids and bath salts. It is very difficult to detect, screen, and confirm these compounds. The lab has added many new drugs to our test panels.

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



DWI/DUID/DFSA Cases Sources of Cases as a Percentage of Total Cases for 2014



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Summary of Forensic Toxicology Performed for Office of the Medical Examiner

	2011	2012	2013	2014	2015
Autopsies From Which Samples Were Submitted	533	576	583	525	557
Samples Analyzed From Autopsies	1952	2189	2128	1995	2115
Average Number of Samples Analyzed/Autopsy	3.7	3.8	3.7	3.8	3.8
ALCOHOL					
Autopsies Tested For Alcohol	533	576	583	525	557
Autopsies Found to Contain Alcohol	155	149	149	127	148
% Autopsies Found to Contain Alcohol	29%	26%	26%	24%	26%
DRUGS					
Autopsies Tested With Drug Screen	533	576	583	525	557
Autopsies Found to Contain Drugs (other than alcohol)	406	349	493	356	419
% Autopsies Found to Contain Drugs (other than alcohol)	76%	60%	85%	68%	75%
CARBON MONOXIDE					
Autopsies Tested For Carbon Monoxide	17	17	29	13	31
Autopsies Found Positive, i.e., Toxic Concentrations (>10% saturation)	5	6	14	6	9
Autopsies Found Negative, i.e., Nontoxic Concentrations (<10% saturation)	12	11	15	7	22

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. New screening tests for zolpidem and carisoprodol were added to the DWI/DWAI and DFSA urine samples. Another test (LC/MS/TOF), requires several days to evaluate, screens for several hundred drugs simultaneously. Many classes of drugs are evaluated. Positive drug findings are then scheduled for confirmation which includes quantitation of the results. Confirmation testing is more specific and complicated. Tests like phencyclidine 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. The 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.

The Medical Examiner post-mortem toxicology is performed as part of the investigation for cause and manner of death. In 2011, 533 cases were received, 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. The overall complexity of the cases increases the turnaround time, until 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. The 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 on a regular basis. The lab must be aware of this and add them to 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 at this time. 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.

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Law Enforcement Agency Submissions

	2011	2012	2013	2014	2015
Ardsley	1	1			1
Bedford	6	12	7	12	4
Briarcliff Manor	4	1	5	1	4
Bronxville			1	1	
Buchanan			5	3	1
Croton	4	9	10	3	6
Dobbs Ferry	3	4		4	
Eastchester	2	3	5	6	2
Elmsford					
Greenburgh	8	11	17	20	10
Harrison	12	8	21	12	17
Hastings	3	5	5	5	3
Irvington				1	
Larchmont	3		1	2	1
Lewisboro	1		1		
Mamaroneck Town	1	1		4	3
Mamaroneck Village	10	12	2	4	2
Mount Kisco	10	18	10	5	3
Mount Pleasant	7	4	8	3	2
Mount Vernon	23	8	8	8	7
New Castle	3	8	2	1	3
New Rochelle	15	26	24	27	31
NYC DEP	1		1	2	1
NY State Police	111	84	73	63	72
North Castle	5	7	5	1	
Ossining Town					
Ossining Village	9	7	5	9	17
Peekskill	6	8	2	4	7
Pelham	3	4	5	1	
Pleasantville	2		3	1	
Port Chester	6	7	9	11	4
Pound Ridge		4	2	5	
Rye Brook	1	2	3	2	
Rye City	4	1	4	1	3
Scarsdale	1	4	2	2	1
Sleepy Hollow	3	5	7	3	
Tarrytown	2	7	3	2	3
Tuckahoe	1	5	2		3
West. Co. PD	148	129	103	172	76
White Plains	7	9	14	10	16
Yonkers	69	52	51	48	54
Yorktown	13	12	7	7	7
Westchester ME		2			
West. Medical Center					
DA's Office	1				
Metro North					
Other (SUNY – Purchase)				2	
Div. of Forensic Science		1		1	2
TOTAL	509	481	433	469	366

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, 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

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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

Synthetic Cannabinoids & Cathinones Training Workshop DCJS Saratoga Springs, New York	M. Trauzzi, S. Viens
Pharmacology & Toxicology of Synthetic Cathinones And Phenylethylamines SOFT Annual Meeting Atlanta, GA	E. Spratt
Management Practical Forensic Toxicology: A Panel Discussion SOFT Annual Meeting Atlanta, GA	E. Spratt

Training

NLCP Inspectors Training Society of Forensic Toxicologists Annual Meeting Atlanta, GA	E. Spratt
Ethics Training DCJS - Mandatory Labs & Research Webinar	T. Camporese, C. Cording, T. Baker, E. Adorno, M. Trauzzi, J. Masih, S. Viens, O. Sparavado, V. Radkar
Package & Shipping of Biohazards Labs & Research	T. Camporese, C. Cording, T. Baker, E. Adorno, M. Trauzzi, J. Masih, S. Viens, O. Sparavado,

V. Radkar

Borkenstein Drug Seminar
Center for Forensic Science Research & Education
Phoenix, AZ

T. Baker

Forensic Laboratory Management
DCJS
Jamaica, Queens

E. Adorno

WEBINAR TRAINING

Essential Guide to “What LC-MS Operators Need to Know”
The CHROM Academy
November 19, 2016

M. Trauzzi, E. Spratt,
S. Viens

DIVISION OF FORENSIC TOXICOLOGY

Laboratory Accreditation

Accreditation
American Board of Forensic Toxicology (ABFT)

Inspection: May 4-5

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
Atlanta, GA

E. Spratt

Society of Toxicology Meeting
San Diego, CA

O. Splaravalo

Professional Certification

American Board of Forensic Toxicology
Fellow - ABFT

E. Spratt
C. Cording, M. Trauzzi,
S. Viens

Diplomate- ABFT- FTS

American Society of Clinical Pathologists

T. Camporese

National Registry in Certified Chemistry
Toxicological Chemist

E. Spratt

New York State Department of Health
Clinical Laboratory Technologist License

T. Camporese, E. Spratt

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
North Redding (MA) HS
French American School of NY
Holy Cross College (IN)
Iona Prep
Eastchester PD
PNWBOCES Fox Meadow HS
Crompond School
WCDA's office new ADA tour
WCDA's office interns and ADA Keary Neary
County Administration
Director of R&D, Gene Link, Inc.
Brewster HS