

DACUM Research Chart for Seized Drug Analyst

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Possible job titles for employees within this occupational area include but are not limited to:

- Seized Drug Analyst
- Forensic Chemist
- Forensic Scientist
- Forensic Analyst
- Criminalist

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DACUM Research Chart for Seized Drug Analyst

Duties		Tasks						
A	Prepare Laboratory Workspace	A-1 Clean laboratory work area	A-2 Stock laboratory bench supplies	A-3 Prepare screening test reagents (e.g., color tests, microcrystalline tests)	A-4 Prepare instrumental reagents	A-5 Prepare testing reagents (e.g., acid/base solutions, derivatizing agents, solvent mixtures)		
B	Perform initial casework assessment	B-1 Acknowledge casework assignment	B-2 Maintain COC	B-3 Generate case notes	B-4 Retrieve SD evidence	B-5 Coordinate analysis with other disciplines	B-6 Verify case information	B-7 Verify case integrity (e.g., seals, leaks, tears)
C	Perform qualitative instrumental analysis	C-1 Select qualitative instrumental analysis	C-2 Prepare samples for qualitative GC-MS analysis	C-3 Perform qualitative GC-MS analysis	C-4 Evaluate qualitative GC-MS data	C-5 Prepare samples for qualitative FTIR analysis	C-6 Perform qualitative FTIR analysis	
		C-15 Perform qualitative UV-Vis analysis	C-16 Evaluate qualitative UV-Vis data	C-17 Prepare samples for qualitative NMR analysis	C-18 Perform qualitative NMR analysis	C-19 Evaluate qualitative NMR data	C-20 Prepare samples for qualitative HPLC analysis	
D	Perform quantitative instrumental analysis	D-1 Select quantitative instrumental analysis	D-2 Prepare samples for quantitative HPLC analysis	D-3 Perform quantitative HPLC analysis	D-4 Evaluate quantitative HPLC data	D-5 Prepare samples for quantitative LC-MS analysis	D-6 Perform quantitative LC-MS analysis	D-7 Evaluate quantitative LC-MS data
E	Perform final casework assessment	E-1 Evaluate SD case data	E-2 Perform additional analysis	E-3 Prepare final case packet	E-4 Complete review process	E-5 Return SD evidence		
F	Perform technical reviews	F-1 Acknowledge technical review assignment	F-2 Review administrative information	F-3 Review technical information	F-4 Return case record for correction	F-5 Participate in case record mediation		
G	Provide SD expert knowledge	G-1 Participate in pretrial conferences	G-2 Provide judicial SD expert testimony	G-3 Answer stakeholders SD questions	G-4 Provide legislative SD expert testimony	G-5 Draft legislative SD bills		
H	Enhance SD knowledge	H-1 Review current SD literature	H-2 Participate in external SD training	H-3 Participate in internal SD training	H-4 Obtain SD certification	H-5 Obtain SD license		
I	Maintain Quality Control	I-1 Maintain measurement uncertainty budgets	I-2 Maintain SD reference standards	I-3 Maintain SD instrumental reference libraries	I-4 Verify safety equipment performance	I-5 Participate in laboratory audits (e.g., safety, quality, evidence)	I-6 Perform laboratory audits (e.g., safety, quality, evidence)	I-7 Perform safety incident investigations

