



Inside this issue:

Western Laboratory	2
has new location	
DNA Casework and	2
CODIS	
FAQs—Evidence	3
DNA Rush Case and	3
Turnaround Time	
What's New?	4
FAQ's General	4
Legal Challenges	5
Open Records vs.	5
Discovery	
BEAST access	5
Breath Alcohol	5
Maintenance	
Contact Us	6

Focus on Forensics

Kentucky State Police Forensic Laboratories

July 2013

The Rise of Synthetic Drugs in Kentucky

A week doesn't go by that we don't get a call from an officer, attorney, or member of the news media with questions about synthetic drugs. They have certainly become the *trend du jour* of the last 3 years not only in Kentucky, but nation-wide. In this first newsletter, we'd like to give an update on how the "class" legislation passed in 2012 seems to be working, information on a new iteration of synthetic drugs that we have seen lately, and an additional resource on emerging drugs that both law enforcement officers and attorneys may find useful.

In 2012, the Kentucky Legislature overwhelmingly passed HB 481 which controlled synthetic cannabinoids (aka - spice, synthetic marijuana) and synthetic cathinones (aka - bath salts) by chemical class rather than by specific name. Subsequently, we have seen improvement in the frequency of submission of these types of drugs to the KSP laboratories. As of this posting, there has been a decrease of approximately 55% of all synthetic drug submissions

since their peak in August 2012. Two waves of new synthetic drugs have appeared and disappeared as the sellers attempted to introduce new drugs into the market to circumvent the new law. The law has been strong enough, however, to cover these new attempts and control the new synthetic drugs.

At present, we are currently seeing a few new drugs in Kentucky. They are being called the "NBOMe" drugs. They are derivatives of several designer drugs of the 1990's. In the 2013 legislative session, the legislature controlled these drugs under an emergency clause. They are very potent substances with effective dosages similar to that of LSD. They are typically found on blotter paper or dissolved in liquids. The NBOMe drugs are responsible for several deaths across the United States. To that end, officers are encouraged to be very cautious and always wear gloves when handling blotter paper or liquids where they suspect these new drugs are present. Further information on these new

drugs can be found at: <http://en.wikipedia.org/wiki/25I-NBOMe>. (While we acknowledge that Wikipedia is not typically considered an authoritative reference, we have reviewed the information in this article and find it accurate as of this newsletter's printing.)

Lastly, the National Institute of Standards and Technology recently partnered with the Drug Enforcement Administration to host a conference on Emerging Trends in Synthetic Drugs. Part of the information is intended for forensic science audiences, however many of the talks provide background and resources that law enforcement and attorneys may find helpful. The entire conference is available as a webcast and can be viewed at:

<http://www.nist.gov/oles/forensics/emerging-trends-in-synthetic-drugs-workshop-webcast.cfm>.

Introducing the KSP Lab Newsletter

Kentucky State Police Forensic Laboratories will be providing communication through various medias to Kentucky law enforcement officers and the courts. The purpose of this communication is to provide information on current trends and patterns concerning forensic analysis. This will aid in establishing positive relationships and embrace discussion between

forensic analysts, police agencies, and the courts. Our objective is to increase understanding, information and resources toward obtaining accurate results in the quickest time for Kentucky's Justice System.

—Major Eddie Johnson,
Commander KSP Forensic Laboratories

To determine which laboratory services your area or to get

KSP Lab System

more information on the laboratory system click on the "Forensic Laboratories" link at:

<http://www.kentuckystatepolice.org/labs.htm>



The Western Laboratory Branch gets a new home

The Kentucky State Police Western Laboratory Branch was opened May 1, 1975 in Madisonville at the old TB Hospital. In 1987 it was relocated to the Martin Mall office complex on Thornberry Drive where the laboratory occupied a first floor area. About ten years later a renovation was done at the Martin Mall complex and the laboratory expanded to space on the second floor giving the lab a total of 7435 square feet. To access the upstairs lab area one had three choices; 1) take the stairs 2) risk taking the elevator or 3) utilize the dreaded spiral staircase. This arrangement was not practical or efficient and building maintenance was a continuing issue.

In December of 2008 it was decided by the Forensic Laboratories Commander Major Ricki Allen and the Kentucky State Police Command Staff, to pursue a

modern facility. After several months of planning by the Kentucky State Police and Department of Finance, Division of Real Properties, a contract was awarded in August 2011 for a new facility. Ironically the contract was awarded to the same company that built the Martin Mall building. It was to be new construction designed specifically to the Western Lab's needs. All employees were given the opportunity to provide input into the design.

