WI Department of Justice

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Crime Laboratory Bureau

WISCONSIN DEPARTMENT OF JUSTICE
Bureau Technical Bulletin

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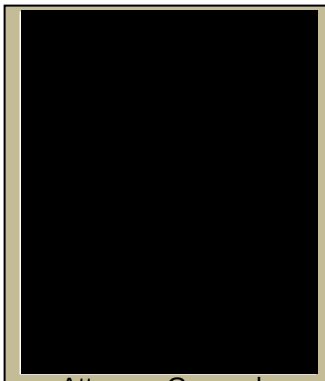
The mission of the Wisconsin State Crime Laboratory Bureau is to provide quality forensic analyses in the interest of criminal justice, performed in a timely manner, communicated in a clear and unbiased fashion, and to complement that with nonbiased, effective, and competent expert testimony for the trier of fact.

2014 Closure

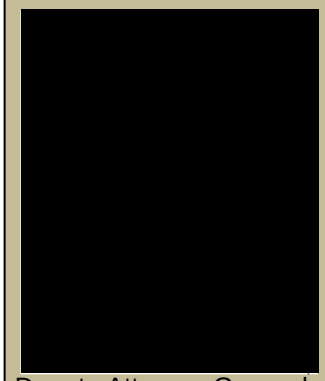
As the final newsletter of 2014, I felt that the Bureau technical leaders should showcase their units.

For those of you that are new or don't have regular interactions with other units, please read through this newsletter to gain a better understanding of all the great work we do and the services we provide to our customers.

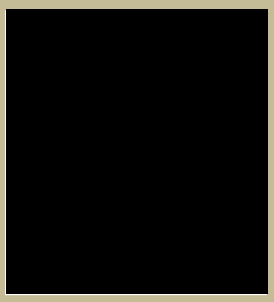
We also want to welcome Attorney General Brad Schimel and his staff: Andrew Cook, Deputy Attorney General; Dave Meany, Administrator Division of Legal Services; Paul Connell, Director of Public Affairs and Policy; Michael Austin, Legislative Liaison; and Anne Schwartz, Communications Officer.



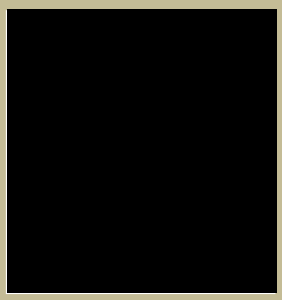
Attorney General
Brad Schimel



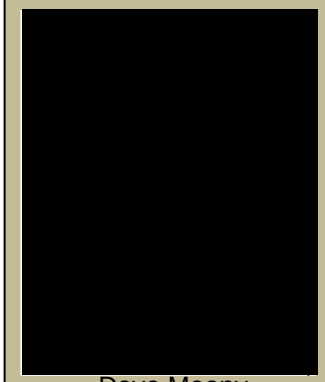
Deputy Attorney General
Andrew Cook



Paul Connell



Michael Austin



Dave Meany

Anne E Schwartz

PROMOTION:
Please congratulate Sara Thomas on her promotion to Laboratory Manager.

New Employees

Please join in welcoming the new staff to the CLB!

Allison Verre
FPT-Madison

[redacted]

Jenna Scheidt
FPT-Madison

[redacted]

Margaret Ringberg
FPT-Madison

[redacted]

Daniel Salzwedel
FPT-Madison

[redacted]

Stephanie Brown
FPT-Madison

[redacted]

Jessica Lieske
FPT-Madison

[redacted]

Timothy Erlandson
FPT-Madison

[redacted]

Amanda Wiltzius
Fingerprint & Footwear
Examiner-Milwaukee

[redacted]

Current Recruitments

We are working through a lot of recruitments within the CLB. Here is a status update:

Toxicologists-Madison & Milwaukee-Interviews completed, background checks in progress
Forensic Program Technician Senior-MKE-Pending
DNA Analysts-Madison (two positions). Recruitment to start soon
Forensic Scientist Supervisor-Madison-Interviews in progress
AFIS Identification Technician-In progress