A-6 Perform electronic checks (e.g., computers, LIMS)		A-7 Complete routine housekeeping													
B-8 Inventory received evidence	B-9 Select evidence items for analysis	B-10 Document sample quantity (e.g., weight, volume, count)		B-11 Implement sampling plan	B-12 Perform color tests	B-13 Perform microcryst alline tests	B-14 Perform microscopic analysis	B-15 Perform TLC analysis	B-16 Perform physical identification	B-17 Perform immunoassay test					
C-7 Evaluate qualitative FTIR data		C-8 Prepare samples for qualitative GC-FID analysis		C-9 Perform qualitative GC-FID analysis		C-10 Evaluate qualitative GC-FID data		C-11 Prepare samples for qualitative GC-IR analysis		C-12 Perform qualitative GC-IR analysis		C-13 Evaluate qualitative GC-IR data	C-14 Prepare samples for qualitative UV-Vis analysis		
C-21 Perform qualitative HPLC analysis		C-22 Evaluate qualitative HPLC data		C-23 Prepare samples for qualitative Raman analysis		C-24 Perform qualitative Raman analysis		C-25 Evaluate qualitative Raman data		C-26 Prepare samples for qualitative LC-MS analysis		C-27 Perform qualitative LC-MS analysis	C-28 Evaluate qualitative LC-MS data		
D-8 Prepare samples for quantitative GC-FID analysis		D-9 Perform quantitative GC-FID analysis		D-10 Evaluate quantitative GC-FID data		D-11 Prepare samples for quantitative GC-MS analysis		D-12 Perform quantitative GC-MS analysis		D-13 Evaluate quantitative GC-MS data		D-14 Prepare samples for quantitative NMR analysis		D-15 Perform quantitative NMR analysis	D-16 Evaluate quantitative NMR data
E-6 Deliver customer results		E-7 Coordinate transfer for additional analysis													
F-6 Approve final report															
G-6 Provide lab tours		G-7 Participate in SD organizations (e.g., panels, working groups)		G-8 Provide current SD trends											
H-6 Research current SD trends		H-7 Review judicial rulings													
I-8 Participate in SD proficiency tests	I-9 Evaluate expert testimony	I-10 Maintain SD SOPs		I-11 Participate in scheduled trainings (e.g., safety, ethics, SD)		I-12 Verify SD supplies (e.g., technical specification, solvent grade)		I-13 Maintain chemical inventory		I-14 Participate in corrective action investigations		I-15 Verify screening test reagent performance		I-16 Participate in policy review	

DACUM Research Chart for Seized Drug Analyst- continued

Duties		Tasks				
J	Participate in validation and research	J-1 Perform validation literature review	J-2 Draft validation plan	J-3 Perform validation studies	J-4 Evaluate validation data	J-5 Draft completed validation report
		K-1 Perform preventative GC-MS maintenance	K-2 Verify GC-MS performance	K-3 Perform GC-MS troubleshooting	K-4 Perform preventative GC-FID maintenance	K-5 Verify GC-FID performance
K	Maintain Laboratory Equipment	K-13 Perform preventative NMR maintenance	K-14 Verify NMR performance	K-15 Perform NMR troubleshooting	K-16 Perform preventative HPLC maintenance	K-17 Verify HPLC performance
		K-25 Perform preventative FTIR maintenance	K-26 Verify FTIR performance	K-27 Perform FTIR troubleshooting	K-28 Perform preventative balance maintenance	K-29 Verify balance performance
		L-1 Maintain training manual	L-2 Assign training modules	L-3 Demonstrate SD analysis	L-4 Prepare training materials	L-5 Evaluate trainee performance
L	Provide SD Training	M-1 Respond to personal professional correspondences	M-2 Participate in performance appraisals	M-3 Maintain individual personnel record (e.g., CV, training)	M-4 Maintain time-keeping records	M-5 Order laboratory supplies
		M-13 Participate in staff meetings	M-14 Track training activities	M-15 Complete HR documentation	M-16 Maintain organizational memberships	M-17 Monitor archived documents
M	Perform administrative tasks					