The new laboratory building, located on the north side of Madisonville on Hanson Road, officially reopened for analysis January 16, 2013. The staff consists of two administrative specialists, six chemists (four trained in clan lab and three trained in toxicology), one forensic biologist, two breath alcohol technicians, one polygraph examiner, and the commander. The new facility with 9240 square feet is 1805 square feet larger than the old facility. Improvements include, single story construction, an air lock entry providing

administrative staff a buffer to visitors, dedicated evidence receiving room, large storage room (no longer have to use the hallway), larger break room, conference/training room, new fume hoods, better utilization of workspace for the various disciplines, state of the art computer server and phone system.

The chemistry section was designed approximately 800 square feet larger than the previous facility. Chemists now have their own work and desk areas providing privacy. The larger area in chemistry also allows for the instruments to be in rows for easy access to perform analysis and make repairs. The increased space in chemistry will also allow for additional chemists in the future.

Since our opening we have had nothing but positive comments from all who

have visited. We have tried to show it off as much as possible. We are very proud of our new laboratory and want to share it with you!

Our doors are open so contact Lt. Mayes

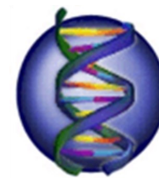
mark.mayes@ky.gov if you are in the area and would like to see the new facility.



DNA case submissions— Did you know?

- Over one third of all cases submitted to the laboratories for DNA testing take 90 days to get here—over 10% take more than 6 months. The following shows the number of days cases take to get to the lab by crime type:

Murder- 73 days	Robbery- 68 days
Assault- 42 days	Property Crimes- 54 days
Rape- 56 days	
- Since 2009 there has been a **34% increase in the number of cases** submitted for DNA testing.
- Since 2009 there has been a **40% decrease in the time it takes to get testing completed** and a lab report issued.
- Up to 10% of cases received in the Forensic Biology Casework section are adjudicated prior to the start of the analysis. ****Please contact the lab if the case status changes!****
- Requests for analysis can be made by the Department of Public Advocacy.
- A reference standard must be submitted for a case prior to DNA Analysis, even if an offender sample has been collected from the same suspect for the database. Offender samples are not evidentiary and are not intended for use at trial.



CODIS

Ever wonder how the Combined DNA Index System (CODIS) works? What dictates which samples go in? How does CODIS help solve crime? What exactly is stored in CODIS—names, addresses, pictures, like CSI? What about rDNA? Read all about it at: <http://www.fbi.gov/about-us/lab/biometric-analysis/codis>

For information on [DNA case turn around time](#) see Page 3.

Frequently Asked Questions– Evidence

Q: Why do I need to give a detailed case history on cases?

A: For trace, serology, DNA and firearms cases we need to understand the relationship between the victim, the suspect, and the crime scene so that we can determine how best to look for and analyze the evidence. We can also determine if all the appropriate reference standards were submitted and if DNA samples are eligible for entry into CODIS.

Q: How should fire debris evidence be packaged?

A: In an air tight container that is not plastic: standard arson kits provided free of charge to law enforcement agencies and fire departments are the most preferred way. Paper and plastic bags are never acceptable.

Q: How do I package syringes if they must be submitted for testing?

A: Syringes must be packaged in a tube specifically designed to hold syringes or “sharps.” Please do not place tape over the needle or drop the syringe in a bag with the other items for submission. If you do not have access to syringe tubes, very carefully transport the syringe in a puncture-proof container to the laboratory and we will package it in a syringe tube for you. Please be careful with syringes. This policy is for both the safety of our analysts and YOU as you transport them.

Q: How do I package freshly cut plant material?

A: It is very important to package freshly cut plant material (particularly marijuana cultivation cases) in paper bags. The fresh plant material will mold and degrade if placed in a plastic bag as the moisture will not be able to escape as the plant dries.



...and what about those pesky bedbugs?

To prevent the spread of bedbugs from crimes scenes to your evidence locker and then to the lab, please follow this simple procedure:

Keep evidence FROZEN!! While heat treatment and chemicals are recommended for the elimination of bedbugs, those treatments can damage your biological evidence or interfere with chemical testing. Using a common house-

hold freezer a two week freeze time is recommended to inactivate the bedbugs. If you have a lower temperature freezer available the freeze time will be shorter. The same treatment can be used for lice or other crawling pests.



Turn Around Time and RUSH Cases for Forensic Biology Casework

Surprise, the CSI Effect has hit Kentucky! A combination of expectations by TV viewers (who subsequently become jurors) in conjunction with some advances in DNA technology have been instrumental in dynamic changes regarding the types of cases and evidence currently being requested for DNA analysis. The results are a significant increase in the number of cases being submitted to the Forensic Biology Casework section, more than a 30% increase over the last 5 years with a current case backlog of nearly 1000 cases.

