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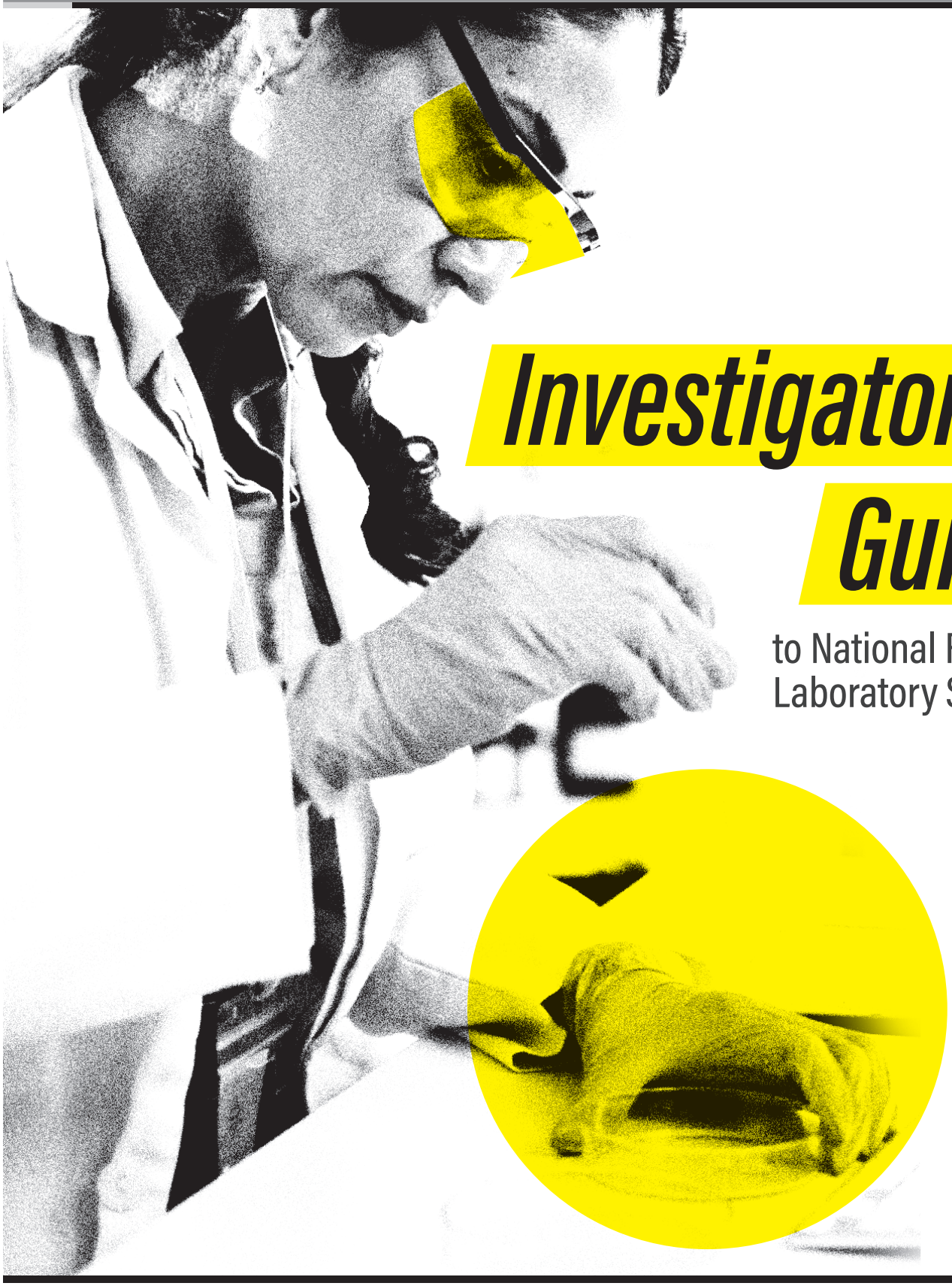

Investigator's Guide

to National Forensic Laboratory Services

Royal Canadian Mounted Police
Gendarmerie royale du Canada

Canada

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Contact information

Forensic Assessment Centre

To request a forensic service for biology, firearms and toolmark identification, toxicology and/or trace evidence, you must first contact the Forensic Assessment Centre for authorization in order to submit an exhibit.

Hours:
Monday to Friday, 7 am to 7 pm Eastern time
✆: 1-866-677-5227
Fax: 1-877-243-5047
✉: fac-cej@ rcmp-grc.gc.ca

National Anti-Counterfeiting Bureau

For exhibits related to counterfeit, send exhibits along with the appropriate, completed forensic laboratory analysis request form (refer to Submitting evidence) to:

National Anti-Counterfeiting Bureau National Police Services Building
73 Leikin Drive
Ottawa ON K1A 0R2

Hours:
Monday to Friday, 8 am to 4 pm Eastern time
✆: 613-993-0664
✉: nacb@rcmp-grc.gc.ca

Note: Pre-authorization is **not** required for National Anti-Counterfeiting Bureau exhibits.

About this guide

This guide assists police investigators with the collection, preservation, and shipping of physical evidence to the RCMP's National Forensic Laboratory Services, which operates as a single public laboratory system with three sites located across Canada.

In addition to providing investigators with general information, this guide provides examples of some common exhibit types that are submitted to the different forensic service areas at the National Forensic Laboratory Services - biology (DNA), toxicology, trace evidence, counterfeit, and firearms. There could be other types of evidence not identified in this guide.

Basic guidelines and techniques

Collection

Local forensic identification service units may be called upon to assist with the collection of evidence. They have the proper tools and their members have undergone specialized training to ensure evidence is collected properly and safely. Table 1 provides some general guides, tips and best practices that can be used by investigators should forensic identification members not be available to assist.

Important notice

Always use gloves and a mask.

Table 1: Common tools and supplies for collecting evidence

Tool	Generally used for	Additional information
• **Disposable scalpels**	• cutting stains from larger exhibits scraping paint samples from vehicles (for example, hit-and-run incidents)	• if disposable tools are not available, rinse non-disposable tools between each use with 3% hydrogen peroxide followed by 70% isopropyl alcohol
• **Disposable tweezers and forceps**	• collecting small items (hair, building product particles, cigarette butts)	• **do not** use metal tools on ammunition components
• **Disposable lancet**	• collecting known DNA samples from individuals onto collection cards	• found in the DNA warrant or consent collection kits commercially available or from medical practitioner
• **Sterile swabs**	• collecting biological samples (for example, blood, saliva, skin cells) • soaking up liquid such as gasoline at an arson scene • swabbing suspected pepper spray canisters/stains	• it is preferable to use sterile, cotton swabs that are individually wrapped within a re-sealable paper or plastic sleeve • when collecting non-biological evidence, a best practice is to also submit an unused "control" swab (preferably from the same lot)
• **Sexual assault evidence kits**	• sexual assault evidence kits are used to assist with the collection of evidence associated with sexual assaults - evidence is collected by trained health care practitioners	• police can submit requests for forensic analysis regardless of whether it is part of a sexual assault evidence kit • police can submit requests for forensic analysis regardless of whether it is part of a sexual assault evidence kit

Tool	Generally used for	Additional information
• **Sexual assault evidence kit**		• sexual assault evidence kits are generally sealed by the health care practitioner when handed over to police ensure the health care practitioner that is collecting the evidence provides you with: 1. the date and time of blood or urine collection because you will need this for the Toxicology Services Analysis Request Check Sheet 2. a list of all the samples or exhibits in the sexual assault evidence kit because you will need to list all items on the Request for Forensic Laboratory Analysis form (C-414) when submitting for analysis (alternatively, you may break the seal in order to itemize the available exhibits) • for biology submission, form 2 Sexual Assault History and form 4 Forensic Evidence Record from the sexual assault evidence kit should be submitted. If not available, the RCMP National Forensic Laboratory Services Biology Sexual Assault Check Sheet (G10) should be completed instead • RCMP agencies can obtain RCMP's sexual assault evidence kits through the RCMP Stores • other agencies can purchase RCMP's sexual assault evidence kits from Systems Plus • agencies can also decide to use other commercial sexual assault evidence kit if they wish to
• **Forensic blood collection kit**	• used for toxicological analysis of blood (for example, cases of impaired driving)	• contains two grey-stoppered vacuum tubes with a white powder that acts as preservative and anti-coagulant • the RCMP has a kit and it is also available commercially

