Dynamic Adsorption-Elution is actually a total heated headspace sampling. It relies on volatility of the ignitable liquid petroleum product. Volatilized ignitable liquid petroleum product is removed by vacuum and is trapped on activated charcoal in a sterile syringe (e.g.18 GA X 1 ½" length). Ignitable liquid petroleum product residue is removed from the sterile syringe by use of a solvent, and analyzed. This is also referred to as the "Purge and Trap Method."

The activated charcoal is coconut-based. A 50-200 mesh charcoal is suggested for use.

Blanks: A charcoal tube blank will be made utilizing the same materials involved in the sample collection.

Evidence Packaging - The submitted container (nylon bag or metal can) or the sample itself (ex: debris itself) will be placed inside a laboratory heatsealed clean/unused nylon bag for the extraction time frame (when practical). This will apply to both oven or room temperature extractions. This will ensure knowledge of the integrity of the outer packaging, providing an airtight seal and prevent cross contamination.

5.1.2.2.1 Dynamic (Active) Headspace Concentration (Adsorption-Elution) - Procedure for Analysis - Suggested Materials

- Disposable sterile syringes
- Activated coconut charcoal, 50-200 mesh (e.g., Fisher No. 5-690).
- Absorbent, first-aid -type cotton.
- A.C.S. Reagent Grade Carbon Disulfide (CS_2)

5.1.2.2.2 Dynamic (Active) Headspace Concentration (Adsorption-Elution) - Procedure for Analysis - Preparation of Sterile Syringe:

- Using a wooden applicator stick, insert a piece of cotton into a sterile syringe (e.g., 16 - 18 Ga.) and tamp lightly.
- Load the sterile syringe with approximately 25mg of charcoal.
- After the charcoal has been added, introduce a second piece of cotton and tamp it lightly into place against the top of the charcoal. A suitable quantity of cotton forms a plug of cotton/charcoal/cotton.
- The sterile syringe is now ready for use. If not to be used immediately, or if a "stock" of sterile syringes is being assembled, storage in a clean vapor-tight container is strongly advised.

5.1.2.2.3 Dynamic (Active) Headspace Concentration (Adsorption-Elution) - Sampling Debris:

- For sealed metal paint cans, puncture the lid of the can with one hole and place a piece of nylon re-enforced tape or equivalent over hole.
- For sealed nylon plastic bags, place directly into the oven. Note: Nylon bags can easily be punctured by substances within the fire debris sample. Care must be taken when handling nylon plastic bags to maintain a sealed bag.
- Place the sealed sample container in a preheated oven. Caution: Avoid sample temperature above 100°C to minimize stripping of "light" components of the sample from the charcoal.

- After the sample has been heated and removed from oven, connect the sterile syringe to a vacuum line and draw out the atmosphere of the sample container through charcoal for 1 minute or until the container (if nylon) has fully collapsed (may be less if high concentration ignitable liquid petroleum product is present). Be sure to maintain a good vacuum. If the flow becomes minimal or ceases, replace the sterile syringe with a new sterile syringe. If the evidence is to be checked for latent prints, sampling can be performed at room temperature.

5.1.2.2.4 Dynamic (Active) Headspace Concentration (Adsorption-Elution) - Elution of Sample:

- Place one end of the sterile syringe with charcoal added into a test tube (e.g. 12x75mm).
- Using a suitable small pipette, add to the open end of the sterile syringe approximately 0.5ml of reagent grade CS_2 to wet the charcoal.
- Attach one end of tubing of the appropriate sized to the sterile syringe. The other end of the tubing is attached to a regulator on a tank of grade 5 (Ultra Pure) N_2. Using minimum pressure, push the CS_2 through the syringe and into the test tube. Collect the CS_2 extract from the test tube and place into a glass vial into which a glass insert has been placed. Cap with an appropriate cap. (If the extract cannot be analyzed within a day, it should be stored in a refrigerator or freezer.)
- When ready to analyze the sample or samples, place the capped glass vial(s) into the tray of the GC/MS auto sampler. A standard sampling volume is 1.0 µl of sample. When analysis is completed place the glass vials for return to the submitting agency.