

FIRE DEBRIS



Services Provided

- Analysis of items to identify the presence of accelerants or other substances.



Fire Debris

Airtight Sample Containers

- Must be **airtight** !
- Acceptable Containers:
 - Friction lid cans
 - Arson Bags
 - Glass jars (only use if cans and bags are unavailable)
- Unacceptable Containers:
 - Plastic paint buckets
 - Paper bags and evidence envelopes
 - Cardboard boxes



Fire Debris

Airtight Sample Containers

- Friction Lid Cans:
 - Preferred due to laboratory analysis considerations.
 - Clean, unused, metal paint-type cans. Not made of recycled material.
 - Lined cans are preferred.
 - Fill only 2/3 full. We need headspace to perform the analysis.
 - Obtain from paint stores, evidence supply, container and packaging supply or scientific supply companies.
 - Cans available in pint, quart, or gallon size.
 - Store the cans with lids sealed in contaminant-free environment (no car trunks!)



Good Example



- LINED can, approximately 2/3 full.

Bad Example



- Keep soil out of rim groove.

Bad Example



- Can is too big.
- Too much headspace will lead to low results.

Bad Example



- Can is too small.
- Not enough headspace is also not good.
- The magic number is $\frac{2}{3}$ full.

Bad Example



- Make sure the lid is firmly seated but not crushed.

Fire Debris

Airtight Sample Containers

- Arson Bags (heat sealable pouch material)
 - Usually nylon, sold as Arson Bags.
 - DO NOT use regular heat sealable evidence bags! They are NOT the same!
 - Good for items that don't fit in friction lid cans.
 - Fill only $\frac{3}{4}$ full.
 - Can be easily punctured, more difficult to work with.
 - Close with regular heat sealer.
 - Store the bags with end of the roll heat-sealed.



Arson Bags



- In Field Emergencies - no access to a heat sealer
 - Twist the bag, then. . .

Arson Bags



- ...fold over to form a "gooseneck" and tape.

Arson Bags



- Bags are good for odd shaped and oversized items.
- Beware! They puncture easily.
- Make sure they are airtight.

Liquid Samples

- Use vials with a Teflon (PTFE) screw cap.
- Place vial in plastic bottle, then inside the can with absorbent material.
 - Vermiculite from garden store - lighter but more expensive.
 - Cat litter – heavier but cheaper.
- If it is a two-layer liquid, collect both layers in one bottle.
- You can also place a SMALL amount of liquid directly into a lined can, if that is all you have available.
 - Just enough liquid to fill the bottom of the can.



Liquid Samples

- Use disposable pipettes to transfer.
- Only need 1 (one) milliliter.
- Can also place a few drops of liquid on a gauze in a paint can.
 - Submit a blank can containing gauze to test for contamination.
- Provide complete information from any product labels.



Proper Seal

- All items should have a proper seal.
 - Use tamper-evident tape on any non-manufactured seal.
 - Place seals over the top of a friction lid can and follow the contours of the lid.
 - Write your initials and date on the tape.
 - If using heat-sealed arson bags, these must be initialed, too.