Tool	Generally used for	Additional information

• **DNA warrant or consent collection kit**	• used for collecting known DNA samples for comparison purposes
	• there are three DNA warrant or consent collection kits:
	  • blood sample
	  • buccal sample
	  • hair sample
		• DNA warrant or consent collection kits **cannot** be used for submission of samples to the National DNA Data Bank of Canada
		• blood samples are preferred for biology (DNA) analysis, followed by buccal (mouth swab) and lastly, hair
		• the DNA warrant or consent collection kits are available to all police agencies, however, other versions are available by alternate service providers

• **Convicted offender National DNA Data Bank sample collection kit (labelled "National DNA Data Bank" - see Figure 2)**	• used to collect DNA samples from convicted offenders	• specifically designed for the collection of DNA samples from convicted offenders • only kits accepted by the National DNA Data Bank of Canada of Canada • to obtain these kits, contact the National DNA Data Bank of Canada at nddb-bndg@rcmp-grc.gc.ca
• **Leak proof urine collection jar**	• used for toxicological analysis of urine (for example, cases of impaired driving)	• commercially available or from medical practitioner
• **Gunshot residue kit**	• collecting gunshot residue samples from persons suspected of recently discharging a firearm	• contains instructions, a collection form, and two boxes each containing a pair of disposable gloves, a label to re-seal the box after use, and two sample vials (also known as stubs) • obtain samples as soon as possible after the shooting • **do not** collect gunshot residue samples if the exhibit has been authorized for gunshot residue testing at the National Forensic Laboratory Services complete the gunshot residue kit form at the time of sampling include the gunshot residue kit collection form with your submission request by either sending the original along with the gunshot residue kit or sending an electronic copy by email with your Request for Analysis form (C-414) • see the National Forensic Laboratory Services Information Centre: Gunshot residue kits

Tool	Generally used for	Additional information
• **FTA collection card or Whatman 31ET filter paper**	• collecting blood or buccal (mouth swab) samples from known individuals	• the FTA Collection Card is found in the DNA warrant or consent collection kit • Whatman filter papers are commercially available
• **Hemastix test strips**	• to screen for the presence of blood	• indicates if blood may be present, either human or animal • the strip **must** not come into direct contact with the material that is being collected • advise the Forensic Assessment Centre if the Hemastix strip came in direct contact with an exhibit, stained surface or swab (so that the Forensic Assessment Centre directs the exhibit to the appropriate area for DNA analysis)

Handling exhibits

Personal safety

Attending crime scenes and handling exhibits can be dangerous. Minimize exposure to infectious disease, hazardous drugs, and reduce the risk of contaminating the evidence by always wearing gloves and a mask when handling exhibits, including when collecting, packaging or shipping evidence. When finished, remove gloves and wash hands thoroughly with soap and hot water. Eye protection and other personal protection is also advised.

Avoid contaminating exhibits

Keep exhibits that need to be examined completely separate from each other, from different scenes, and from comparison samples. Wear gloves at all times, changing them frequently (for example, between exhibits and different areas of a crime scene). Avoid touching your face or any other area of your body while the gloves are on. Avoid excessive handling of exhibits. Avoid talking while directly handling exhibits or wear a face covering if talking is required. Use a clean tool for each exhibit being processed. Do not use worn disposable gloves to collect an exhibit or an exhibit packaging. Use disposable tools such as scalpels whenever possible. Alternatively, clean all scissors and forceps thoroughly with an appropriate decontamination agent (such as 3% hydrogen peroxide followed by 70% isopropyl alcohol) between uses. Always package exhibits dry and separately in clean bags or containers that will not leak, break or open. If accidental contamination is suspected, please inform the Forensic Assessment Centre at the time of your submission.

Fingerprinting

Forensic Assessment Centre Submission

Fingerprinting is not a service provided by the National Forensic Laboratory Services and is the responsibility of the investigator and agency. Your local forensic identification unit may provide this service or assist you in determining if the surface of the item is suitable for fingerprinting. Also, when conducting fingerprinting, avoid excessive handling of the exhibit, even while wearing gloves. Please note that if the exhibit requires both fingerprinting and other forensic services at the National Forensic Laboratory Services, there is a recommended order and workflow. For example, fingerprinting and swabbing for DNA analysis should be done prior to submitting firearm-related exhibits for firearm testing and examination. If Amido black or Leucocrystal Violet has been used directly on the exhibit for fingerprinting purposes, please advise the Forensic Assessment Centre, as this will impact blood examination. Contact the Forensic Assessment Centre for further guidance.

National Anti-Counterfeiting Bureau Submission

Suspect counterfeiting exhibits should be submitted to the National Anti-Counterfeiting Bureau prior to fingerprinting. Some development chemicals and techniques may have an impact on the forensic examination by damaging or destroying the evidence. If the National Anti-Counterfeiting Bureau is notified that special handling is required, the exhibit(s) will be protected for subsequent fingerprinting. Contact the National Anti-Counterfeiting Bureau for further guidance.

Large and small exhibits

For larger exhibits with visible staining that cannot be submitted to the National Forensic Laboratory Services (for example, bed mattress, large carpet), the stains of interest may be cut out when required. Using a sterile disposable scalpel, carefully cut out the area of interest ensuring to leave a sufficient border around the stain. When collecting truly small particles, such as hair or paint chips, it is best to fold them in a piece of paper and seal in an envelope or plastic bag.

Swabbing protocols for DNA

- **Do not** swab knives or other items used on a person as a weapon. Properly package and submit any items used to cause injury or bodily harm directly to the National Forensic Laboratory Services. If the object is too large, call the Forensic Assessment Centre for more information.
- **Do not** swab clothing items or fabric, chewing gum, or cigarette butts as the DNA is difficult to recover. Properly package these exhibits and submit to the National Forensic Laboratory Services.
- **Ok** to swab exhibits from all property crimes.

- **Ok** to swab exhibits from other offences with exhibits that cannot be easily submitted to the National Forensic Laboratory Services and are expected to have one source of DNA (one person).
- **Ok** to swab blood, saliva or skin cells that are believed to be left on an exhibit (with the exception of weapons used on a person, fabric, chewing gum, or cigarette butts).
- **Fingerprint** before swabbing since fingerprints may be wiped out during swabbing. Standard fingerprint technology does not interfere with analysis at the National Forensic Laboratory Services, however, overhandling the item may remove biological material.

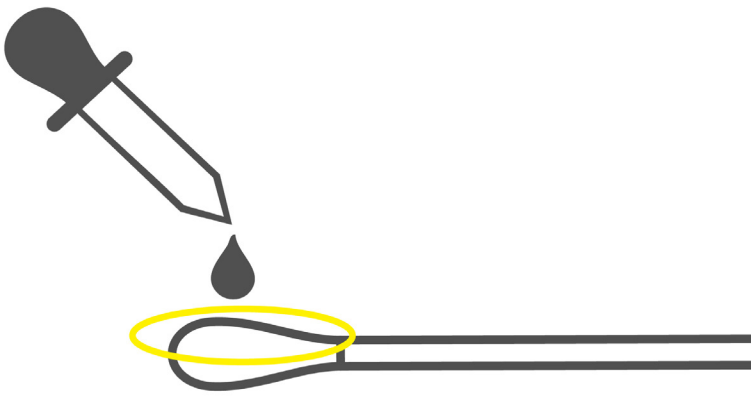
Investigators may be required to collect biological samples for DNA analysis. Such material can be wet (for example, a pool of blood), dry (for example dried blood stain on a carpet), visible (for example, white stain, possible saliva or semen) or not visible (for example, skin cells transferred when handling an object). In these situations, there are various collection methods available and different areas to swab that allow the highest potential to produce a DNA profile. Objects that have been handled by multiple individuals (for example, door knobs ortelephone receivers) are not recommended for forensic DNA analysis as they rarely yield useable information. See Figure 1: Common examples of some areas to swab that provide the highest potential of DNA recovery.

What is needed for swabbing

- Cotton sterile swabs (ensure they are not expired) should be individually wrapped in paper or plastic packaging. Some swabs have a plastic cap or tubes that allow the swab to dry within the package.
- Disposable gloves.
- Mask that covers your nose and mouth.
- Sterile or distilled water preferably in a dropper bottle. If unavailable, use bottled or tap water.
- **Do not** use swabs in agar gel for sample collection.

