



# UNDER the SCOPE



A Closer Examination from the Benchtop

MAY 2026

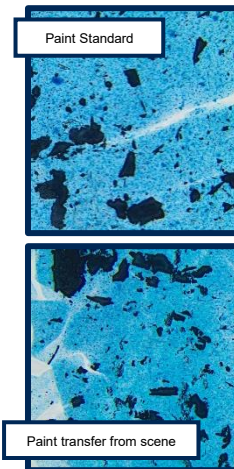
## Two Paths of Analysis: Categorizing Trace Evidence

### COMPARISONS

The comparisons category is exactly like the name sounds: Two or more items are compared to determine if they could share a common source. Often, the comparison is between an item from an unknown source to an item from a known source, or a “standard.” The Trace Evidence Section can perform comparisons on a variety of different materials, including:

- ✓ **Hair** from human sources
- ✓ **Fibers** from garments, threads, rope, etc.
- ✓ **Paint** from vehicles, architecture, tools, etc.
- ✓ **Glass** from vehicles, architecture, containers, etc.
- ✓ **Tape** including duct tape, electrical tape, packing tape, etc.
- ✓ **Plastic bags** including trash bags and Ziplock style bags

When collecting a standard for comparison, there is one golden rule: the larger the standard sample size is, the better the analysis can be. When collecting evidence or standards that are small in size, the best means to retain an item is to place it on a sticky note. This sticky note should then be folded and labeled prior to submission to the laboratory. The adhesives on this type of note are sticky enough to retain the sample but not so much as to transfer with the sample when it is removed.

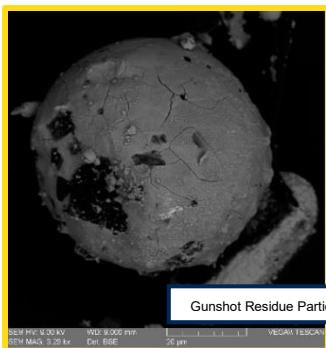


### CHARACTERIZATIONS

In the characterizations category, the main question being asked would be: “Is there something of interest in this sample, and if so, what is it?” Unlike comparisons, characterizations involve a single sample - no known source is necessary.

Characterization type analyses performed by the laboratory fall into the following categories:

- ✓ **Ignitable Liquids** typically from suspected arson investigations
- ✓ **General Substance Identification** in poisonings, tampering, etc.
- ✓ **Gunshot Residue** from individuals not struck by gunfire
- ✓ **Explosives** both intact and post-blast samples



Gunshot Residue Particle

Materials that cannot be tested by the Trace Evidence Section include:

- 1) Ink stains – Such as those found on bank robbery suspects.
- 2) Counterfeit money – This type of investigation is handled by the Secret Service.
- 3) Biological materials – Such as ricin, anthrax, urine, saliva, mold, etc.
- 4) Cleaning agents – With the exception of bleach.

If you have any questions about Trace Evidence, please contact us.

Springfield Laboratory: (417) 868-9400

Jefferson City Laboratory: (573) 526-6134



## EYE ON IT: UPCOMING TRAINING EVENTS

**June 10** Troop B  
Macon, MO

**June 23** Troop E  
Poplar Bluff, MO

**June 25** Troop C  
St. Charles, MO

**June 30** Troop F  
Jefferson City, MO

**July 15** Troop A  
Lee's Summit, MO

**Aug. 11** Troop G / I  
Rolla, MO

**Aug. 26** Troop H  
St. Joseph, MO

We will be hosting a free four-hour POST-certified class that is open to law enforcement personnel. It will cover an overview of all sections of the laboratory and their capabilities, with a special focus on evidence packaging.

Contact [Ashley.Jefferies@mshp.dps.mo.gov](mailto:Ashley.Jefferies@mshp.dps.mo.gov) to reserve your spot.



## ...All About Arson

**Q: Why did the evidence not test positive for accelerants when my dog indicated them?**  
 A: This likely involves the dog's ability to sample debris from a close distance and actively pull air into its nose. The dog's nose concentrates the vapors and exposes them to its nerve sensors immediately. In contrast, the technique employed by the laboratory is reliant on concentrating ignitable liquid components on a carbon strip in a passive manner. The entirety of the volatiles present cannot be concentrated onto the strip.

**Q: What do I do with samples that are very large?**  
 A: Arrowhead Forensics sells a 100-foot-long roll of nylon bags that are 18 inches in width. This can be cut to size and heat-sealed to make a container that is quite large. Subdividing your sample and submitting multiple containers is another option - but be aware that you are also splitting the volatiles that may be present across the containers. To allow for sufficient headspace for sampling, containers need to be less than three-quarters full.

**Q: Does arson evidence have to be frozen?**  
 A: No. However, ignitable liquids do readily evaporate. The lower you can keep the temperature a sample is stored in, the lower you make the potential for this evaporation. The bigger factor in retention of ignitable liquid vapors in arson evidence is the type of container. Vapor tight containers such as glass jars or vials, metal cans, and bags made of nylon or polyester will present a barrier to hold in any vapors that escape from arson evidence.

Do you have ideas for our next issue? If you have a question or topic you would like to see us cover in a future issue, let us know!

Send questions or feedback to:  
[Shelby.Massman@mshp.dps.mo.gov](mailto:Shelby.Massman@mshp.dps.mo.gov)



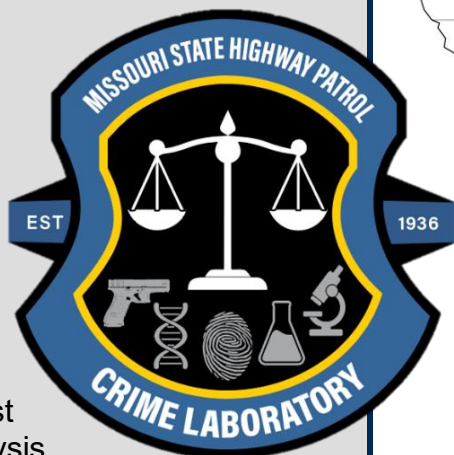
To visit our website or contact us, scan here:



## Crime Lab's NEW LOOK

We are excited to announce our brand-new logo!

This fresh design reflects who we are today – modern, innovative, and committed to serving Missouri. While our look has evolved, our mission remains the same: to provide the highest quality forensic analysis possible.



## TRACE EVIDENCE LOCATIONS



**GHQ - Jefferson City Lab**  
 1510 E. Elm Street  
 Jefferson City, MO 65101  
 (573) 526-6134

**Troop D - Springfield Lab**  
 425 E. Phelps Street  
 Springfield, MO 65806  
 (417) 868-9400

**GHQ  
 Central Laboratory  
 JEFFERSON CITY**

SPRINGFIELD