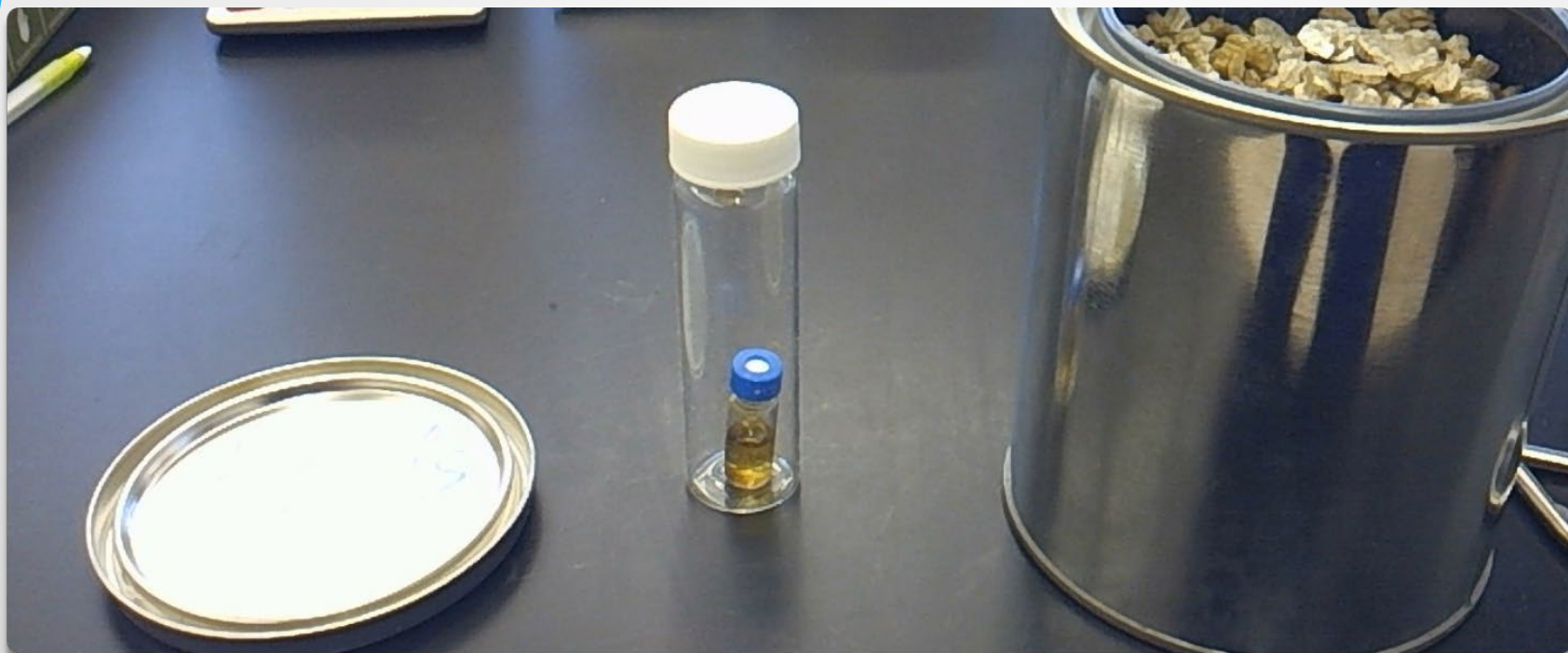


Shipping Liquids

- DOT Rules apply when shipping:
 - No more than 30 mL.
 - Must travel by GROUND. No airplanes!
 - Must notify the shipper.
 - Do NOT send filled gallon can!