How to swab

- Wear mask and gloves, change gloves between exhibits.
- If swabbing at a location other than where the exhibit was seized, use a clean surface (for example, clean with bleach). Consider covering the work area with clean durable paper.
- Use one swab per area or stain (for example, do not use two swabs for the same area or stain).
- Swabbing a wet area (for example, pool of blood, foods or other wet items): collect the DNA using a dry cotton sterile swab.
- Swabbing a dry area (for example, dried blood stain on wall, tools, utensils):
  - ▻ With an eye dropper, dampen one side of a clean sterile swab with 1 or 2 drops of sterile or distilled water. **Do not** saturate. If distilled or sterile water is not available, use bottled or tap water.
  - ▻ Swab the area using the damp side first. Then, turn the swab over and swab the same area with the dry side.
- Apply reasonable pressure when swabbing so that enough material is collected (particularly if the surface is textured). The swab should remain intact.
- Avoid swabbing large areas with one swab.
- Dry and label appropriately.



Storing and drying swabs

- **Do not** store moist swabs in airtight containers such as plastic bags or closed tubes. Moisture can lead to the growth of mould and bacteria which may limit the ability to obtaina DNA profile.
- Some swabs come in self-drying containers so in this circumstance, it is acceptable to return the damp swab to its container. **Do not** put the container in a plastic bag.
- When in doubt, or for swabs that require drying prior to packaging:
  - ▻ Use a drying cabinet or area with good ventilation where the swabs will not be touched or disturbed (to prevent contamination).
  - ▻ Ensure they are kept with their packaging to prevent mix-ups.

What to swab (and not to swab)

Following are some common exhibits showing what areas to swab that provide the highest potential of DNA recovery. In cases where an item is used as a weapon, **do not** swab - send it "as is" to the National Forensic Laboratory Services. More detailed information about the collection process for each of these exhibits is provided in the next section on collection and packaging "by exhibit type".

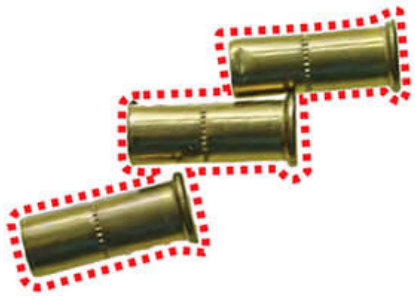
Figure 1: Common examples of some areas to swab that provide the highest potential of DNA recovery

Do not swab if item was used as a weapon and blood is thought to be present.

Where to swab firearms and ammunition.

For possession and charges related to unsafe storage, use one swab to swab the grip and slide/action.

Do not swab if the firearm was used as a weapon causing injury or death. Submit the firearm "as is" to the the National Forensic Laboratory Services.



Use one swab per group of cartridges, casings or bullets of the same caliber found in close proximity. Use one swab per group of cartridges, casings or bullets of the same caliber found in close proximity.

Where to swab tools. Swab the area that is touched most often.

Use one swab to swab the handle of a tool.

Use one swab to swab the inside glove and use another swab to swab outside the glove.

If used as a handled object (for example, pry tool), a knife should be swabbed in the area where it has been handled. For example, swab the handle and not the blade.

Where to swab tools. Swab the area that is touched most often.

Do not swab knives or other tools or items if they are used as a weapon on a person. For example, do not swab knives with blood on them.

Swab anything large (for example, floor wall, window glass, furniture). Use one swab per stain. In cases where blood or other biological material is found on a large smooth surface, such as a wooden floor or a window, swab that area for biological evidence.

Do not swab fabric, textiles or clothing.

Where to swab drinking containers, utensils and food - swab the area that may have saliva on it.

A plastic bottle should be swabbed along the drinking spout and around the inside rim of the cap.

An aluminum can should be swabbed around the easy-open tab, including the side area below the tab where the bottom lip would have made contact with the can.

Cartons such as those used for milk, should be swabbed around the spout, including the inside and outside of the spout.

A take-out paper cup, such as those used for coffee and tea, should be swabbed along the full length of the top rim, both inside and outside of the cup. The accompanying lid should be swabbed along the top of the sip-through opening.

When swabbing food items, freeze the item first, if possible. An apple should be swabbed along the area that has been bitten. A muffin should be swabbed along the area where a bite or bites have been taken.

An aluminum can should be swabbed around the easy-open tab, including the side area below the tab where the bottom lip would have made contact with the can.

Swab the bowl part of the spoon.
For forks, swab the prongs or tines.

Collecting comparison samples for DNA purposes

DNA analysis is based on a comparative process wherein a DNA profile that is obtained from an exhibit is compared to the DNA profile from a known person, from personal effects or discarded items. For all DNA samples submitted to the National Forensic Laboratory Services for comparison, clearly indicate on the C-414 form whether a sample is from consent, from a warrant, or a discarded item. In all cases, always wear disposable gloves, even when collecting comparison samples.

From known persons, in order of preference

1. Blood

- A blood sample can be collected using the blood sample warrant or consent collection kit, or a blood sample kit offered by another service provider.
- Use the FTA collection card in the collection kit or a Whatman 31ET filter paper to collect the blood. The FTA collection card or Whatman 31ET filter paper are preferred methods to collectblood samples, however, liquid blood is accepted in most cases.
- The collection of liquid blood must be performed by a healthcare practitioner who collects the blood in a lavender vacutainer tube, which contains preservatives and anti-coagulants.
- The collection of blood from a deceased person is done at autopsy.
- See section on "Exhibit Types" for the collection of a blood sample for biological analysis.

2. Buccal (mouth swab)

- A buccal sample can be collected using the buccal sample warrant or consent collection kit, or a buccal sample kit offered by another service provider.
- See section on "Exhibit Types" for the collection of a buccal or mouth swab sample for biological analysis.

3. Hair

- A hair sample can be collected using the hair sample warrant or consent collection kit, or a hair sample kit offered by another service provider.
- See section on "Exhibit Types" for the collection of hair samples for biological analysis.

If it is not possible to collect any of the above samples (for example, individual is under surveillance), consider collecting and submitting personal effects or discarded samples for comparison purposes.

From personal effects and discarded items:

Personal effects, such as a toothbrush, razor or hair brush, can be collected and submitted as comparison samples. Personal items, usually from missing persons, are considered "quasi" knowns because it is not guaranteed that the object pertains solely to the user/owner of the item. As it relates to the personal effects of a known suspect, it is not possible to submit them as comparison samples without consent or a court- ordered warrant.

Discarded items, such as gum, a cigarette butt or a drinking container, can be collected and submitted as comparison samples, however, the act of discarding must be viewed by police. For example, the cigarette butt has to be seen by police as being discarded by the suspect in order to be used as a comparison sample. Ensure that the discarded sample is packaged, sealed and labelled separately and that the origin of the sample is clearly marked.

From a collection card using a dry stain

- Use a FTA collection card or Whatman 31 ET filter paper and a disposable lancet to collect enough blood from a finger prick.
- Gently squeeze the finger, causing the blood to drop onto the card, approximately the size of a quarter.
- Allow the blood stain to dry completely. **Do not** fan the card or applyartificial heat to speed up the drying process (allow to dry naturally).
- Package, seal and label each known sample separately.
- Ensure the origin of the sample is clearly marked.
- Collection cards are stored at room temperature before and after sample application.

Preservation and storage

The information below will assist in preventing the deterioration, unauthorized handling, loss, contamination and unnecessary alteration of exhibits during storage and prior to submitting exhibits to the the National Forensic Laboratory Services.

Drying and storing exhibits

Ensure exhibits for DNA analysis are completely dry especially when using plastic bags (some exceptions are noted below). If a drying cabinet is not available, allow wet or moist exhibits to dry naturally in a clean low-traffic area prior to packaging. Do not hand fan, use electric fans, hair dryers or other heat sources to speed up the drying process as air currents and excessive heat may cause some loss of evidential material. Fully dried exhibits can be stored at room temperature provided it is not excessively hot or humid. Refer to Tables 2 and 3 below, for the recommended storage of exhibits for short and long terms.

Considerations:

- **Do not** dry exhibits for arson or post-blast investigations (for example, fire debris, suspect clothing, bomb debris). Arson and post- blast exhibits should be packaged as soon as possible. See section on Trace Evidence Analysis below.
- If exhibits for biological (DNA) analysis cannot be dried completely, they should be stored in a frozen state whenever possible.
- Refrigeration can be used if freezing is not an option. Submit the samples to the National Forensic Laboratory Services as soon as possible.
- Note: some exceptions may apply, see below under "By Exhibit Types - Biological (DNA) analysis".
- Biological samples submitted for toxicological analysis should be refrigerated immediately and submitted as soon as possible to prevent the potential breakdown or loss of drugs (for example: cocaine). Avoid freezing samples as there is a higher risk of leakage and/or break age of containers.

