How to Collect Paint Evidence

Introduction

[Scene 1: Title Screen]

Visual: The Center of Forensic Sciences logo is displayed in the top left corner of the screen, accompanied by text that reads “Center of Forensic Sciences”. The word “Chemistry” appears faintly in the background, and the title “How to Perform Hair & Fibre Evidence Collection” is displayed prominently, followed by the subtitle “Vehicle Exterior”.

Audio: [Music: ‘Calm Background Music for Video’] Music continues to play softly in the background throughout the video.]

[Scene 2: Disclaimer]

Visual: Text on screen reads: “This video may not be copied or used, in part or in whole, without prior written permission of the CFS”

[Scene 3: Introduction]

Visual: The camera pans across a vehicle part showing prominent paint smearing. On-screen text appears that reads “hit-and-runs and homicides”.

Voiceover: “Paint evidence can be encountered in a variety of case types, including hit-and-runs and homicides”.

[Scene 4: Introduction]

Visual: A scientist approaches another scientist working at a computer and engages in a conversation. On-screen text appears that reads “identify its source, link objects and scenes”.

Voiceover: “With its many types, often applied in layers, paint can be used to identify its source and to link objects and scenes”.

[Scene 5: Introduction]

Visual: A close-up shows a scientist looking into a microscope. The scene transitions to a vehicle bay, where a scientist examines a white SUV with a handheld light. On-screen text reads “submit entire item whenever possible”.

Voiceover: “Because paint evidence is often microscopic, the best practice is to submit the entire vehicle whenever possible. This allows the Center of Forensic Sciences to collect all available evidence and to protect areas of interest for fingerprints”.

[Scene 6: Introduction]

Visual: The scene transitions to an outdoor setting, showing a heavily damaged blue vehicle in the center of the frame. A scientist approaches the vehicle and removes the bumper. On-screen text reads “next best option: submit an entire part”.

Voiceover: “If submitting the entire vehicle is not feasible, the next best option is to submit an entire vehicle panel or part, such as a bumper or fender”.

[Scene 7: Introduction]

Visual: A close-up shows the scientist using a scalpel to collect a smear from the surface of the blue vehicle. On-screen text reads “paint sample collection: NOT possible to submit entire vehicle/part” followed by “paint sample collection: after taping for H&F evidence, swabbing for DNA”.

Voiceover: “Paint sample collection should only be done if it is *not* possible to submit the entire vehicle or part, and always after taping for hair and fibre evidence and swabbing for DNA, if those collections are required”.

[Scene 8: Introduction]

Visual: The camera pans across an outdoor vehicle pound, settling on a dark grey vehicle with heavy damage to its frontal area. A scientist walks into view and pauses to examine the vehicle. A small pop-up window briefly appears, showing the collection of a sample from a non-vehicle item. The scientist then walks our of frame.

Voiceover: “In this video, you’ll learn how to properly collect paint evidence from vehicles—though, the techniques shown can also be applied to other objects—ensuring the integrity of paint for forensic analysis”.

[Scene 9: PPE]

Visual: The screen fades to black as on-screen text reading “Part 1: Preparations/Materials” appears, then fades out to reveal the scientist putting on a disposable lab coat. Text reading “PPE” fades into the center of the screen. The footage cuts as the scientist buttons up the lab coat, with on-screen text reading “lab coat”. The footage continues to cut as the scientist puts on safety eyewear and disposable gloves, with corresponding on-screen text reading “safety eyewear” and “disposable gloves”.

Voiceover: “It’s important to protect yourself by first putting on a lab coat, followed by safety eyewear, and finally clean disposable gloves. If available cut-proof gloves may also be worn underneath”

[Scene 10: Materials]

Visual: The scene transitions, and on-screen text reading “Materials” fades in. The scientists holds up an envelope with corresponding on-screen text reading “paper” and “envelope”.

Voiceover: “Next, for each paint sample you’ll need clean paper for collecting the sample, and envelope for packaging, and a clean cutting tool”.

[Scene 11: Materials]

Visual: The scene transitions, and on-screen text reading “Materials” fades in. The scientists holds up an envelope with corresponding on-screen text reading “paper” and “envelope”.

Voiceover: “Next, for each paint sample you’ll need clean paper for collecting the sample, and envelope for packaging, and a clean cutting tool”.

[Scene 12: Materials]

Visual: The scientists holds a scalpel and razor. On-screen text reads “cutting tool”, before shifting to “scalpel” and “razor blade”.

Voiceover: “The recommended cutting tools are a scalpel or a single-sided razor blade—this video will demonstrate the use of both”.