AFQAM 13th Annual Training Conference, Vancouver, British Columbia

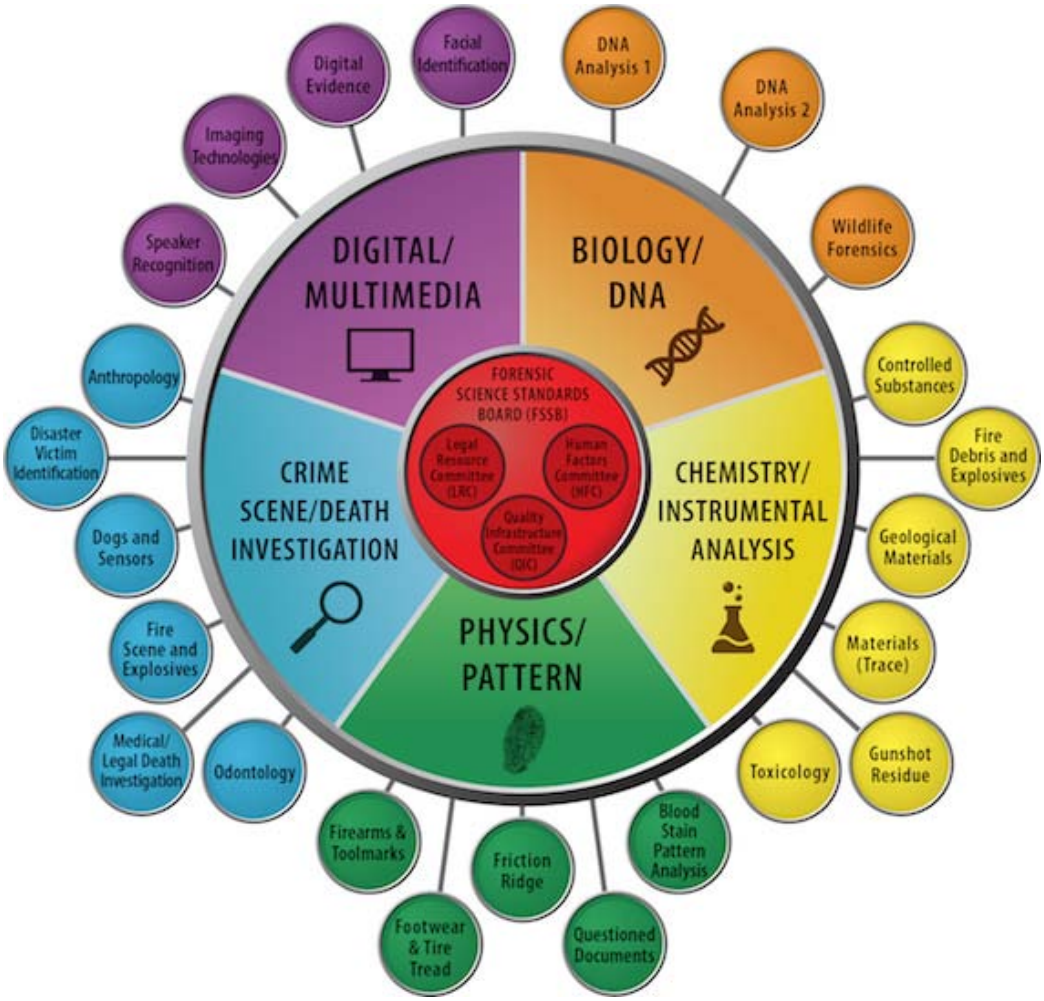
Eva Marie Lewis, Forensic Science Supervisor as CLB Quality Representative

The Association of Forensic Quality Assurance Managers (AFQAM) held their 13th Annual Training Conference in Vancouver, British Columbia October 13-17, 2014. This four (4) day conference included sessions, workshops, discussions and presentations on auditing, accreditation and other topics that deal with practical experiences of Quality Assurance Managers. The conference began with updates from several organizations to include the Consortium of Forensic Science Organizations (CSFO), American Society of Crime Laboratory Directors/Laboratory Accreditation Board (ASCLD/LAB), Forensic Quality Services (FQS), and American Association for Accreditation (A2LA). Presentations included overview of the L-A-B Forensic Accreditation Program, and an impressive presentation on Cognitive Factors in Forensic Quality Assurance. Anticipate future meetings and conferences in forensic science presenting on cognitive factors or on similar type presentations that speak to context, expectation, motivation, perception and forensic confirmation bias as the Human Factors Committee was named as a Scientific Area Committee July 2014 (more on this below). To become familiar with the topic of cognitive factors in forensic science, review the article by Itiel E. Dror of the Center of Forensic Sciences, London, UK titled Practical Solutions to Cognitive and Human Factor Challenges in Forensic Science and found at http://www.cci-hq.com/Dror_FSPM_practical_solutions.pdf.

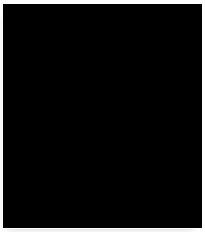
Also amongst the updates at AFQAM, the National Commission on Forensic Science (NCFS) kicked off the series of updates where Deputy Assistant Administrator Nelson Santos of the DEA Office of Forensic Sciences provided a brief history describing NCFS as one part of an agreement/partnership between the National Institute of Standards and Technology (NIST) and the Department of Justice (DOJ) that is administered by the US DOJ. Established to be an advisory body for the U.S. Attorney General and governed by the Federal Advisory Committee Act (FACA) with expectation of transparency. Its purpose is to create impactful policy recommendations and provide guidance and advice to the DOJ for improved forensic sciences. The primary focus of the NCFS is on issues concerning the intersection between forensic science and the courtroom. In a nutshell, the NCFS is a Federal Advisory Committee that reports to the U.S. Attorney General and develops policy. The NCFS *is not* the National Institute of Forensic Science (NIFS). It *is not* congressionally mandated, nor is it a rulemaking authority. The NCFS met for the first time

on February 3-4, 2014. Upcoming meetings will be held on January 29-30, 2015 (fifth meeting) and April 30-May 1, 2015 (sixth meeting). Meeting dates and other NCFS information can be found at http://www.justice.gov/ncfs.