Table 2: Short term storage conditions matrix for biology (DNA) analysis (Technical Working Group on Biological Evidence Preservation, April 2013)

Type of exhibit	Frozen	Refrigerated	Temperature controlled	Room temperature
• Liquid blood	Never	Best	Less than 24 hours	n/a
• Urine	Best	Less than 24 hours	n/a	n/a
• Dry biological stained item	n/a	n/a	Best	Acceptable
• Wet bloody items (if cannot be dried)	Best	Acceptable	Less than 24 hours	n/a
• Bones	Acceptable		Acceptable	Acceptable
• Hair	n/a	n/a	Best	Acceptable
• Swabs with biological material	n/a	Best (wet)	Best (dried)	n/a
• Vaginal smears	n/a	n/a	Best	n/a
• Feces	Best	n/a	n/a	n/a
• Buccal swabs	n/a	n/a	Best	Less than 24 hours

Table 3: Long term storage conditions matrix for biology (DNA) analysis (Technical Working Group on Biological Evidence Preservation, April 2013)

Type of exhibit	Frozen	Refrigerated	Temperature controlled	Room temperature
• Liquid blood	Never	Best	n/a	n/a
• Urine	Best	n/a	n/a	n/a
• Dry biological stained item	n/a	n/a	Best	n/a
• Bones	n/a	n/a	n/a	n/a
• Hair	n/a	n/a	Best	Acceptable
• Swabs with biological material	n/a	n/a	Best (dried)	n/a
• Vaginal smears	n/a	n/a	Best	n/a
• Feces	Best	n/a	n/a	n/a
• Buccal swabs	n/a	n/a	Best	Less than 24 hours
• DNA Extracts	Best (liquid)	Acceptable (liquid)	Acceptable (dried)	n/a

Table 4: Common containers

Type	Container style	Notes
Plastic	• tamper-proof evidence bags	• apply tamper-proof seal as directed • if any gaps are present after sealing, tape or heat-seals can be used • already packaged exhibits (for example, swab holders, exhibits in paper bags) can be put into tamper-proof evidence bags
	• plastic vials	• suitable for collecting biological samples • suitable for solid evidence such as building product materials, paint chips, ammunition fragments • ensure lids are put on tightly - consider using tape to seal the lid in place • not recommended for solvents (for example, gasoline) as it can dissolve the plastic • liquid samples (urine, melted snow) may leak depending on the lid type
	• vacutainer tubes (various types)	• trained individuals use various tubes to collect blood for hospital laboratory testing when collected for medical purposes, biological samples may be obtained by police by search warrant • stopper/cap colour and/or container label indicate the tube type and what additives they contain • if forensic blood collection kits or sexual assault evidence kits are unavailable, you may use to collect biological samples for toxicology: • for blood, use the largest available grey or lavender tubes • for urine, use the available urine collection jars or grey tubes • **do not** use citrate tubes • (light blue) or tubes with liquid additives
Nylon	• tamper-proof special evidence bags for packaging fire debris or post- blast explosive debris	• 100% nylon • air tight (must be properly sealed) • difficult to puncture commercially available

Type	Container style	Notes
Glass	• lavender vacutainer tubes	• healthcare practitioners, pathologists, coroners and other qualified medical professionals use these tubes to collect blood for DNA (please note dry stain collection is preferred to liquid blood sample) • contains an anti-coagulant glass can break during shipping or upon freezing
	• grey-stoppered vacutainer tubes (10 mL)	• tube type contained in the forensic blood collection kit and the sexual assault evidence kit used for collecting samples that require toxicological analysis (alcohol and drugs) • contains a special preservative and anti-coagulant • glass can break during shipping or upon freezing
	• vacutainer tubes (other)	• healthcare practitioners, coroners and medical examiners use various tubes to collect biological samples • when collected for medical purposes, biological samples may be obtained by police by search warrant • stopper/cap colour and/or container label indicate the tube type and what additives they contain • glass can break during shipping or upon freezing
	• glass containers with chemical resistant cap closures (for example, canning jars)	• rigid and puncture resistant leak proof • ensure proper storage of empty canning jars • store them with their lids on and tightly closed • glass can break during shipping
	• glass vials with a chemical resistant screw-cap lid (Teflon lined inside lid)	• preserves liquid (acids, bases, solvents and fuels) • good for packaging solvents and caustic exhibits • have teflon-lined screw cap closures • air tight • glass can break during shipping or upon freezing

Table 4: Common containers

Type	Container style	Notes
Metal	• metal mailing tubes and ointment tins	• ointment tins are suitable for hair or other types of non- biological trace evidence • resistant to punctures or breakage during shipment not suitable for material from arsons • **not** suitable for material from arsons
	• paint cans (new unused paint cans can be found at hardware stores)	• lined cans must be used for arson-related exhibits • rust-resistant and can prevent leakage of volatile compounds of interest during an arson or post-blast bombing investigation
Paper	• paper bag	• good option for shoes, which may be difficult to fully dry allows for moisture to breathe from the exhibit, reducing the chance of mould forming difficult to seal properly suitable for packaging clothing for DNA • not suitable for clothing from • arson suspects or fire debris (both must be packaged in an airtight container)
	• cardboard box	• good packaging to place multiple sealed exhibits • helps ensure safe shipment and receipt of sharp exhibits, such as knives • use zip-ties to affix the sharp object inside the box for more effective contamination prevention • **not** suitable for fire debris or • post-blast explosive exhibits

Special transport containers are required for flammable liquids or live explosives - see Dangerous Goods.

Packaging and shipping

Proper packaging and delivery of exhibits to the National Forensic Laboratory Services is critical. Improperly packaged exhibits can be a health hazard, may cause the exhibit to become contaminated or could even destroy the evidence. Improperly packaged exhibits might not be suitable for analysis and will be sent back to you by the National Forensic Laboratory Services without further processing. Before submitting the exhibits, discuss packaging requirements with your local forensic identification unit and/or the Forensic Assessment Centre.

Items infested with pests (for example, bed bugs)

When it is known or suspected that approved exhibits are infested with pests such as bed bugs, you must advise the Forensic Assessment Centre prior to the items arriving at the National Forensic Laboratory Services.

- Indicate the measures you have taken to prevent further spread of the pests prior to shipment.
- *Exhibits infested with bed bugs should be placed in a freezer at -17.8 degrees Celsius (0 degrees Fahrenheit) for a minimum of 3.5 days, or 48 hours if temperatures average below -20 degrees Celsius.* [1]
- Prior to placing an exhibit in a freezer, proper bagging is required in order to protect it against changes in condensation or damage caused by moisture. Typically, standing upright household freezers are set to -17.8 degrees Celsius (0 degrees Fahrenheit) or lower for proper food storage however older freezers may not be capable of maintaining lower temperatures.

Sharp objects

Knives that have been used to cause bodily harm or injury should be placed and secured in a cardboard box.

Objects such as knives, syringes or glass must be packaged properly to ensure the object/exhibit doesn't puncture through packaging. For glass and other breakable items, ensure there is plenty of protective material used when packaging. Knives should be packaged in a knife box, or protected, secured and tied down in a box, and sealed in a plastic bag.

Items contaminated with potent synthetic opioids (for example, fentanyl)

When it is known or suspected that approved exhibits are contaminated with potent synthetic opioids, such as fentanyl, please ensure proper decontamination has been done prior to shipment and advise the Forensic Assessment Centre prior to the items arriving at the National Forensic Laboratory Services.

Contaminated suspect counterfeit exhibit(s)

When submitting to the National Anti-Counterfeiting Bureau, please label any exhibit packaging that contains known or suspected contaminated exhibit(s), both visibly and appropriately. This includes any strong odours, dampness, powders, drugs, toxic substances or other potential health hazards. Please ensure that proper decontamination measures have been performed prior to shipment and that the decontamination process is recorded on the attached forensic request (form C-414 or 3774, as appropriate).

Dangerous goods

Follow Transport Canada's Transportation of Dangerous Goods Regulations: improper transportation of dangerous goods is an offence. For more information, contact the Forensic Assessment Centre prior to shipping exhibits.

Ammunition

- Firearms and unfired ammunition must be shipped separately.
- For shipping of ammunition in amounts of less than 25 kg, follow the Transportation of Dangerous Goods Regulations. For this weight category, the shipping package must have a "1.4S"

Transportation of Dangerous Goods label attached to it and the shipping company/courier must be notified in writing (for example, notation on the way bill) that the package contains a substance that is classified as "1.4S" for Transportation of Dangerous Goods purposes.

- Ammunition must be packed in a strong container that is securely closed to prevent opening during transit. Cartridges must be properly cushioned and protected from accidental discharge.