[Scene 13: Examination]

Visual: The scene transitions, and on-screen text reading “Examination” fades in. The scientist approaches a dark grey vehicle and begins a visual examination. Close-up shots highlight a dent, scratches, and an extraneous paint chip. Corresponding on-screen text reads “dents”, “scratches” and “extraneous paint chips, smears, and deposits”.

Voiceover: “Start with a visual examination and documentation of the vehicle’s condition to determine areas of contact. Look for areas of damage: such as dents, scratches, and especially extraneous paint chips, smears, and deposits”.

[Scene 14: Examination]

Visual: The scientist uses tweezers to collect a loose paint chip and places it onto a sheet of paper.

Voiceover: “All possible transferred material and smears should also be collected. Loose transfers paint chips and flaking paint can be collected using tweezers”.

[Scene 15: Collection of Sample]

Visual: The scientist walks to the rear of the vehicle and examines a paint smear.

Voiceover: “It’s important to sample paint from all areas of damage, as different parts of the vehicle, plastics and metal parts, may be painted or repainted differently. Vehicles may also have spot repairs and/or replacement panels”.

[Scene 16: Plastic Surface]

Visual: On-screen text reading “Plastic Surface” fades in as the scientist continues to examine the smear. The screen then darkens drawing focus to the highlighted area of the smear.

Voiceover: “The collection process is similar whether you’re sampling from a plastic surface, such as bumper, or a metal panel such as the fender. In this case, there’s a long smear on the plastic bumper, so we’ll start here”.

[Scene 17:Plastic Surface]

Visual: The scientist holds up a single-sided razor blade up to the camera. On-screen text reads “single-sided razor blade”. The scientist then holds up a scalpel, accompanied by on-screen text reading “scalpel”, before unwrapping the razor blade.

Voiceover: “You can use either a single-sided razor blade, or a scalpel here, depending on your preference or tool availability. We will be using a single-sided razor blade”.

[Scene 18: Plastic Surface - Smear]

Visual: On-screen text reading “plastic surface: smear” appears and fades out. A series of close-up shots show the scientist collecting the smear with a razor blade. S the process unfolds, on-screen text appears sequentially: “bend razor inward to create a curve”, “hold clean paper below”, “push blade into plastic at shallow angle”, “cutting through all paint layers”, “gently move back and forth”, “collect entire smear”, “cut through depth of paint”, “down to substrate”. The scientist then slices the sample free and holds it up to the camera.

Voiceover: “To collect the smear, slightly bend the single-sided razor inward to create a curve. Then, hold a clean piece of paper underneath the collection area. Push the blade into the plastic at a shallow angle, cutting through all paint layers. Gently move it back and forth to deepen the cut, which helps to remove the sample more easily. Take care to protect your fingers throughout this process. Always try to collect the entire smear, and make sure you cut through the entire depth of the paint, all the way down to the substrate. Once the razor is deep enough, and you are satisfied with the sample size, slice the sample free. At this point, inspect the sample or sampled area of the vehicle to determine if the sample was collected to the substrate. If so, the exposed substrate should be visible”.

[Scene 19: Plastic Surface - Comparison Sample]

Visual: On-screen text reading “plastic surface: comparison sample” appears and fades out. A sped-up close-up shot shows the scientist collecting the smear, before removing it from the vehicle and examining it over a piece of paper. On-screen text reads “near each area of damage: quarter-sized, down to the substrate”.

Voiceover: “In addition to any extraneous paint chips, smears and deposits, it’s important to collect a comparison sample from each area of damage. A known comparison sample should be collected at or near the area of damage, quarter sized, and down to the substrate”.

[Scene 20: Paper Fold]

Visual: The scene transitions, and on-screen text reading “Paper Fold” fades in. The scientist brings the paper and comparison sample into frame and through a series of close-up shots demonstrates the folding process. Sequential on-screen text appears throughout: “ensure sample is in the middle”, “fold paper in half, leave about 1cm on the top”, “do NOT press down on middle”, “fold paper in thirds”, “fold bottom up”, “fold the extra lip”, “fold corners of lip into triangles, tuck inside the fold”.

Voiceover: “With your collected samples on to your piece of paper, it is time to secure it for submission. A paper fold is the preferred method for packaging paint samples. Ensure that the sample is placed in the middle. Then, fold the paper in half, leaving about 1cm of distance on the top. Make sure that you do not press down on the middle at any point, as you do not want to crush the sample. Next, fold the paper into thirds. At this point, your sample should be located in

the bottom half. Then fold the bottom up. And once you've done that, fold the extra lip that you created earlier as well. Finally, fold the corners of the lip into triangles, and tuck it inside the fold. As long as the sample is secure, any type of paper fold is acceptable".