Additionally, the NIST Organization of Scientific Area Committees (OSAC) followed with presentation and update of OSAC activities. Mark D, Stolorow, Director of OSAC Affairs spoke of the Forensic Science Realignment on the Federal level to strengthen the nation's use of forensic science. He spoke of pending legislation to include the Criminal Justice and Forensic Science Reform Act (Leahy Bill) and the Forensic Science and Standards Act (Rockefeller Bill) for the same purpose. Fiscal 2014 introduced the new NIST role of administering the OSAC. The OSAC is comprised of the Forensic Science Standards Board (FSSB) appointed June 26, 2014, the Quality Infrastructure Committee (QIC), the Legal Resource Committee (LRC), and the Human Factors Committees (HFC) each instituted July 2014, the Scientific Area Committees (SAC) instituted August 2014, and the Subcommittees instituted October 2014. The FSSB is established to manage OSAC Registry of Approved Standards and Guidelines, approve standards and set rules and priorities for OSAC. With guidelines approved by SAC, the forensic discipline-specific groups established to develop practical standards and guidelines come together to comprise OSAC. The OSAC Functional Organizational Chart is listed below and found at with "clickable" chart information at http://nist.gov/forensics/osac/index.cfm.



QUALITY CORNER WITH CASEY COLLINS



Happy New Year Everyone,

This corner is about forms and documents. Let's start with forms (see QPM 5.1.2.8). The basic idea behind forms is to facilitate the capture of desired information. Forms allow us to write less, remind us what information to record and standardize the collection of information which, in turn, allows for easier review. Unlike Qualtrax policies and procedures which open as secured PDFs, Qualtrax forms can open up in editable formats (e.g. Word® documents). This allows the user to enter information and save or print the completed form. A filled out form becomes a record.

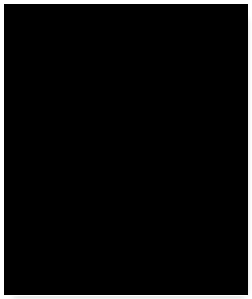
Next is a reminder about printed manuals (policies and procedures). Per QPM 5.4.2, all controlled documents are maintained in Qualtrax. Rephrased, our official manuals are the published revisions visible on the screen in Qualtrax. This means any copy, printed or exported, may or may not be current. To rely on a printed copy, you need to verify it matches the version in Qualtrax on a daily basis. This can be done by comparing the printed revision number to that on the screen in Qualtrax. Major revisions should be published after hours to avoid requirement changes in the middle of a day. When new revisions affecting your work are published, an email from "No Reply – Qualtrax Admin" will be sent to you with the Subject line starting with CHANGED and PUBLISHED. This email will contain information about the changes made and a link to the new revision.

"Quality is not for compromise."
~ Dee Dee Artner

Thanks for all your quality efforts.

- Casey

Trace Evidence Unit Update - Bureau Technical Lead Ruth



Both members of the Trace Evidence Unit attended training at the joint meeting of the Midwestern Association of Forensic Scientists (MAFS) and American Association of Trace Evidence Examiners (ASTEE) in St. Paul, MN this past October. Workshops attended include Advanced Fire Debris Interpretation, Special Topics in Fire Debris Analysis, Examinations of Lubricants and Fiber Dyes and Dyeing.

The Trace Unit Intern Sara Karp presented a paper on GC-MS Measurement of Gasoline Vapor Absorption on Clothing in a Confined Space. This was a joint project between UW-Platteville and the Trace Unit. The purpose of this research was to show whether or not gasoline vapors could be present and detectable on clothing from a limited exposure to a gas source. This project was prompted by a question posed by the defense during an arson trial in which the defendant had gas on his shoes but none on his clothing.

The testing involved exposing t-shirts to gasoline vapors: for various amounts of time (15 minutes, 1 hour and 6 hours) and under various conditions. Results showed that the t-shirts exposed for one and six hours had detectable amounts of gasoline. Because the environment the t-shirts were in was one that was saturated with gas, it is unlikely that a person would survive the conditions for the time needed to absorb sufficient vapors to be detected.

The Advanced Fire Debris Workshop included the topics of Comparison Samples and Contamination, Quality Control, Streamlining the Evaluation Process and Reporting and Expert Testimony.

Special topics in Fire Debris Analysis covered the detection of glycol ethers in debris samples. They are found in fire fighting foams, some air fresheners and cleaning products. Linear alkylbenzenes are encountered from the use of detergents containing sodium linear alkylbenzene sulfonate. The class also involved a demonstration of common easy to make incendiary devices.

The lubricant workshop attended by the Trace Unit covered condom lubricants, personal lubricants and improvised lubricants such as lotions, oils and gels. This workshop was of particular importance to the unit as this is an area of limited case submissions and one that is being evaluated for its value to our clients. Topics covered included background information on product composition and manufacture, sampling and extraction, analytical techniques and reporting.