Explosives (including gunpowder)

Contact the Forensic Assessment Centre to obtain an Explosive Transport Container. It is the only approved shipping container for non-initiated explosive samples. There are instructions provided with the explosive transport containers, including Teflon vials.

Firearms

- Ensure the firearm is unloaded and safe for handling before shipping.
- A visible securing device should be used through the action (for example, zap-strap, trigger lock). Depending on the type of firearm, additional legal requirements must be met. For more information see the Storage, Display and Transportation of Firearms and Other Weapons by Business Regulations.
- **Do not** place labels or tags over identifying marks or over areas that affect the operation of the firearm component. You can mark the container or affix a tag to the item, as required.
- Firearms must be registered with a firearm identification number to the investigating agency prior to shipping. A Public Agency Identification Number must be obtained and can be found on the RCMP public website, under the Canadian Firearms Program.
- Firearms with broken stocks must be packaged properly to ensure the object/exhibit doesn't puncture through packaging. Ensure there is plenty of protective material used when packaging.
- The container should not bear any markings on the exterior to indicate that it contains a firearm.
- Firearms and unfired ammunition must be shipped separately.

Ignitable liquids (flammable liquids)

- An ignitable liquid transport container is recommended to safely transport ignitable liquids. These containers are equipped with an inner protective metal can and lid, absorbent material, exhibit bags and sample vials along with instructions.
- Larger police agencies have their own ignitable liquid transport containers. Other agencies should contact the Forensic Assessment Centre to request an ignitable liquid transport container and provide the number of samples of suspected ignitable liquids you wish to submit for analysis.
- For more information, follow Transport Canada's Transportation of Dangerous Goods Regulations: improper transportation is an offence.

Infectious substances

- An infectious substance is a material that is known to contain a micro-organism or infectious particle that can cause disease in humans or animals. The infectious substance might be contained in blood, tissue, organs, body fluids, vaccines or cultures.
- When shipping infectious substances, follow Transport Canada's Transportation of Dangerous Goods Regulations. In particular, refer to Shipping Infectious Substances.

Toxicological exhibits

- Label the exhibit container in a way that allows it to be uniquely identified (for example, name of source, date, investigator information).
- Package according to Transportation of Dangerous Goods Regulations.
- Place the exhibit container into a sealable plastic bag with absorbent packing material. Place this

bag into another container strong enough to withstand transportation (for example, a box).

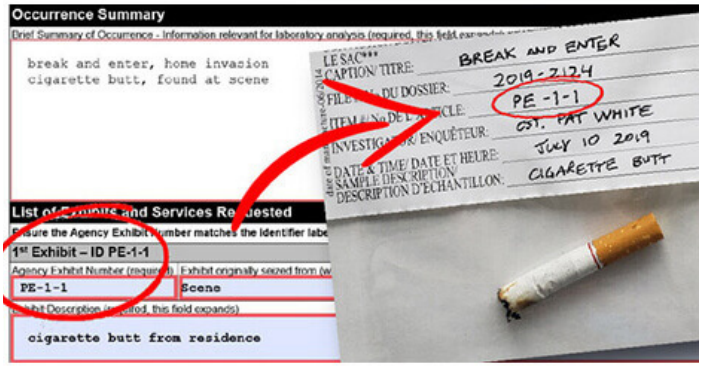
- Ensure sufficient packing material is present to impede the movement of the exhibit container without/within the outer container.
- Biological samples should be kept as cold as possible during transit; use insulated containers and non-rigid ice packs to achieve this.

Proper closure

Inspect each layer of packaging to ensure they are properly closed and that at least one of the layers for each exhibit is sealed; this will prevent containers containing liquid samples from breaking and the sample from leaking. Following are some examples of what constitutes a "sealed package":

- evidence bag,
- heat-sealed plastic bags,
- vials or jars, sealed with tape or
- plastic or paper bags folded and sealed with sufficient tape.

Proper labelling



National Forensic Laboratory Services should have the same exhibit number as the one identified on Form C-414, specifically the part of the form that list exhibits and services requested.

Delays can be caused due to the improper identification/ labelling of exhibits. To ensure your submission is processed promptly, please ensure that the exhibit identifier listed on form C-414 (Request for Forensic Laboratory Analysis) matches exactly to the exhibit identifier used on the actual exhibit. These identifiers should also match exactly to information found on each layer of packaging.

Guidelines - By exhibit type

Biological (DNA) analysis

Adhesive tape (DNA)

Fingerprinting on any adhesive tape-related exhibits must be done prior to submitting for DNA analysis. Contact your local forensic identification unit for fingerprinting services. Advise the person who is fingerprinting that DNA analysis will also be done and advise the National Forensic Laboratory Services that the exhibit was first sent for fingerprinting.

- **Do not** swab - submit "as is".
- Submit the tape for DNA analysis without removing it from the taped object, if possible.
- If removal from taped object is necessary, handle ends of tape as little as possible to allow for possible DNA sampling. Place adhesive-side down onto a new document protector.
- If cutting the tape is necessary to remove it from the object/person, mark the **cut ends** with permanent marker.
- Do not separate or straighten pieces.
- Package in tamper-proof evidence bags or rigid plastic or metal containers.
- Do not package in paper or cardboard containers.

Airbag (DNA)

When swabbing an airbag, focus only on the centre area to about two thirds of the distance to the outside.
When swabbing, divide the airbag into halves and swab each half separately.

- For cases involving injury of an individual, other than the driver, or in cases of death:
  - ▻ **do not** swab. The entire airbag should be packaged and submitted to the National Forensic Laboratory Services "as is" (without swabbing).
- For crimes against property (for example, stolen vehicles) or cases of impaired driving:
  - ▻ If blood is visible, swab the blood stain only.
  - ▻ If no blood is visible, divide the airbag into halves and swab each half separately (one swab per half). Swab from the centre outwards, to about 2/3 of the distance to the outside.

Bite marks (DNA)

- When attempting to recover saliva or biological traces from a bite mark, use one swab over the bite mark. See swabbing protocols for dry area.
- Only one swab is needed.

Blood (DNA)

A. Blood collected by healthcare practitioner

- Blood from a deceased person is collected at autopsy by the pathologist/medical examiner or designated assistant. Consider asking for a buccal (from mouth) swab or pulled hair sample as backup. Deep muscle tissue, bone and/or teeth can also be considered.
- Blood from a suspect or victim/complainant is collected by a healthcare practitioner (for example, at hospital).
- Blood samples should be refrigerated and submitted to the National Forensic Laboratory Services as soon as possible.
- Ensure all vials are properly sealed and labeled.
- **Note:** A dry stain is preferred: request that the healthcare practitioner create a dry stain using a FTA collection card or Whatman 31ET filter paper.

B. Blood collected by investigator

- All necessary information and instructions for blood, buccal or hair samples are contained in the DNA warrant/consent collection kits. If a sample is being collected from a convicted offender for submission to the National DNA Data Bank, use the Convicted Offender National DNA Data Bank Sample Collection Kit.
- **From a person by consent**
  - ▻ Use a FTA card or Whatman 31ET filter paper and a disposable lancet to collect the blood.
  - ▻ Allow the blood stain to dry completely.
  - ▻ Package, seal and label each known sample separately.
  - ▻ Ensure the origin of the sample is clearly marked.
- **From a person by warrant**
  - ▻ DNA warrant legislation (sections 487.04 and 487.05 of the Criminal Code (form 5.02) allows for samples to be taken from suspects or accused individuals without their consent.
  - ▻ National Forensic Laboratory Services recommends using the blood sample warrant/consent collection kit, which has been prepared specifically for DNA warrant or consent sample collection.
- **From a convicted offender**
  - ▻ Please refer to the National DNA Data Bank of Canada for more information.
- **From items at the crime scene**
  - ▻ Direct contact between Hemastix test strips and a biological stain may negatively affect certain DNA analysis procedures. Advise the Forensic Assessment Centre if the Hemastix strip has come in direct contact with an exhibit, stained surface or
  - ▻ swab so that the exhibit is directed to the appropriate areas for DNA analysis.
  - ▻ Contact of the exhibit with Amido Black or Leucocrystal Violet can interfere with the confirmatory test for blood used by the National Forensic Laboratory Services. Advise the Forensic Assessment Centre if Amido Black or Leucocrystal Violet testing was done on the exhibit and the National Forensic Laboratory Services will not conduct testing of blood. If investigator requires blood testing on an exhibit, the stain should not be treated with Amido Black or Leucocrystal Violet.
  - ▻ Blood stains on fabric or absorbent material (for example, carpet, clothing):
    - If possible, submit the entire item. Consult with the Forensic Assessment Centre for large items.
    - Allow to completely dry naturally.
    - Package, seal and label each item separately.
- **Blood stains on other surfaces (for example, walls):**
  - ▻ If the item is large, cut out a portion, dry naturally, seal, label and submit. A swab can also be taken (see swabbing protocols). When swabbing suspected bloodstains, try to concentrate the stain onto the swab tip.
  - ▻ Avoid swabbing excess background material (dirt, debris, paint) from the material being swabbed. Use one swab per stain.
  - ▻ Avoid scraping dry blood into envelopes. Dry blood may become airborne.
- **Liquid blood stains:**
  - ▻ Use a dry swab. **Do not** over saturate. See swabbing protocols for wet area

Bone and teeth (DNA)

- Bone and teeth samples need to be pulverized prior to submission.
- Contact the Forensic Assessment Centre for more information.