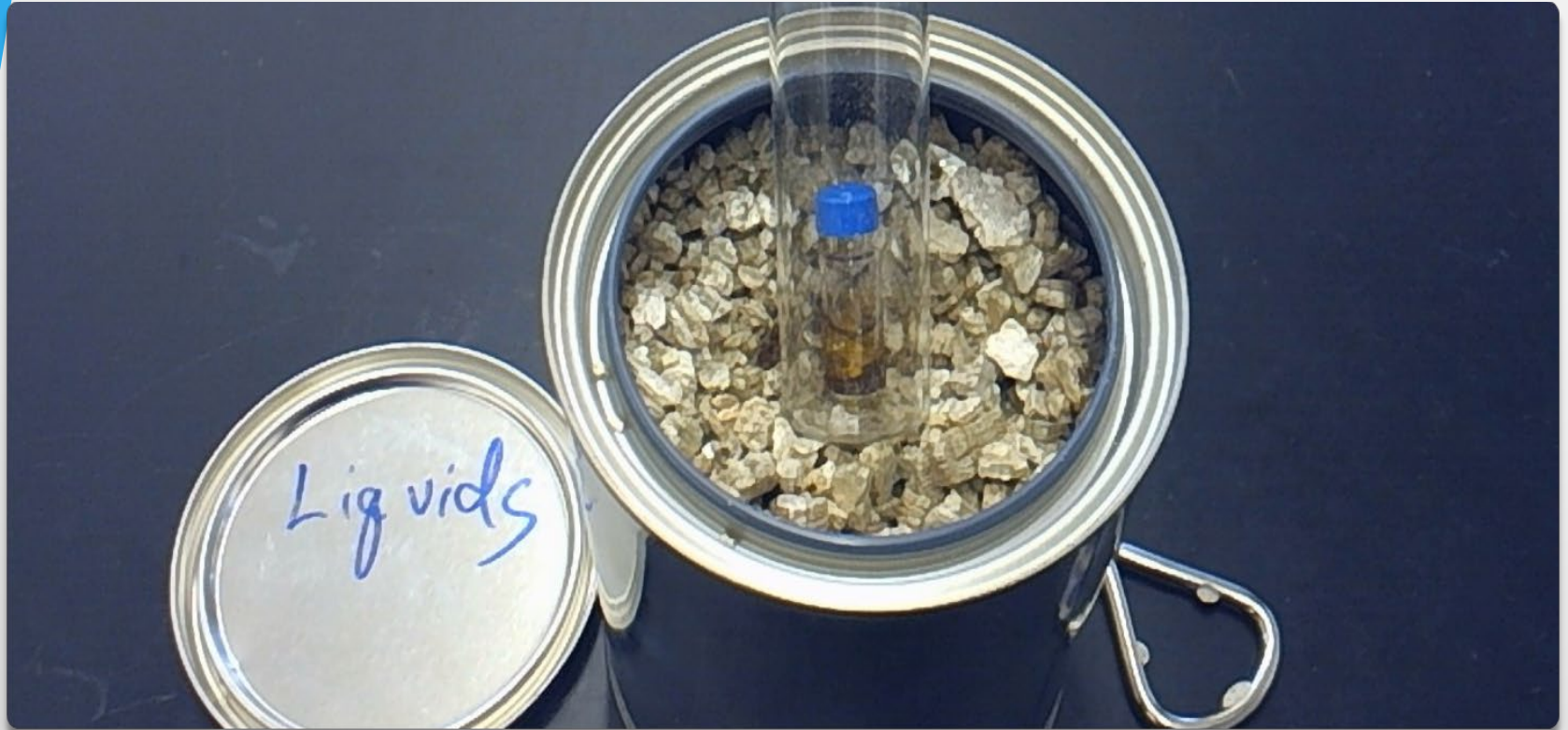


Liquid Samples



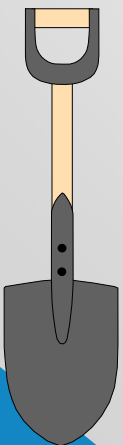
- Completely fill vial if possible (to stop evaporation).
- Do NOT send the filled gallon can!
- Send EMPTY can for latent prints.

Liquid Samples



Collection Tools

- Collection Materials
 - Polyethylene disposable transfer pipettes.
 - Vials – 1.8 to 2 milliliter screw-top glass vials (Teflon-lined).
 - Prevent cross-contamination of samples by collecting samples using uncontaminated tools
 - Shovels, axes, knives, gloves, pipettes, etc. should be cleaned or disposed of between samples.
 - Do not use waterless or similar types of cleaners that may contain volatile solvents or scents.



Fire Debris Evidence

Types of Samples

- Best practice to collect:
 - Questioned Samples
 - Standard Comparison Samples
 - Control Comparison Samples
 - Blank Comparison Samples



Fire Debris

Questioned Samples

- Questioned Samples
 - Materials collected that are *suspected of containing an ignitable liquid*
 - Examples:
 - Burnt materials at the fire scene such as carpet, linoleum, wood, soil, fabric, papers, etc.
 - Suspect's clothing and shoes.
 - Suspected ignitable liquids located at the fire scene.
 - Broken glass and wick from Molotov cocktail.



Fire Debris

Standard Comparison

- Standard Comparison Sample
 - A standard comparison sample is an ***ignitable liquid believed to have been used to accelerate a fire*** from a known, documented source.
 - Example:
 - An unopened container of charcoal starter.



Fire Debris Control Comparison

- Control Comparison Sample
 - Material you believe does ***not contain an ignitable liquid/petroleum product.***
 - Examples:
 - Carpet, wood, linoleum, etc.
 - Helps establish a baseline for the material. Many materials have petroleum products involved in their manufacturing process.
 - Collect at time of initial investigation.
 - May not always be available but may be burnt to the same degree.
 - If not available, collect a non-burnt sample.