Trace evidence analysis is the section of the crime lab where, if they don't know where to send it, they send it to us.

~ Crime Scene by Connie Fletcher

Past, **Present** and **Future** of the Trace Unit

Many changes have taken place in the last six months including updating most sections of the Trace Unit Procedure Manual, the addition of a new FTIR-Microscope and the addition of the Paint Data Query database (PDQ). We are currently in the process of finishing our first paint submissions to the RCMP for PDQ and putting the finishing touches on the remaining manual sections that required substantial overhaul. We are continuing to promote the idea of overfilling the Unit with one employee for the purpose of having a smooth transition when Ray Lenz retires in a few years.

DNA Section Technical Bulletin

[redacted]

Gretchen Degroot - Bureau Technical Lead

When I was informed that the Bureau Technical Leaders would be required to submit updates on their units for our bureau wide newsletter I thought it would be appropriate to begin with a brief introduction of the quality standards that govern DNA testing.

The QAS or the Quality Assurance Standards for Forensic DNA Testing and the Quality Assurance Standards for Convicted Offender DNA Databasing Laboratories are documents issued by the director of the FBI. They were created as a result of the DNA Identification Act of 1994 which required that the FBI ensure that all DNA laboratories that are federally operated, receive federal funds, or participate in the National DNA Index System (NDIS) demonstrate compliance with quality standards. The QAS for Forensic DNA Testing became effective in October of 1998 and the QAS for Convicted Offender DNA Databasing became effective in April 1999. Once these standards were placed into effect it was necessary for our laboratories to comply with these standards and for an outside entity to audit the DNA Unit for compliance (at a minimum of every two years). Since the initial issue of these standards, the Scientific Working Group on DNA Analysis Methods (SWGDAM) has been responsible for updating the QAS. The laboratory must comply with any updates and are audited to the updated standards. After a laboratory has been audited, the audit documents are sent to the FBI to review, and to approve or reject corrective measures, if any. Laboratories who fail an audit are "disconnected" from NDIS and can no longer receive federal money. Given the consequences of "failing" a QAS audit, the DNA Unit focuses a large amount of our resources to meet or exceed the QAS standards.

"The best thing about the future is that it comes one day at a time"
~ Abraham Lincoln

These quality assurance standards drive an important component of the DNA Unit: our commitment to research and validation studies. We devote much of our time to validation because forensic DNA testing and molecular biology in general is advancing in leaps and bounds, and our laboratory is dedicated to providing the best possible results in a timely manner. This requires that we stay abreast of new research, and continually re-evaluate our methods looking for improvements. For example in the last year we have implemented a new Y-STR amplification kit that is much more discriminating than our previous kit, and we have published our validation study. Instead of looking at 12 genetic locations we are now examining 23 locations on the Y chromosome all at one time. Other validations or studies that have been performed include BlueStar, a blood detection reagent that will be valuable for crime scenes, a Tecan with a 1.5 meter deck, new scripts for the Tecan that implement improvements developed at both lab locations, software upgrades to our instruments so we can use Windows 7, foil covers for amplification plates, the effects, if any, of toluidine blues (a stain used by sexual assault nurses) on DNA testing, new megaplex amplification kits, and so on.

In sum, the DNA Unit will be continuing to work to improve efficiencies, implement new methods and continue to provide timely results in 2015. Please stay tuned for more information in future newsletters on all that is happening in the DNA Analysis Unit.

Databank Technical Bulletin - Bureau Technical Lead Jennifer Honkanen

[redacted]

Databank Unit Update

Change is in the air and that is certainly the case in the Databank Unit. As the unit prepares for the implementation of Wisconsin Act 20 on April 1, 2015, we are working on many projects to streamline our process. Wisconsin law already requires collection of DNA from individuals convicted of a felony and a few sexually related misdemeanors. Wisconsin Act 20 will require collection of DNA from individuals arrested of certain violent felonies, all adults convicted of a misdemeanor, and juveniles convicted of a subset of misdemeanors. It's estimated the Databank unit will receive 65,000 more DNA samples each year (a 540% increase).

Technology/Equipment

The validation of a new amplification kit (Promega's PowerPlex® Fusion kit) and the new capillary electrophoresis instrument (3500xL) is near completion. This new technology will allow the Databank unit to process DNA samples more efficiently. In addition, the new amplification kit will incorporate the additional loci that the FBI has added to the CODIS core loci.

Staffing

The unit is training eight DNA analysts to perform Databank duties in addition to their casework responsibilities. Seven DNA Analysts have recently completed the Databank training program. We are also training Kara Raymond as the new State CODIS Administrator (Katie Eilers is training as the casework alternate Local CODIS Administrator in Madison). In addition, the unit is currently training six Forensic Program Technicians to perform a variety of Databank and DNA unit duties. Two more Forensic Program Technicians started on January 26th.

Building

To accommodate the increase in staffing and the increase in sample storage, the Databank unit will be moving to the space that housed the original Madison Crime Laboratory. The renovations look great and completion is still on-schedule for a February move-in date.