Buccal / mouth (DNA)

- After blood, the next preferred comparison sample is a buccal (mouth swab). See section on comparison samples from known sources.
- When possible, known samples should be collected using the Buccal Sample Warrant/ consent collection kit, which has been prepared specifically for DNA warrant or consent sample collection.
- Swabbing the mouth allows for the collection of epithelial cells from the lining of the mouth
- Have the individual rinse their mouth with water twice before collecting the sample in order to remove excess saliva.
- Use one dry sterile swab to thoroughly rub the inside of the cheeks, tongue and gums using an up and down motion.
- Allow time for the swab to dry completely.
- Package, seal and label each known sample separately.
- Ensure the origin of the sample is clearly marked.

Cartridges / casings / bullets (DNA)

Swab multiple casings from the same group with a single swab

- Spent cartridges should be swabbed together when thought to have originated from the same firearm (that is, those of the same caliber found in close proximity).

Cigarette butts (DNA)

Do not swab cigarette butts

- Use clean forceps or wear clean gloves to collect the cigarette butt, if possible.
- If the cigarette butt is wet or damp, allow to dry completely.
- **Do not** swab. Submit "as is".
- Package, seal and label each item separately.

Clothing / fabric (DNA)

Do not swab fabric

- Do not swab as the DNA is difficult to recover. Submit the item "as is" to the National Forensic Laboratory Services.
- Allow time for stains to dry completely. Applying artificial heat (for example, blow dryer) may damage the biological sample. Not allowing to dry fully or properly can cause bacteria to form, leading to the degradation of the biological sample.
- Handle each article of clothing separately.
- If the item is large (carpet, bed sheet), consult with the Forensic Assessment Centre.

- Package, seal and label each article of clothing separately in paper bags.

Condoms (DNA)

- If intact, place a knot at open end to seal contents, seal and label properly in a plastic container and submit to the laboratory as soon as possible.
- If broken or ripped, allow the condom to dry as much as possible and package, seal and label separately in a plastic container before submitting to the laboratory.
- Keep the intact or broken condom frozen, if possible.

Where to swab drinking containers, utensils and food - swab the area that may have saliva on it.

Drinking containers / straws (DNA)

- Skin cells can be located on drinking containers such as coffee cups, pop cans, milk/juice cartons, coffee lids and/or straws.
- Swab the area where skin cells are thought to be present as this provides the highest potential of DNA recovery (see diagram). Use one swab. See swabbing protocols.
- If the straw is paper, please refer to the procedure for cigarette butts.

Envelopes and stamps (DNA)

- Whenever possible, submit the entire envelope to the National Forensic Laboratory Services.
- Ensure that the envelope is dry before packaging.
- In cases where the envelope requires both fingerprinting and forensic DNA analysis, have the exhibit fingerprinted prior to its submission to the National Forensic Laboratory Services. Advise the Forensic Assessment Centre.
- If handwriting analysis will be taking place (via private examiner), this may need to be done prior to fingerprinting. Ensure the examiner takes all necessary contamination prevention precautions.
- If the exhibit is required for other document examination, please specify this on form C-414.

Fetal material (DNA)

- When the abortion of the fetus has just occurred, the products of conception should be sent to the National Forensic Laboratory Services as soon as possible.
- Refrigerate and ship immediately.
- Do not freeze products of conception unless the sample was already frozen at the time of the collection. If already frozen, it should be kept frozen (avoid freeze-thaw-freeze).
- Package on ice and send to the National Forensic Laboratory Services as soon as possible using expedited transport.
- It is preferable not to place in formalin/ formaldehyde or any other preservative.
- If the fetal material has been preserved, please advise the Forensic Assessment Centre upon submission.

Fingernail (DNA)

- Material from under the fingernails should be collected when the victim / complainant indicates that they scratched the assailant. Samples are collected from each hand separately.
- Swabbing fingernails is preferred, however, clippings are acceptable depending on the case.

A. Swabbing fingernails

- Place two separate sheets of paper on a working surface where the swabbing will take place.
- Use one swab per hand.
- Moisten one side of a sterile swab with saline water (if not available, use distilled water or tap water).
- Place the victim/complainant's **right hand** over one of the pieces of paper and swab the area under each of the fingernails using the damp side of the swab. Turn the swab and go over the same areas with the dry side.
- Allow the swab to dry.
- Place the swab in its packaging, ensuring that it is properly closed and labelled right hand.
- Carefully fold the piece of paper to enclose any debris.
- Place the swab and folded paper in an envelope or container marked right hand.
- Repeat for **left hand**.

B. Clipping fingernails

- Place two separate sheets of paper on a working surface where the clipping will take place.
- Place the victim/complainant's **right hand** over one of the pieces of paper and clip the nails as close as possible to the fingertip using clean scissors or clippers.
- Fold the piece of paper with the clippings and place in a clean container.
- Label the container right hand.
- Repeat for **left hand.**

Firearms (DNA)

- **Do not** swab the firearm if its discharge caused injury or death -properly package and submit the firearm to the National Forensic Laboratory Services for swabbing.

Do not swab a firearm if its discharge caused injury or death.

Use one swab per firearm. One swab can be used on different areas of the same firearm.

- If the firearm is a handled object, it is acceptable to swab. The general rule is to use **one swab** on different areas of the same firearm.
  - ▻ for possession and charges related to unsafe storage, use one swab to swab the grip and slide/action;
  - ▻ for possession and charges related to unsafe storage involving more than one firearm, the National Forensic Laboratory Services will accept up to 4 swabs per investigation (one per firearm).
- All cartridges found from within the magazine may be swabbed using one swab.
- See Packaging and shipping of dangerous goods.

Food (DNA)

- Food may be considered for biological (DNA) analysis.
- When swabbing food items, freeze the item first, if possible.
- Swab the area where the food item was

An apple should be swabbed along the area that has been bitten. A muffin should be swabbed along the area where a bite or bites have been taken.

bitten (see swabbing protocols).

- When in doubt, contact the Forensic Assessment Centre.

Fork / spoon (DNA)

Swab the bowl part of the spoon. For forks, swab the prongs or tines.

- Skin cells can be located on items such as utensils used for food.
- Swab the area where skin cells are thought to be present as this provides the highest potential of DNA recovery (see diagram). Use one swab. See swabbing protocols.

Hair (DNA)

A. From known source

- After blood and buccal (mouth swab), hair is the next preferred comparison sample. See section on comparison samples from known sources.
- When possible, known samples should be collected using the Hair Sample Warrant/ consent collection kit, which has been prepared specifically for DNA warrant or consent sample collection.
- Collect approximately 6-8 pulled scalp hairs with root sheaths. **Do not** cut hair.
- Place the hair in a folded sheet of paper and place in another appropriate container (envelope or plastic bag).
- Package, seal and label each known sample separately.
- Ensure the origin of the sample is clearly marked.

B. From unknown source

- In the event a hair or hairs are found at a crime scene, there may be an opportunity to submit these as exhibits for DNA analysis.
- Place the hair in a folded sheet of paper and place in another appropriate container (envelope or plastic bag).
- Package, seal and label each sample separately.
- Ensure the origin of the sample is clearly marked.

