

Vehicles

The Laboratory accepts cases involving automobile accidents which have resulted in injury or death and where criminal negligence is suspected. Vehicles involved in accidents of this type should be immediately impounded. Where skid damage on the vehicle's tires may indicate related important conditions prior to or at the time of impact, the vehicle should be conveyed on a trailer to a storage facility. The Laboratory also may accept vehicles involved with the commission of a sexual assault or conveyance of a body. Contact your area Laboratory before submitting the vehicle.

It is also very important that the submitting agency obtain proper photographs of the scene, skid marks, damage to vehicles, impact damage, etc. The Laboratory does not perform accident reconstruction or determination of the condition of mechanical or electrical systems. These types of analysis must be sought from another source.

I. Criminal Damage to Motor Vehicles and Engines

The perpetrators of criminal damage to motor vehicles may add a foreign substance, such as emery dust or sand, to the vehicle engine or transmission. Where internal damage of this type is suspected, a sample, consisting of one pint of oil from the top and bottom of the oil pan of the damaged engine, should be submitted. Any foreign residue found on top of the engine, in the carburetor, or near the oil spout should also be submitted. It is important that as much sediment as possible be obtained from the oil pan or gear box.

In cases involving addition of sugar or other materials to gasoline, submit **at least** one pint of gasoline from the tank. Because sugar has a low solubility in gasoline, it is imperative that the intact fuel filter as well as a sample of the sediment or condensation (water) in the bottom of the gasoline tank be submitted.

Samples from fuel pump bowls should be avoided because they contain sediments which interfere with tests. However, the sediment bowl can be removed so that a sample of gasoline may be pumped directly into the sample container.

Containers with rubber or waxed paper seals should not be used, since they dissolve in petroleum products and give erroneous test results. Pistons, bearings, gears and scrapings from the combustion chamber or rings may also be submitted. Samples of the radiator coolant also may be examined for evidence of foreign substances when indicated.

Caution: It is unlawful to send flammable liquids via mail.

II. Stolen Vehicles

The Laboratory may be able to identify stolen vehicles which have been repainted or stripped or which have had the serial or manufacturing numbers altered or replaced.

If a vehicle is suspected of having been repainted, it is possible to analyze and photograph the paint layers as confirmatory evidence and to establish the original factory color. See Chapter 18, Paints for the recovery technique.

When an automobile has been stripped and the suspect parts are found, the Laboratory may be able to physically match these to the vehicle.

Stamped serial numbers may be removed by grinding or altered by other methods. Frequently, they may be restored. When alteration of the serial number is suspected, the object or part bearing the serial number should be submitted.

For general technical information, contact the Laboratory or the National Insurance Crime Bureau (NICB) at www.NICB.org. In some cases, confidential, hidden vehicle identification numbers may be present to assist in determining authentic vehicle identification.

III. Hit-and-Run Investigations

In attempting accident reconstruction, the investigator should be mindful that showing a relationship between materials or items recovered from different locations is most important. Materials or items recovered from different sources or at a later date that can be related to each other constitutes very important evidence. Three primary sources should be considered: the accident scene, vehicles and victims.

Accident Scene

A. Initial Procedures:

1. Request ambulance personnel at scene to preserve blankets and clothing which may contain trace evidence such as broken glass, paint chips, metal parts, plastic, etc.
2. In vehicular accidents, an officer should be assigned to the hospital to assist in the recovery of clothing and body fluids.

B. Protect scene from:

1. Additional accident damage
2. Bystanders
3. Theft from vehicles

C. Establish a written record:

1. Date
2. Time
3. Location
4. Description of incident
5. Weather conditions
6. Temperature
7. Road conditions
8. Victim's location upon your arrival, his/her condition and tentative identification
9. If a description of the hit-and-run vehicle can be obtained, immediately have dispatcher alert other officers in the surrounding area. The vehicle's description may be obtained from eye witnesses or materials recovered at the scene.

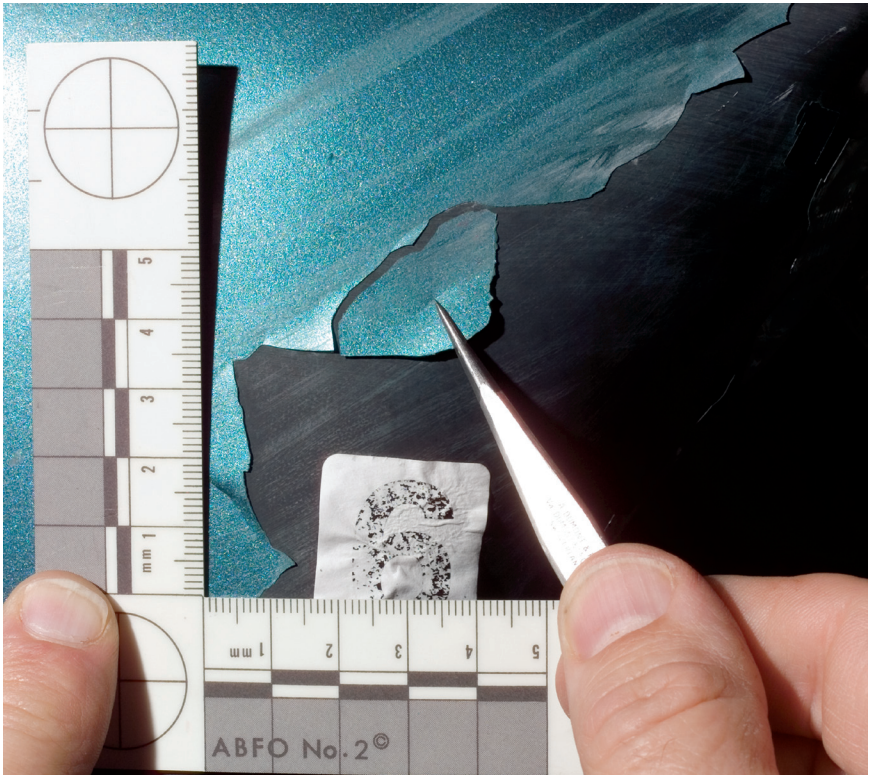
D. Attempt to locate the fleeing driver and/or vehicle.