The beginning is the most important part of the work.
~ Plato

DB Technical Bulletin (continued)

LIMS

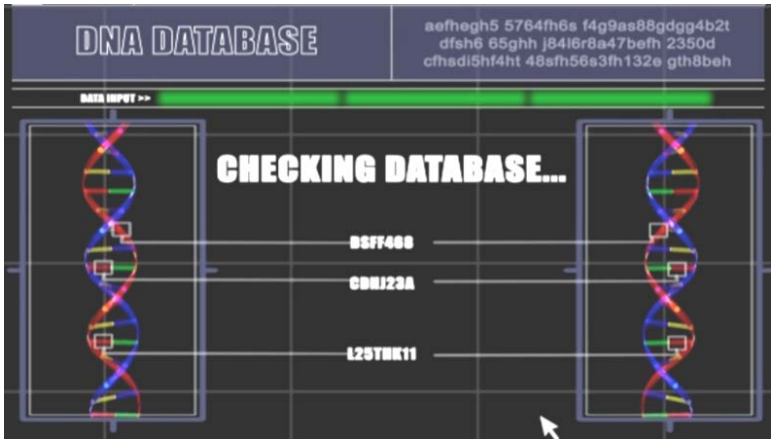
The Porter Lee Company is developing a module (CoDNA) to allow the Databank to electronically track DNA samples and increase the efficiency of the DNA sample intake and shipping processes. It will also streamline the tracking of DNA samples, confirmation events, and various reporting requirements. Starting January 12, 2015, we will be testing portions of this module with implementation set for April 1, 2015.

ARMS

The Criminal History Management System (CHMS) is changing to the Arrestee Record Management System (ARMS). This update will allow a better exchange of information for law enforcement agencies and the Databank Unit. The Databank will enter DNA collection information into ARMS to inform law enforcement agencies if a DNA sample has been collected. We have been working with the developer to ensure our needs are met and will soon be testing the program with implementation set for April 2015.

Familial Search Pilot Program

Familial searching is the deliberate search of the convicted offender database for first order biological relatives of an unknown forensic profile obtained from crime scene evidence. We have completed four cases under this pilot program. We have been very fortunate as two of these cases have led to suspects being arrested. Familial search is proving to be a valuable tool with which we may assist our agencies when all their investigative leads have been exhausted.



Firearms/Toolmark Section Update - Mark Simonson Bureau Tech

There have been significant changes and events in the lab system's Firearms section over the last two years. Reg Templin retired in January 2013 after his many years of service at the Milwaukee Lab. He was well respected by the people he served the most. It seems like every detective, investigator, district attorney, and judge in the southeast corner of the state know or knew of Reg. He was even on a first name basis with several public defenders. He cut a wide path during his time with the state, and his personality and practicality in the section is missed. [redacted]

January 2013 also saw Kyle Anderson make his transition from working as a firearm examiner to the Criminalistics Supervisor position at the Milwaukee Lab. Fortunately, Kyle has still been allowed to stay proficient in the discipline so he could still help with the caseload demands of the section.

The Milwaukee Firearms unit saw the addition of three new trainees in June of 2013. Nick Drake a former Marine Corps artilleryman from New Jersey, Sara Clemens a graduate student from New York, and Xai Xiong from our own great state of Wisconsin. They all began their training as a group. One interesting moment in their early training is when Reg stopped at the lab for a visit. Reg sat down with the trainees telling stories about unique cases, icons of the discipline that Reg knew personally, and some of his defining experiences as an examiner. Nick, Xai and Sara sat around him listening like grandkids listening to family stories from their grandfather while sitting by the fireplace. Our lab is fortunate in that we have a lineage to our training in the firearms unit. It can be traced like a family tree back to the founding father of firearm identification, Calvin Goddard, who put firearm identification into fame during the investigation of the St. Valentine's Day massacre in 1929. The group of new trainees has taken a different turn. Xai remained here at the Milwaukee Lab gaining knowledge and experience while working alongside myself. Nick and Sara were sent off to ATF's National Firearms Examiner Academy to further their studies. It's fortunate that Xai was able to stay in Wisconsin [redacted]

2014 saw the loss of more Firearms section members through retirement. Bill Newhouse retired September 2014 [redacted] after 12 years of service. Bill brought his experiences from Kansas City, California, and Montana to help serve in Wisconsin. Bill's retirement has left the Madison Laboratory without an experienced firearm examiner on staff. Walt Faria, the Firearm Technician at the Milwaukee Lab, retired in November of 2014. Walt came to the Milwaukee Lab after his retirement from the Coast Guard. During Walt's tenure in the Firearms section he assisted with a special NIBIN program the Milwaukee Lab had with Milwaukee Police Department. Milwaukee Police Department began their own NIBIN program in late 2012. His last mission before retirement was completing the data entry of over 11,000 firearms from Milwaukee Police Department to be destroyed. This project was completed in less than two years in addition to his other duties.