Human remains (DNA)

- If decomposition is minimal, routine comparison samples should be taken at autopsy. Consult with the coroner.
- If decomposition is extensive, have the following samples taken at autopsy:
  - ▻ a sample of deep muscle tissue (about an inch cube) - **do not** put tissue in formalin or any preservative
  - ▻ a sample of bone including the marrow (about 3 to 4 inches long), preferably from a long bone or from a rib
  - ▻ a few teeth, preferably molars
- Freeze samples as soon as possible and keep

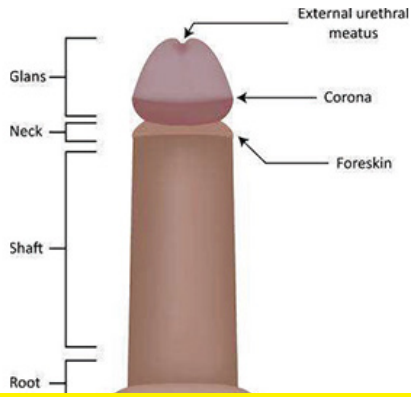
Knife (DNA)

Do not swab if used on a person as a weapon causing injury or death. Package knife "as is" and submit to the the National Forensic Laboratory Services.

Swab if the knife has been handled, for example, used as a pry tool.

- Do not swab the knife if it has been used on a person as a weapon - properly package and submit the knife to the National Forensic Laboratory Services for swabbing. See Packaging and shipping of sharp objects.
- If the knife is a handled object (for example, used as a pry tool), the handle should be swabbed. When swabbing the handle, swab both sides using one swab.

Penile swab (DNA) (refer to R v Saeed, 2016 SCC 24)



Anatomy of the penis.

- The collection of penile swabs is conducted when there is a report of vaginal, anal or oral inter course during a sexual assault. For best collection results, the swabbing of the penis should be conducted within 12 hours of the sexual offence but collection up to 24 hours after the sexual offence is still acceptable.
- For collection of penile swabs from suspects:
  - ▻ Moisten one half a swab with one to two drops of sterile water (see swabbing protocols for dry area). Make sure to pull down the foreskin, if any present. With the damp side of the swab, swab all sides of the penis shaft and glans and around/beneath the corona (rounded projecting border or flare that forms at the base of the glans). Turn the swab over and swab the moistened area with the dry side.
  - ▻ Repeat the process with a new swab to sample from the scrotum area.
  - ▻ Properly dry, package, seal and label each swab sample separately in a swab container.
  - ▻ Ensure the origin of the sample is clearly marked.

Semen (DNA)

A. Semen from a victim/complainant (DNA)

- The healthcare practitioner will use a sexual assault evidence kit or equivalent to collect the samples required from the victim or complainant.
- Sexual assault evidence kits are generally sealed when handed over to police. Ensure the health care practitioner that is collecting the evidence provides you with a list of all the samples/exhib its in the sexual assault evidence kit because you will need to list all items on the request form (C-414) when submitting for analysis.
- Alternatively, you may break the seal in order to itemize the available exhibits.

B. Semen from items at a crime scene (DNA)

- Semen stains can be found on the surface of objects or items (for example, bedding, carpet).

- When dealing with an object that can be seized (for example, clothing, bedding) and semen is thought to be present, **do not** swab. Submit to the National Forensic Laboratory Services "as is".
- When dealing with an object that cannot be seized (for example, wall, floor) and semen is thought to be present, swab the area and submit to the National Forensic Laboratory Services. **Do not** swab fabric surfaces. Cuttings from areas of interest can be taken from fabric surfaces.
- See swabbing protocols.

Skin cells (DNA)

- **Do not** swab fabric.
- **Do not** swab cigarette butts.
- **Do not** swab chewing gum.
- **Do not** swab if possible blood is present.

Some common types of items where skin cells may exist include jewelry, watches and cell phones.

- **Do not** swab fabric, cigarette butts, and chewing gum as the DNA is difficult to recover. Package and submit "as is" to the National Forensic Laboratory Services.
- **Do not** swab if there is possible blood present and submit "as is" to the National Forensic Laboratory Services.
- Some common types of items where skin cells may exist include break and enter tools, jewelry, and cell phones.
- Swab the item where it is handled most.
- Use one swab.

Do not swab tools or weapons that have been used on a person to cause injury or death.

Swab handled objects to determine if biological evidence exists. Use one moist swab per stain. Swab both sides of textured area as a single swab.

Tools/weapons(DNA)

- Do not swab a tool or weapon that has been used on a person to cause injury or death - properly package and submit the tool or weapon to the National Forensic Laboratory Services for swabbing.
- If the tool or weapon is a handled object (and not used on a person), the handle should be swabbed separately.
- Carefully package the ends of tools to prevent loss of foreign material.
- Use plastic bags or styrofoam cups over the ends to prevent further damage to the tool and to retain any foreign material.
- Send tools in a tightly-packed box to prevent movement.
- See Packaging and shipping of dangerous goods.

Counterfeit

- All equipment linked to counterfeit activities must be reported to the National Anti-Counterfeiting Bureau using the Clandestine Operations Seized Currency and Equipment Report (form 6643 or NACB A16). Contact the National Anti-Counterfeiting Bureau to obtain a copy of form 6643 or NACB A16 by sending an email to nacb@rcmp-grc.gc.ca.
- The National Anti-Counterfeiting Bureau will contact you once they receive form 6643 or NACB A16 and discuss which counterfeit equipment needs to be submitted to the laboratory and which counterfeit equipment can be destroyed locally.

Bank notes and negotiable instruments (counterfeit)

- Under Section 462 of the Criminal Code, the National Anti-Counterfeiting Bureau has been delegated authority to be the central repository and point of disposition of all counterfeit currency (bank notes and coins) recovered from circulation in Canada.
- All suspect counterfeit bank notes (Canadian, American and foreign) must be submitted to the National Anti-Counterfeiting Bureau for examination.
- All suspected negotiable instruments (for example, government cheques, money orders, stamps, traveler's cheques and bank drafts) must be submitted to the National Anti-Counterfeiting Bureau for examination.
- Before conducting a printing plant search, investigators are encouraged to contact the National Anti-Counterfeiting Bureau to discuss the case and establish a list of items to seize.
- All counterfeit exhibits are submitted directly to the National Anti-Counterfeiting Bureau (NACB).
- When the exhibits are no longer required for court and / or court proceedings have been concluded, all previously examined counterfeit exhibits must be sent to the NACB for destruction. Counterfeit bank notes must be submitted for destruction to the National Anti-Counterfeiting Bureau when they are no longer required for court or court proceedings have been concluded. Submit the exhibits, along with a completed copy of form NACB A14e (Request for Destruction of Previously Examined Counterfeit Exhibits).
- Contact the National Anti-Counterfeiting bureau by email at nacb@rcmp-grc.gc.ca to obtain a copy of this form.

$1 and $2 Canadian coins in circulation (counterfeit)

- All suspect counterfeit $1 and $2 Canadian circulation coins must be submitted to the National Anti-Counterfeiting Bureau for examination.
- The National Anti-Counterfeiting Bureau **does not** accept:
  - American coins Foreign coins
  - Numismatic coins
  - Bullions coins (for example, gold and silver)
  - Canadian circulation coins of a lesser value than $1
- All suspect counterfeit exhibits are submitted directly to the National Anti-Counterfeiting Bureau.

Payment cards (counterfeit)

- Submit all suspect counterfeit payment cards to the National Anti- Counterfeiting Bureau for examination.
- Investigators should consult with counterfeit examiners at the National Anti-Counterfeiting Bureau before sending seized equipment to the laboratory, including embossing machines, encoders and tipping machines.
- **Do not** activate, adjust or alter equipment.
- Place payment cards and related printing materials in separate document protectors or plastic or paper envelopes.

- All suspect counterfeit exhibits are submitted directly to the National Anti-Counterfeiting Bureau.

Travel and identification documents (counterfeit)

- Submit all suspect travel and identification documents to the National Anti-Counterfeiting Bureau for examination.
- Suspect travel and identification documents include government-issued identification such as passports, immigrations forms, citizenship cards, birth certificates, driver's licences, health cards and social insurance cards.
- All suspect counterfeit exhibits are submitted directly to the National Anti-Counterfeiting Bureau.

Computers and Information Technology equipment (counterfeit)

- All equipment linked to counterfeit activities must be reported to the National Anti-Counterfeiting Bureau using the Clandestine Operations Seized Currency and Equipment Report (form 6643 or NACB A16).
- Contact the National Anti-Counterfeiting Bureau to obtain a copy of form A16 by sending an email to nacb@rcmp-grc.gc.ca.
- Computers and equipment should go to your technological crime unit.
- Contact the National Anti-Counterfeiting Bureau for assistance prior to seizure to discuss what needs to be seized.
- **Do not** move, unplug or alter the equipment.
- **Do not** allow the suspect (or other user) access to the computer.
- Ask the user to provide you with usernames and passwords, but do not attempt to login.
- Contact your local technological crime unit for assistance.
- When seizing, collect all wires, cables and related items.
- Modern printers may store electronic data relevant to an investigation. To prevent the possible loss of evidence, contact your local technological crime unit for assistance.
- Check if the printer has a ribbon. Used ribbon can be submitted to determine if impressions of the questioned text can be found.
- If the printer has interchangeable type elements, collect them all.
- **Comparison Sample**: Obtain samples of correspondence from files which were produced by the same equipment on or about the date of the questioned document, if possible. Label and place samples in paper envelopes. Send these exhibits to the National Anti-Counterfeiting Bureau for analysis.
- Complete the Seized Currency and Equipment Report (form 6643 or NACB A16) and send to the National Anti-Counterfeiting Bureau.