[Scene 21: Paper Fold]

Visual: The scientist labels the envelope and places the paper fold inside. On-screen text reads: "label, place in separate envelope and seal", "label paper fold and envelope: contents of paper fold, vehicle it was collected from, location on vehicle".

Voiceover: "Each paper fold should be labeled, placed in a separate envelope and sealed. Both the paper fold and the envelopes should indicate the contents of the paper fold, the vehicle it was collected from, and the location on the vehicle it was collected. For example, the black smear from the front right bumper of the Honda Civic".

[Scene 22: metal Surface]

Visual: The scene transitions, and on-screen text reading "Metal Surface" fades in. The scientist approaches a blue vehicle and retrieves a scalpel, holding it up to the camera for display.

Voiceover: "Now, let's move on to collecting a paint sample from a metal vehicle part. This time, we will be using a scalpel. On metal surfaces, blades will dull quickly. So, if you find it's getting difficult to cut through the paint, switch to a new blade".

[Scene 23: Metal Surface - Comparison Sample]

Visual: A series of close-up shots show the scientist collecting the comparison sample. Sequential on-screen text reads: "metal surface: comparison sample", "hold scalpel at 45 degree angle", "apply firm pressure", "gently move back and forth", "all layers down to the substrate". The scientist then uses tweezers to retrieve the sample and places it on a clean piece of paper.

Voiceover: "Hold a clean piece of paper underneath the collection area. To collect the sample, hold the scalpel at roughly a 45-degree angle, and apply firm pressure. Once you feel the blade reach the substrate, gently move it back and forth to begin collecting. Paint samples must include all layers down to the metal substrate. However, if some pieces have only a partial layer sequence, still include them with the rest of the sample submitted".

[Scene 24: Metal Surface - Smear]

Visual: On-screen text reading "metal surface: smear" appears and fades out. The scientist begins collecting the smear, and as the process continues, a small pop-up window appears referencing the comparison sample.

Voiceover: "Collecting smears from metal parts is more difficult than on plastic parts. Before attempting to collect the smears, collect the comparison samples in order to practice the technique".

[Scene 25: Metal Surface - Smear]

Visual: The scientist finishes collecting the smear, then uses tweezers to place it onto a clean piece of paper.

Voiceover: “For difficult smears, you may need to collect the smear with the surface layer only and not down to the metal substrate. If paint sticks to the blade, it can be gently rubbed onto the collection paper”.

[Scene 26: Submission]

Visual: The scene transitions, and on-screen text reading “Submission” fades in. The scientist performs another paper fold, and places it inside an envelope. On-screen text reads “once collected, sample should be: packaged in paper fold (labelled), sealed in individual envelope, properly labelled”

Voiceover: “Smears of different colours, or smears located on different parts of the vehicle should also be packaged separately. Once collected, samples should be packaged in paper folds, with each fold labeled. The folds should then be sealed in individual enveloped, which must also be labeled”.

[Scene 27: Submission]

Visual: A close-up shows the scientists labelling the envelope. On-screen text reads: “VIN, colour, make, model and year of vehicle”.

Voiceover: “Please include the VIN, colour, make, model, and year of all vehicles on the Center of Forensic Sciences submission”.

[Scene 28: Other Objects/Surfaces]

Visual: the screen fades to black. On-screen text reading “Submission” fades in, revealing a new scene with a prominent orange-painted metal fence. The scientist approaches the fence, examines its surface, and collects a paint sample. The scientist then returns to the table and packages the sample for submission.

Voiceover: “Forensic paint evidence can be collected from any object or surface where there is possible transfer or paint. This can include: doors, window frames, drywall, buildings, poles, bus shelters and signs. The same sampling principles apply. If the entire item, or a portion of it, cannot be submitted, collect the entire area of transferred material down to the substrate. Additionally, comparison samples from near damaged area should also be collected. For additional guidance, or to discuss a specific case, please contact Chemistry. Additionally, the handbook of Forensic Evidence for the Investigator can be accessed through the submission portal”.

[Scene 29: End Screen]

Visual: The screen fades to black, revealing text that reads “Contact Chemistry”, “647-329-1500”, "CFSChemistry.Scientificadvisor@ontario.ca". Followed by additional text: “Techniques and materials demonstrated in this video are a representation of best practices but alternate approaches may also be appropriate”. Finally, the CFS logo appears centred on the screen.