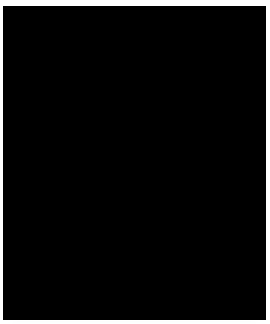
2014 also saw the group of trainees reunited with Nick and Sara graduating from the National Firearms Examiner Academy in the fall. The three went through their moot court trials with assistance from the Milwaukee District Attorney's Office. We were able to use the Honorable Judge Wagner's courtroom on a Friday afternoon in November with ADA Antoni Apollo acting as prosecutor and ADA Mark Williams playing the part of legal defense.

It's noteworthy that ADA Mark Williams retired in December after 30 years of service and prosecuted over 750 homicides. That experience was reflected in his cross-examination. It's an experience Xai, Nick, & Sara will never forget. Mr. Williams also played that part in my own moot court in 2001. I'll never forget my learning experience either. Nick, Sara, and Xai started writing their own reports on their examinations in January.

One of Xai's projects was to educate Milwaukee Laboratory staff with firearm safety training. The voluntary training was conducted in small groups with as much hands on experience as time allowed. The training consisted of firearm types, nomenclature, ammunition, and safe handling to include loading and unloading. Certificates were issued with completion of the class. I would like to see the same voluntary training offered in Madison and Wausau. The experience was valuable to the participants to relieve fear, myths, and misconceptions that surround firearms in addition the mechanics and respect they need to be given for safe handling.

Upward and onward for 2015!

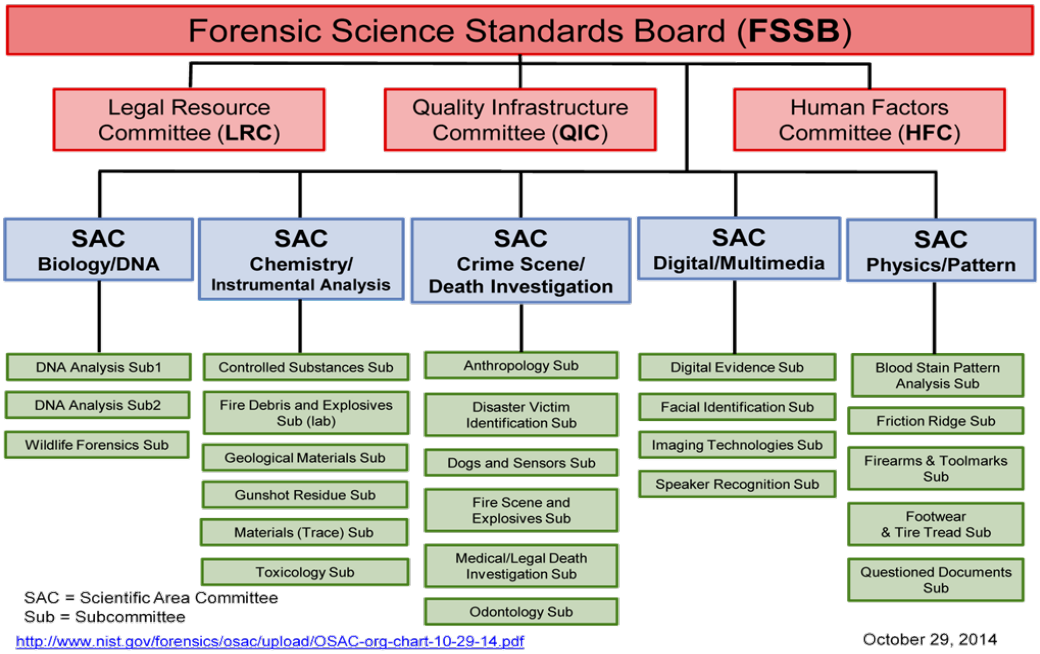
Imaging Section Update - Bob Sanders Bureau Technical



The first NIST Organization of Scientific Area Committees (OSAC) Digital SAC's Subcommittees Virtual Meeting was December 17, 2014. The Scientific Area Committees are basically taking over the functions of the Scientific Working Groups (SWGs). For Imaging this means that the Imaging Technologies Subcommittee will take over the role previously filled by the Scientific Working Group on Imaging Technology (SWG-IT). One of the first tasks will be to review the current SWG documents to determine which ones can be adopted or what updates are needed before they are adopted.

The following diagram below shows the overall organization and where the Imaging Technologies fits in. Unlike the SWGs, this subcommittee will have access to more resources.

Traditional Hierarchal Organizational Chart



The following OSAC Vision slide explains what the Organization of Scientific Area Committees hopes to accomplish and how it impacts laboratory accreditation and testimony in court. If it goes as planned, the standards would be mandatory and the guidelines would only be suggestions.