E. Photograph the scene (see Chapter 2, Forensic Photography).

F. Diagram the scene (see Chapter 4, Crime Scene Sketch).

G. Recognition of potentially valuable materials:

1. Broken glass (headlights, mirrors, and windshield) or plastic from scene or from victim's clothing may be fracture matched with remaining glass or plastic from suspect vehicle.
2. Broken or fractured pieces of metal (trim, antenna, or sheet metal pieces) may also be fracture matched with section remaining on vehicle.
3. Paint chips from scene or vehicle may be fracture matched with suspect vehicle (see Figure 24-1). Paint layer relationship may be valuable evidence (see Figures 18-1 and 18-2 in [Chapter 18, Paints](#)).
4. Dirt deposits recovered from road surface may be indicative of approximate point of impact.

**Fig. 24-1**

Paint chip fracture match to a suspect vehicle believed to be involved in a fatal hit-and-run accident.

5. Physical impressions left on objects at the scene may indicate the make of vehicle causing the impact. These impressions should be properly recorded and collected for possible comparison purposes at a later date.
6. Skid marks and three-dimensional and surface impressions sometimes can be used to determine direction and speed. There are limitations to the usefulness of skid marks, debris, and gouge marks in establishing the exact point of impact. They will, however, indicate the approximate location of the collision. Broken parts found at the accident scene may bounce and roll; therefore, reliable information as to exact point of impact may not be able to be determined.

Victim

A. Living:

1. Obtain complete identifying data to include full name, date and place of birth, permanent address, temporary address (if nonresident), telephone number where he/she can be reached when discharged from hospital.
2. Recover blankets used in conveying victim to hospital. Tag each blanket and place in a separate paper bag. Air dry if wet or bloodstained. Avoid handling blankets any more than necessary to preclude loss of trace material.
3. Recover clothing worn by victim at time of accident. Note any cutting or tearing of clothing by nurse, attending physician or other person rendering aid. Tag each piece of clothing and place in a separate clean paper bag. Air dry if wet or bloodstained. Avoid unnecessary handling of clothing to prevent loss of trace material.
4. Collect body fluids:
Blood:
 - a. Collect at least 5 milliliters of blood in a lavender-topped (EDTA) blood collection tube, then print patient's name on the label. Using a small syringe, insert needle through the rubber stopper of the tube (EDTA) and withdraw approximately 1 milliliter of blood. Using a DNA Stain Collection Card, fill all four (4) of the printed circles on the card with blood. Allow bloodstains to thoroughly air dry,

then write patient's name on the DNA Stain Collection Card. Package the Stain Collection card in a clean, properly labeled paper envelope and seal. Package the blood tube in a styrofoam shipping container, label properly and seal. Store in refrigerator. **Note: A buccal swab may be collected (see Chapter 6, Sexual Offenses for collection procedure) instead of a DNA Stain Collection Card.**

- b. Collect 20 milliliters (two tubes) of blood in gray-topped (sodium fluoride) blood collection tubes for toxicological analysis. Print the patient's name on the labels. Package the blood tubes in a styrofoam shipping container, label properly and seal (see Chapter 28, Toxicology).

Urine:

Collect all available urine in a plastic or glass jar used by hospitals for sample collection. Preservatives are not necessary. Seal and label for identification. Store in refrigerator (see Chapter 28, Toxicology).

5. Ensure that chain of custody is maintained. Everyone who has the item in his/her custody, even for a short time, must be documented. See Chapter 1, Evidence Integrity for further discussion of this topic.

B. Deceased:

1. Photograph the body (see Chapter 2, Forensic Photography).
2. Note position of body. If postmortem lividity has developed, determine if it is consistent with position of body when found.
3. Use caution when removing body to avoid loss of possible trace material. The body should be placed in a new, unused white sheet before being placed in a clean, sealed body bag.
4. Check under victim for trace evidence.
5. See Chapter 25, Autopsy for additional information including procedures for recovery of clothing and foreign materials.
6. See Chapter 28, Toxicology.