Cases submitted for serological analysis (to determine the presence of blood, semen, and/or saliva from bulk evidence items) require 2-4 months for completion. Once the appropriate reference (blood/buccal) standards have been received into the laboratory, cases are forwarded for DNA analysis. Turn around time for DNA analysis involving violent offense cases is an additional 6-9 months, while property crime cases is an additional 9-12 months. In 2009, the Forensic Biology Case Acceptance Policy was updated and limits the number of samples that can initially be submitted for analysis per case. This policy has been instrumental in maintaining the current turn around times for those the Kentucky State Police Laboratory System services, even with the increase in the number of submitted cases.

Even if there was no backlog, Forensic Biology cases aren't something that can be completed in an hour, including commercials. The serological process alone can take anywhere from less than a day to several weeks, depending on the size and complexity of a case. The DNA process is also complicated and lengthy requiring weeks of analysis and review of data. Cases are prioritized by case type and evidence submission date to the Forensic Biology section. There are currently 18 analysts in the Forensic Biology sections working cases from the approximately 450 agencies serviced by the laboratory.

In addition to the increase in the overall number of case submissions, requests for rush court ready DNA cases have increased. DNA rush requests require at least 6-8 weeks notice for general cases, while those involving touch type samples require at least 4-6 months to be completed. Rush requests should not be routine and will be considered on a case by case basis, as not every case can be a rush case. Timely submission of evidence and reference standards, along with communication between agencies and with the laboratory regarding cases status/updates can help to reduce the overall number of rush requests. If you have a rush DNA request, please contact the laboratory as soon as possible regarding the circumstances for the request.

What's New at the Lab?

TRACE SECTION has a new Gunshot Residue Kit

Include a (#1-see photo) Lab Request Form (KSP-26) plus the (#2-see photo) GSR Information Form with each new GSR-SEM kit (box). Fill out and submit both forms. *The new style kits may be re-analyzed if directed by the court.*

TOXICOLOGY SECTION offers additional testing

Toxicology is now testing for buprenorphine (Suboxone) on a special basis. Please indicate on the drugs requested line Suboxone or buprenorphine.

DNA SECTION offers Y-STR Analysis

We now offer **Y-STR DNA Analysis** for applicable cases. This is a service previously offered at a cost through our vendor laboratories that is now a **FREE** in-house service! Please note Y-STR profiles cannot be searched against the offender DNA database.

Frequently Asked Questions– By Section

TRACE/DNA

Q: Can both Ignitable liquid analyses AND DNA be done on an item?

A: Yes. Package the clothing or object in a standard Arson Can and be sure to FREEZE the sample. This is the only exception to the standard DNA packaging requirements.

TRACE

Q: Can I use the new GSR-SEM kits for surfaces other than hands?

A: Yes. Hands are still the preferred sample because it implicates the most recent time frame since the shooting incident. Surfaces such as a car steering wheel, car door, or a glove that may have been worn at the time of the shooting are also acceptable; however, the recent time frame is lost on these types of evidence.

Q: Why can't all automotive paint chips be run on the international database?

A: Only paint samples from original finishes direct from the automotive factories are in the PDQ (Paint Database Query) database. The samples are managed by the FBI and the Royal Canadian Mounted Police. Automotive re-paints and paint -overs are not candidates for the system; however, they can be compared to a specific vehicle if it is known.

Q: How much paint is needed to submit as a standard?

A: The lab would like to receive a sample size of about a dime for a paint standard. Equally important is that all the layers of paint are sampled.

TOXICOLOGY

Q: What does a kit's expiration date mean?

A: The expiration date refers only to the vacuum on the blood tube. After the expiration date the vacuum may be insufficient to properly pull blood from the vein. It does NOT represent the integrity of the tube nor the quality of the preservatives.

Q: What to do with a kit that has expired?

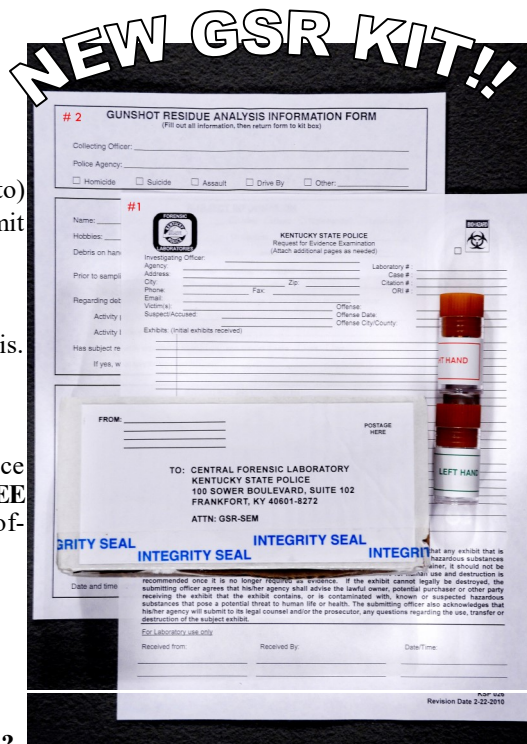
A: If an unexpired kit is available, use it and discard the expired kit. If not, ask the hospital to replace the tubes with new tubes using the same color tops, if possible. Never remove the expired date sticker on a box as the tubes are marked with the same date.