OSAC Vision

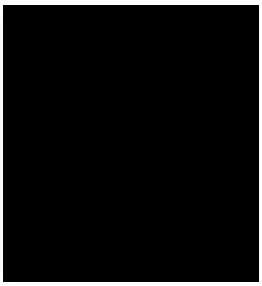
What Will OSAC "Success" look like in 5-10 years? *

- Forensic Science practitioners embrace change
- OSAC Forensic Registries of Standards and Guidelines become implemented in the practice of forensic science across all forensic disciplines in addition to DNA
- Prosecutors, defense attorneys and judges begin to use the Registries of Standards and Guidelines in direct and cross examinations of expert witnesses
- Judges and Juries routinely hear witnesses testify about how their analysis met current standards and scientific validity and openly describe the limitations of the tests in general and their interpretations in the specific case
- Significant forensic science research is finally well organized and well funded with influence from OSAC to define research priorities
- Standards enforcement by accrediting bodies finally becomes the rule rather than the exception

The first face to face meeting is this month in Norman, OK. So, I should have more information after this meeting.

Fingerprint & Footwear Section Update - Bureau Technical Lead

Karley Hujet



Identification Section Update

Stacy Gordon, Tiffany Vickman, Vanessa Styx, and Madelyne Weismantel have all successfully completed their latent print training and are doing independent casework. They are all doing a great job helping with the Identification Section backlog.

As part of the transition from training into performing casework, Vanessa Styx completed a mentorship program which helped her gain familiarity with the day-to-day flow of working cases while still under the guidance of a trained analyst. This program proved to be very successful and will be implemented in the training program in the future.

Mandy Wiltzius joined the Identification Section in the Milwaukee Lab on November 17, 2014. She has a Bachelor of Science Degree from the University of Central Florida with a minor in Chemistry. Mandy worked for the Charlotte-Mecklenburg Police Department as a Crime Scene Investigator before transferring to the Crime Lab as a Latent Fingerprint Examiner and is a Certified Latent Print Examiner through the International Association for Identification (IAI).

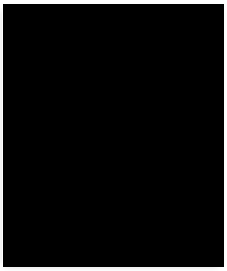
Goals are simply tools to focus your energy in positive directions, these can be changed as your priorities change, new one added, and others dropped.
~ Christopher Columbus

DNA/Ident Reminder

Since this has come up a few times recently in casework, I thought that I would take a moment to write this up as a reminder for cases with paper items that need to be worked by both Identification and DNA. Based on the limited study conducted within the crime laboratory, it was determined that paper items can be swabbed lightly with a small amount of water before the item is examined for latent prints. Throughout our study, and empirically in casework, we have been able to successfully develop friction ridge detail on these items without any evidence of damage due to swabbing.

We have come across one exception during casework on a note written in a pen with fluorescent ink (we believe that it may have been a gel pen with an orange/pink fluorescent ink). Due to the swabbing, some component of the ink was diluted and spread across the paper which created some background fluorescence when examined with a laser. This fluorescence did not interfere with the developed prints which fluoresced more brightly, but it does show that some caution should be given when examining these types of items. If there are any concerns about a particular ink, the item can be examined with a laser or an alternate light source between 495 and 540 nm. If the ink fluoresces under these wavelengths, please consult with someone from the Identification Unit before swabbing these items.

Controlled Substances Update- Bureau Technical Lead Sandy Koresch



There have been some valuable training opportunities related specifically to controlled substances this fall. Billie Robbins attended the Clandestine Laboratory Investigating Chemists Meeting in Vancouver, Canada in September. This October I attended the Midwestern Association of Forensic Scientists Annual Meeting in Minnesota including two workshops on "Current Issues in Drug Chemistry" and "Performing a Validation Study for Forensic Instrumental Analysis". Laura Hedden completed the DEA Forensic Chemist Seminar November 2014 in Virginia. Each analyst summarized their training and disseminated valuable information to the rest of the members in the units.

This fall the Madison and Milwaukee units received two new Thermo Nicolet iS10 FTIR Spectrometers. Performance evaluations were completed for both spectrometers and each are currently being used for casework.

Michelle Freund, our newest analyst in Wausau, has recently completed all training modules and competency samples for the Controlled Substances (CS) Unit. Congratulations Michelle!

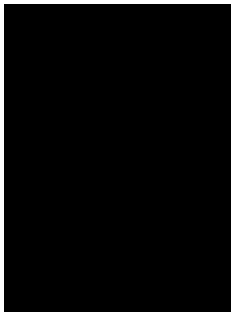
As the year 2014 came to an end, we reflect on some changes that have affected the CS Unit. Perhaps the biggest change has been publication of the 2013 Wisconsin Act 351 which added nearly 200 new synthetic cannabinoids and cathinones and several structural classes to Wisconsin Statute 961. Although this has allowed prosecution related to these substances to move forward, it has also created some hurdles for the unit. Many new reference standards must be purchased to complete identification of these newly controlled substances. Prior to purchasing new standards, the Crime Laboratory is required to have these substances listed on our Special Use Authorization (SUA) permit. If a standard is not available as a DEA exempt preparation, an amendment must be filed and processed by the Controlled Substances Board (CSB) before it can be ordered. This process currently takes 6-8 weeks to complete which greatly affects our mission to provide service to our customers in a timely manner. Although we have tried to alleviate part of this issue by including the newly controlled substances on our annual permit application, we continue to see substances that are controlled by structural class and are not specifically listed on the permit. Two such cases involved a homicide and a pending search warrant where results were requested on a rush basis. We will continue to explore possible solutions to this issue which could include legislative changes to Wisconsin Statue 961.335 Special Use Authorization that would allow the Crime Laboratory to purchase the necessary reference standards.