Vehicle

- A. Avoid touching any part of the vehicle which may bear fingerprints (e.g., steering wheel, mirrors, door handles, brake handle, gear shift handle, seat belt fasteners, hood, windshield, roof, etc.). To shift gears for towing, grasp the stick rather than the end knob where suspect may have left prints.

- B. Protect the vehicle from contamination by covering with new wrapping paper or plastic sheeting.
- C. Transport on a flatbed truck or trailer or tow (do not drive) vehicle to nearest garage. Proper examination of the under-structure requires the use of a hoist.
 1. The vehicle should not be towed any extended distance. Trace evidence such as blood or hair may be lost or destroyed.
 2. The vehicle should be towed or hauled from the **undamaged** end to avoid additional damage and to avoid destruction or addition of evidence during towing.
 3. The vehicle should be placed under lock and key. Police security should be maintained to ensure the custodial chain of the vehicle.
- D. Photograph the vehicle (see Chapter 2, Forensic Photography).
- E. Record an accurate description of the vehicle.
- F. Recover known and questioned paint samples. Paint samples should be taken from both the damaged areas and adjacent undamaged areas. The latter serve as controls or knowns during Laboratory comparisons. Paint samples should also be taken from the victim's vehicle. Fenders, hoods and doors with areas of missing paint should be removed for fracture match analysis with recovered paint samples. Where bicycles, baby strollers, snowmobiles, power lawn mowers or other small vehicles are struck, the entire object should be sent to the Laboratory. See Chapter 18, Paints for procedure in recovering paint samples.
- G. In the event that glass has been broken, recover and submit all known and questioned samples.
- H. Metal, glass and plastic pieces showing fractured edges should be removed, because they may be fracture matched to pieces from the scene. Look in the engine compartment for additional pieces.
- I. A systematic examination should be made of the vehicle exterior including the undercarriage.
- J. If the suspect vehicle is located some time after the accident (after having secured the properly-executed search warrant), immediately record the temperature of the radiator and out-of-doors temperature. Record serial numbers, vehicle identification numbers (VIN), license numbers, condition of brakes, tires (evidence of skidding), mileage reading, service record, approximate amount of fuel in tank and condition of all lights.

- K.** Examine vehicle for presence of blood, hair and fibers. If investigation indicates vehicle passed over victim, the understructure should be examined. Known samples of grease should be recovered and recovery location noted.
- L.** Fabric weave impressions on metal surfaces or paint and in grease should not be overlooked. When possible, the bumpers, hoods or the entire vehicle should be conveyed to the Laboratory for proper photographic documentation of such impressions. To be of use for comparison, all photos must be life-size (1:1) and include a scale.
- M.** Sketch vehicle and note on sketch any damage and the locations of materials recovered. This will be useful during your recollection at any court proceedings (see Figure 24-2).
- N.** Properly mark vehicle for identification.

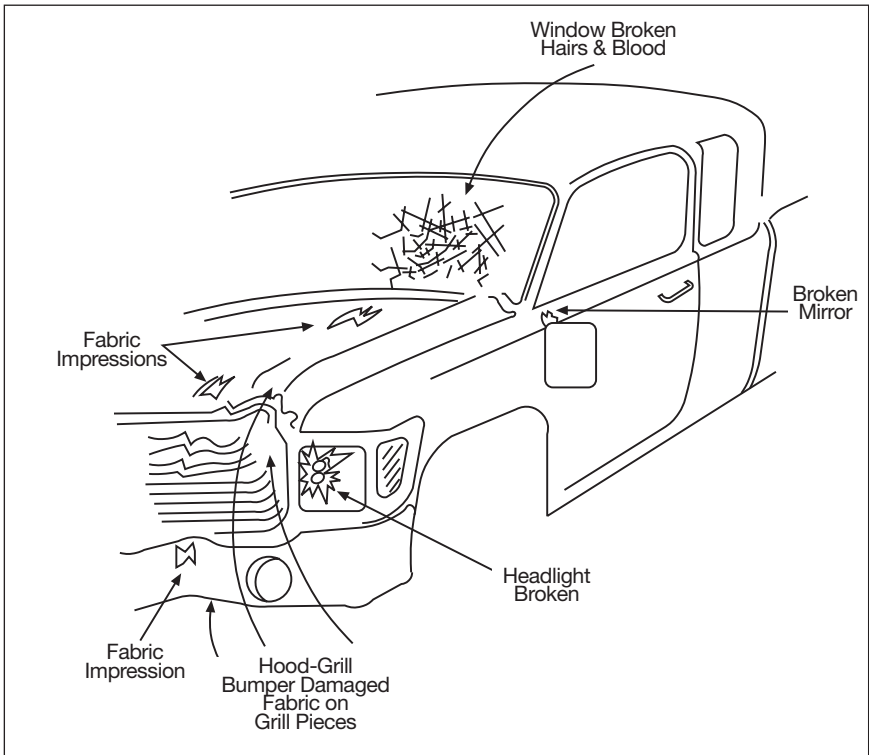


Fig. 24-2

Perspective sketch of a vehicle suspected in a hit-and-run accident. Sketch illustrates vehicle damage and locations of trace material and other evidence.