Q: What does therapeutic range mean?

A: Therapeutic range is the minimum and maximum levels of a drug in the blood which is known to have the desired pharmacological affect. It does not represent the level at which a person is considered to be "safe" to drive and should be considered only as a guide to determine whether a drug is being taken as prescribed.

Q: Can someone be impaired with a drug level inside therapeutic range?

A: Yes; many, in fact most, drugs cause impairment at their therapeutic range. For example narcotics get their name from the Greek *Narkos*, which means "to numb". Words like sedative and central nervous system depressants represent aspects of these drugs' pharmacology. A "pain killer" usually works by decreasing the brain's ability to work properly.





LEGAL NOTES

Facing or Contemplating a Challenge to Forensic Science?

The decision in *Daubert v. Merrell Dow Pharmaceuticals* (92-102), 509 U.S. 579 (1993), has provided a structure for the rigorous challenge of many forensic science disciplines. These challenges have put the science under a new level of scrutiny thus bringing about many positive changes in the approach and professionalism of practitioners. Hopefully over the next few issues, the resources needed to successfully answer these challenges will be provided.

In this first issue, the discipline of Firearm and Toolmark Identification is the focus. The Scientific Working Group for Firearms and Toolmarks (SWGgun) has assembled an Admissibility Resource Kit (ARK) which can be found at the link below. The ARK specifically addresses each of the five prongs of *Daubert*, demonstrating how Firearm and Toolmark identification satisfies each question. Additionally, basic overview information about the discipline is provided and the synopses/citations for numerous court rulings are listed.

KSP Lab's own Scott Doyle who works at the Jefferson Regional Laboratory is a member of SWGgun and has been instrumental in providing these resources on the website.

Link to the SWGgun Admissibility Resource Kit

<http://www.swggun.org>



Obtaining Records from the Laboratory – Open Record Request vs. Discovery

The Forensic Laboratories issue over 30,000 reports annually. The reports released through the BEAST web portal are only a summary report which includes the items submitted, the testing requested and the analysts' conclusions. The supporting data, notes, chain of custody, etc. are maintained at the laboratory and are not released with the summary report. For cases active in the court system, the underlying report material should be obtained through the normal discovery process. Open Record requests in active cases are routinely denied. As part of the discovery process, the prosecuting attorney may request the material directly from the laboratory and they may relay the material to the defense counsel. A court order signed by the judge will also be honored and the material sent directly to defense counsel. Open Record requests are also denied even on closed cases, based on statute, for any report containing DNA information. Any questions regarding the laboratory release of report materials, please contact Laura Sudkamp at the Central Laboratory Branch. (502) 564-5230.

How to Sign up for the BEAST Web Portal for Reports

The Laboratories no longer send lab reports out to the investigating agency through the mail. Reports may be downloaded through our BEAST web portal for law enforcement agencies, prosecutors, and judges. To protect the safety and identity of police officers and informants, laboratory reports for undercover drug buys are only available online to the investigating agency. Prosecutors may obtain the reports through the agency or by calling the laboratory for a copy. A second option is for the prosecutor to have the law enforcement agency send a request in writing to the laboratory granting the prosecutor permission to access their "locked" reports. As the laboratories do not have the ability to know when an investigation is complete and/or law enforcement and prosecution are prepared to move forward, the web portal is not available to defense counsel. When the Department of Public Advocacy submits evidence to the laboratories for testing, they will be provided a web account where they are able to download the reports for items submitted by their agency. To request an account, please send an email to Lisa.Troutman@ky.gov. If you have questions regarding access to the BEAST web portal, please contact Laura Sudkamp at the Central Laboratory Branch. (502) 564-5230.

BREATH ALCOHOL MAINTENANCE

For instrument service notify the assigned Breath Alcohol Maintenance Technician for your area by contacting the lab nearest you. A webpage is being developed so that you will be able to find this information on the KSP Public Website in the future.

When reporting an instrument problem, please provide the following: name, department, contact phone number, instrument county and location, as well as a description of service required. If a problem occurred and service is requested, please indicate time, date and a detailed description of problem that occurred (Be as specific as you can about the problem).

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Laboratory phone numbers and supervisor contact info

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Western Laboratory, 270-824-7540

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Terry Comstock, Supervisor (terry.comstock@ky.gov)

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SUGGESTIONS WELCOME!!

Do you have topics you would like to see covered in future editions? Do you have your own frequently asked Q's and you'd like some A's? Please contact stacy.warnecke@ky.gov with your suggestions.