A battle lost or won is easily described, understood, and appreciated, but the moral growth of a great nation requires reflection, as well as observation, to appreciate it.
~ Frederick Douglass

In closing, I would like to thank each member of the CS Unit for their hard work and contribution throughout the year. Although this year has seen many changes and many new substances requiring more analytical time and research, the unit continues to provide quality work. We have made progress in working together as a unit and I look forward to the upcoming year.

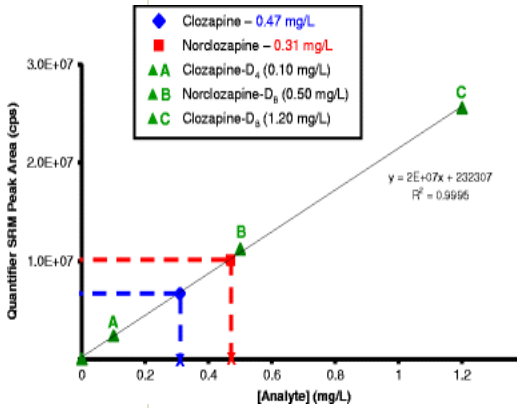
TOXICOLOGY SECTION UPDATES

Jennifer Evans Bureau Technical Lead



The Milwaukee Toxicology Unit has purchased a new type of instrumentation to be used for drug confirmation and quantitation – liquid chromatograph/mass spectrometer/mass spectrometer (LC/MS/MS). Currently, the Toxicology Unit uses gas chromatography/mass spectrometry (GC/MS) for drug confirmation and quantitation, which, for years, has been considered the "gold standard" of forensic toxicology drug confirmations and quantitations. So why would there be any interest in replacing it? Well, first of all, LC/MS/MS would complement GC/MS rather than replace it. GC/MS remains a very powerful tool for forensic toxicology, so there is no intention to discontinue its use at this time. Second, there are some significant advantages to adding LC/MS/MS to the repertoire. These advantages include:

- Analysis of more compounds:
  - o Thermally labile compounds
    Drugs that are not stable at high temperatures (250°C, for example) cannot be confirmed by GC/MS. Aspirin, or acetylsalicylic acid, is an example of a thermally labile compound.
  - o Nonvolatile compounds
    Drugs that do not volatize easily cannot be analyzed by GC/MS. Morphine metabolites, morphine-3 glucoronide and morphine-6-glucoronide, are examples of nonvolatile compounds.
  - o Polar compounds
    Polar substances (such as some "bath salts") may require less sample preparation in order to be run in an aqueous solution as opposed to an organic solvent.
- Faster analysis time:
  - o Less sample preparation
    Some of the sample preparation steps can be eliminated for LC/MS/MS analysis.
  - o Shorter run times
    Less time is required for an LC/MS/MS run to complete than for a GC/MS run.
- Greater sensitivity:
  - o Lower concentrations of drugs can be detected by LC/MS/MS when compared to GC/MS. This is very helpful during the analysis of potent drugs due to the low doses administered.



The estimated date of installation of the LC/MS/MS is early February. Once it is installed, the toxicologists will work with the manufacturer to begin to learn to operate the instrument and the software. A validation plan will be developed and followed before it is approved for use on casework.

Here's a Toxicology quote for you:

"All things are poison and nothing is without poison, only the dose permits something not to be poisonous."

~ Paracelsus

Odds & Ends

We are committed to provide as much training as needed to keep the CLB current with state of the art technologies and forensic networking opportunities. This past quarter we spent over $62,000 on training events. If you see a training opportunity that you would like to attend, please let your supervisor know. The following training events were attended this quarter:

Leadership in Police Organizations-5 people completed
ISHI Conference-6 people attended
MAFS Meeting-13 people attended
SOFT Meeting-1 person attended
Leadership & Team Buidling-2 people attended
Ignitable Liquids training-1 person attended
DEA Basic training-1 person attended
Introduction to Friction Ridge Detail-4 people attended
Kinship training-2 people attended
Clandestine recertification-1 person attended
CODIS Meeting-5 people attended
Train the Trainer-15 people attended
LEVA Training-1 person attended
Effective Communication-2 people attended
FTIR Training-1 person attended
EXCEL training-6 people attended
Conference for Women-7 people attended
Identification Exclusions-1 person attended
Blood Stain Pattern Analysis-15 people attended

CLB Newsletter

To find previous versions of the CLB newsletter they are located on the X: drive under private/dles/CLB Newsletter

Final Thought

"Most folks are as happy as they make up their minds to be."

~ Abe Lincoln