J-6 Implement validated method	J-7 Obtain experiment supplies (e.g., validation, research)	J-8 Perform research literature review	J-9 Draft research proposal	J-10 Perform research experiments	J-11 Evaluate research data	J-12 Draft research paper	J-13 Publish research paper
K-6 Perform GC-FID troubleshooting	K-7 Perform preventative GC-IR maintenance	K-8 Verify GC-IR performance	K-9 Perform GC-IR troubleshooting	K-10 Perform preventative UV-Vis maintenance	K-11 Verify UV-Vis performance	K-12 Perform UV-Vis troubleshooting	
K-18 Perform HPLC troubleshooting	K-19 Perform preventative Raman maintenance	K-20 Verify Raman performance	K-21 Perform Raman troubleshooting	K-22 Perform preventative LC-MS maintenance	K-23 Verify LC-MS performance	K-24 Perform LC-MS troubleshooting	
K-30 Perform balance troubleshooting	K-31 Perform preventative pipet maintenance	K-32 Verify pipet performance	K-33 Perform pipet troubleshooting	K-34 Perform microscope maintenance	K-35 Maintain equipment parts inventory		
L-6 Generate trainee authorization documentation	L-7 Prepare external training (e.g., LEO, community)	L-8 Present external training (e.g., LEO, community)	L-9 Present internal SD training				
M-6 Maintain SD certification	M-7 Record court-related activities	M-8 Respond to discovery orders	M-9 Acknowledge received subpoenas	M-10 Coordinate court appearance	M-11 Maintain case correspondence	M-12 Prepare expense reports	
M-18 Gather NFLIS data	M-19 Initiate professional correspondence	M-20 Participate in hiring process	M-21 Coordinate external equipment calibrations (e.g., balances, weights, glassware)	M-22 Coordinate external equipment maintenance			

Acronyms

SD – Seized drug

LIMS – Laboratory Information Management System

COC – Chain of custody

TLC – Thin layer chromatography

GC-MS – Gas chromatography-mass spectrometry

FTIR – Fourier Transform infrared spectroscopy

GC-FID – Gas chromatography-flame ionization detection

GC-IR – Gas chromatography-infrared spectroscopy

UV-Vis – Ultraviolet-visible spectroscopy

NMR – Nuclear magnetic resonance

HPLC – High performance liquid chromatography

Raman – Raman spectroscopy

LC-MS – Liquid chromatography-mass spectrometry

SOPs – Standard operating procedures

LEO – Law-enforcement officers

HR – Human resources

NFLIS – National Forensic Laboratory Information System

PPE – Personal protective equipment

NPS – Novel psychoactive substances

General Knowledge and Skills

Knowledge

Chemistry
Instrumentation
Mathematics
Statistics
Procedures
Statutes
Accreditation standards
Court procedure
Quality control

Skills

Multitasking
Time-management
Problem solving
Communication
Data interpretation
Critical thinking
Public speaking
Report writing

Worker Behaviors

Analytical
Ethical
Reliable
Detail-orientated
Safety conscious
Trustworthy
Process orientated
Articulate
Professional
Unbiased
Confident
Flexible
Thick-skinned

Future Trends and Concerns

All NPS
Always a new NPS
Availability of reference standards
Ability to identify NPS
Legality of isomers
Testimony for NPS
Changes in control statuses
Outdated lab infrastructure
Funds
Employee retention
Possible requirements of certification and/or licensing

Tools, Equipment, Supplies, and Materials

Gas chromatograph-mass spectrometer
Fourier Transform infrared spectrometer
Gas chromatograph-flame ionization detector
Raman spectrometer
NMR Spectrometer
Gas chromatograph-infrared spectrometer
High performance liquid chromatograph
Microscopes
TLC plates
TLC tanks
Filter paper
Balances
Weights
Pipets
Tweezers
Spatula
Scoopula
Box cutter
Scalpel
Dissecting scissors
Heat sealer
Well plate
General laboratory glassware
Evidence tape
Ultraviolet-visible light Spectrometer
Plastic bags
Instrument consumables
Solvents
Vortexer

Centrifuge
Evaporator
LIMS
PPE
Computer
Bar code reader
Camera
Butcher paper
Mortar and pestle
Reference standards
Chemicals
Liquid chromatograph-mass spectrometer
Basic laboratory cleaning supplies
Dishwasher
Oven
Refrigerator/freezer
Hoods
Disposal boxes
Static guards
PC to Balance Software
Gasses
Gas generators
Phone
Printer/scanner
Internet/email
Secure storage
Solvent cabinets

Air compressor
Sonicator
Calipers
Rockers