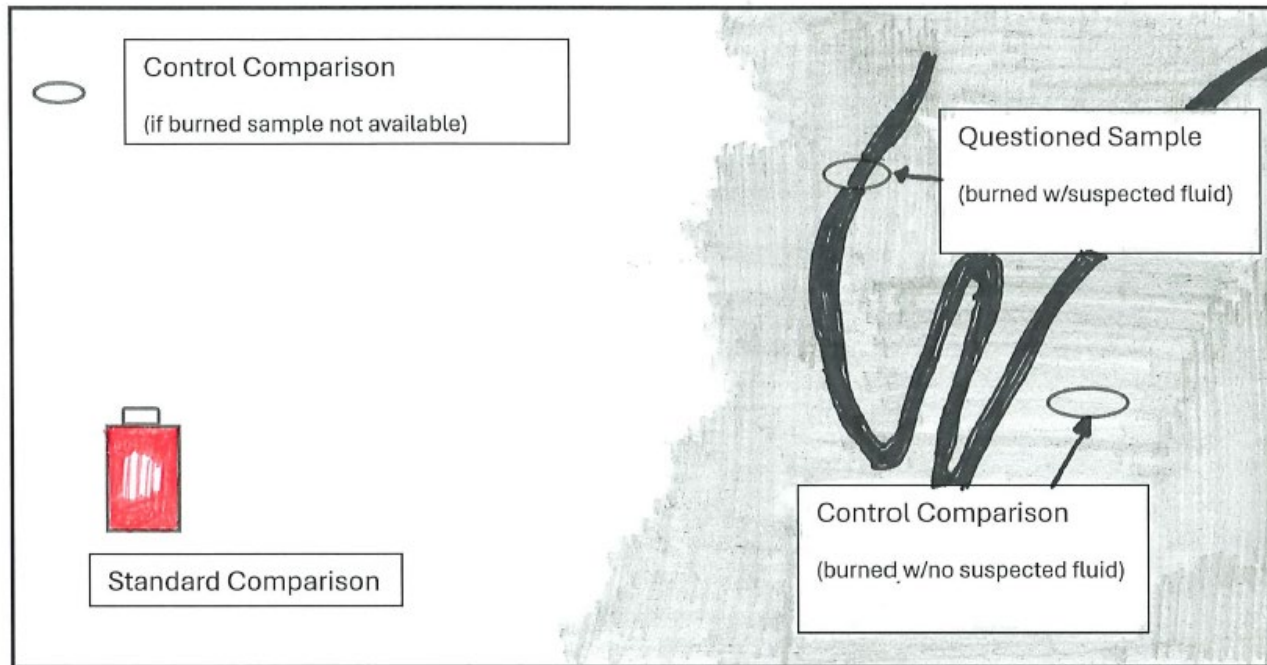
Fire Debris Blank Comparison

- Blank Comparison Sample
 - **Unused** packaging container or collection device of the same type used in the collection process.
 - Used to rule out contamination of collection materials.
 - Examples include an unused:
 - Friction lid can
 - Arson bag
 - Preserve at the time of the initial scene processing.



Sample Collection

Burned carpet as seen from above



-  Unburned carpet
-  Burned carpet
-  Spill pattern of suspected ignitable fluid

Decision Time



- Which is more important? Fire debris, latent prints, or DNA?
- Molotov Cocktail – Fire debris can use the wick; glass can be used for others. If no wick, then you'll have to make a decision.

Proper Packaging of Samples

- Packaging of Samples
 - Place evidence label or evidence envelope on friction lid can.
 - Mark which type of sample (questioned, standard, etc.)
 - Describe location found.
 - Fully describe evidence.
 - Seal can with evidence tape, initial and date seal.
 - Follow the contours of the can.



Storage

- Soil and vegetation samples – Frozen (bacteria!)
- Debris – Refrigerator
- Wet Items – Get to the lab as soon as possible to decrease the amount of time an item could rust the can.



Submission

<https://isp.idaho.gov/wp-content/uploads/Forensics/Evidence/Where-to-submit-evidence.pdf>

- Submit to the CDA lab.
- Case report should be included with submission.
- The following additional information is also helpful:
 - A description of any unusual circumstances
 - Unusual odor
 - Ignitable liquids normally present at the scene



Questions?

- Still have questions? Didn't see the type of evidence you have?
- Call us! We're happy to help!
 - MER lab – 208-884-7170
 - CDA lab - 208-209-8700
 - POC lab – 208-239-9900
- Our analytical methods are also posted on our webpage for each discipline.