Firearms and toolmark identification

Ammunition, cartridges, bullets (firearms/toolmark)

- If no blood is thought to be present on ammunition components, consider having a forensic identification specialist swab them. If blood is thought to be present, it is preferable to submit the relevant ammunition component to the National Forensic Laboratory Services for swabbing.
- Contact your local forensic identification unit to arrange for the fingerprinting of cartridge cases, cartridges and firearms prior to submitting to the National Forensic Laboratory Services.
- Unfired ammunition (firearms/toolmark)
  - ▻ Any cartridge found in the chamber of a firearm should be itemized/packaged as a separate exhibit.
  - ▻ Once removed from a magazine, unfired ammunition **must be** packaged "as is" and

itemized accordingly. **Do not** attempt to load back into the magazine.

- ▷ Unfired ammunition **must be** packaged/shipped separately from firearms.
- ▷ For shipping of ammunition, you must follow Transport Canada's Transportation of Dangerous Goods Regulations. Improper transportation of dangerous goods is an offence.

- Fired ammunition (firearms/toolmark)
  - ▷ Includes the submission of expended cartridge cases, expended shotshells, shot pellets, shotshell wads, fired bullets and bullet fragments.
  - ▷ All fired ammunition components must be itemized/packaged as individual exhibits, except for shot pellets which can be itemized together.
  - ▷ **Do not** use metal tools to remove bullets from bodies or objects (for example, walls).
  - ▷ Bullets, shot pellets and shotshell wads removed from bodies should be rinsed with water and dried before packaging.
  - ▷ It is not necessary to remove **all** the shot pellets from a body. A representative sample will be sufficient for examination at the National Forensic Laboratory Services.
  - ▷ For shipping, wrap in tissue or some type of padding to prevent excessive movement; please avoid cotton batting.
  - ▷ Indicate "biohazard" on form C-414, if there is biological material present on the item.
  - ▷ **Note:** Bullets or bullet fragments can often be located by X-rays.
  - ▷ It is recommended that X-rays be taken, as projectile fragments may remain in a body/medium even when both entrance and exit wounds have been identified. Most medical or veterinary facilities have X-ray equipment which can be used for locating projectiles in small objects. This would prevent the loss of forensically significant evidence and allow for the removal of small fragments with mini mum damage.
- Integrated Ballistics Identification System Acquisition and Correlation
  - ▷ Fired ammunition components submitted to the National Forensic Laboratory Services that meet the Canadian Integrated Ballistic Identification Network Acceptance Criteria (see National Forensic Laboratory Services Information Centre Canadian Integrated Ballistic Identification Network Acceptance Criteria) are eligible for entry onto the Integrated Ballistics Identification System and comparison through the Canadian Integrated Ballistic Identification Network.
  - ▷ Test fires may be harvested by submitting agencies and submitted to the National Forensic Laboratory Services. Test fires must be packaged in a Canadian Integrated Ballistic Identification Network Test Fire envelope or accompanied by a completed Canadian Integrated Ballistic Identification Network Test Fire Information Form (see National Forensic Laboratory Services Information Centre Forms).
  - ▷ General Guidelines for Harvesting Test Fires for Canadian Integrated Ballistic Identification Network by an External Agency (attached to the Canadian Integrated Ballistic Identification Network Test Fire Information Form) must be adhered to

Bone and cartilage (firearms/toolmark)

- Wounds on bone and cartilage may be examined to determine if the tool being submitted was used to inflict the damage.
- The medical examiner or pathologist will excise the bone or cartilage containing the wound.
  - ▷ To preserve toolmarks on cartilage and bone, tissue samples are submerged in a (0.9%) saline solution.

- Refrigerate or freeze and send to the National Forensic Laboratory Services as soon as possible.
- **Comparison sample:** collect associated items for comparison purposes, such as suspect tools.

Clothing (firearms/toolmark)

- Firearms analysis on articles of clothing can be submitted for impact damage assessment and range determination (downrange firearms damage).
- When clothing is submitted for range determination, it must be accompanied by photographs of the associated wounds and an autopsy report (if available at the time of submission).
- Avoid excessive handling of the clothing to ensure residue is not lost or transferred to other parts of the item.
- Submit only the outer layer of clothing that has possibly been penetrated by the projectile(s) or were in close proximity to the bullet path.
- Protect the area near the bullet hole and other areas suspected of bearing firearms discharge residue from contamination or contact with other parts of the clothing.
- Package each item of clothing separately to prevent a transfer of residue.
- Allow wet or moist clothing to dry naturally before packaging. Not allowing items to dry fully or properly can cause bacteria to form. **Do not** use a blow dryer.
- Use paper bags to package clothing to prevent mould.
- Indicate "biohazard" on the C-414 for the exhibit if there is biological material present on the item.

Firearms (firearms/toolmark)

- Fingerprinting or swabbing for DNA on any firearms-related exhibits must be done **prior to** submitting to the firearms section.
- The Integrated Ballistics Identification System database can cross- reference firearms with fired ammunition components. Suspect firearms that meet the Canadian Integrated Ballistic Identification Network Acceptance Criteria are eligible for entry onto the Integrated Ballistics Identification System and comparison through the Canadian Integrated Ballistic Identification Network. Authorization by the Forensic Assessment Centre is required prior to submission.
- Unload and affix proper identification tags to the trigger guard of the firearm.
- **Do not** use adhesive labels, especially if the firearm is to be fingerprinted. These can remove the fingerprints.
- **Do not** handle or manipulate the firearm in any way that would affect testing at the National Forensic Laboratory Services. This includes, but is not limited to:
  - ▻ test firing (for legal classification and functionality) disassembly
  - ▻ trigger pull
  - ▻ shock discharge
  - ▻ serial number restoration
- Contact the Forensic Assessment Centre if the firearm was recovered from water or if the exhibit is excessively soiled. Exposure to air will initiate the corrosion process so it is preferable to keep the firearm submerged or covered in the medium (for example, water, mud, soil) from which it was discovered and shipped to the National Forensic Laboratory Services in that state. If that is not possible, the firearm can be cleaned as follows:
  - ▻ Rinse with boiling water
  - ▻ Allow to dry naturally
  - ▻ Apply lubricant to metallic surfaces to protect against corrosion
  - ▻ **Do not** use pull-throughs, brushes or other cleaning devices to clean the barrel or other metallic parts of the firearm

- **Prior to shipping:**
  - Firearms must be registered with a firearm identification number to the investigating agency, and each requires a Public Agency Identification Number transfer to the applicable the National Forensic Laboratory Services site prior to submission.
  - Ensure the firearm is unloaded and safe for handling before shipping. A visible securing device should be used through the action (for example, zap-strap, trigger lock).
  - If a firearm and magazine(s) are seized together, it is preferred that these are packaged/itemized as a single exhibit, provided the magazine(s) is (are) unloaded.
  - If there is biological material present on the item, indicate "biohazard" on form C-414.
  - If there is possible fentanyl contamination to the firearm or any other exhibit, please ensure proper decontamination has been performed prior to submission.
  - Ensure that firearms are transported in accordance with all federal and provincial regulations and adhere to the shipping policies of the courier company that is being used.

Gunpowder / primer caps (firearms/toolmark)

- Keep gunpowder in its manufacturer's container, when possible.
- Avoid contact with flame, excessive moisture, etc.
- For shipping bulk gunpowder, primer caps or other dangerous goods, please refer to Transport Canada's Transportation of Dangerous Goods Regulations. Improper transportation of dangerous goods is an offence.
- An explosive transport container is the only approved shipping container for non-initiated explosive samples.
- For an explosive transport container or for more information about transporting dangerous goods or other items, please contact the Forensic Assessment Centre prior to shipping exhibits.

Obliterated serial number (firearms/toolmark)

- National Forensic Laboratory Services does not conduct serial number restoration if one has been previously attempted using chemical etching, heat recovery techniques or any other method that is considered destructive.
- If the item, requiring serial number restoration, is something other than a firearm, and is difficult to transport, contact the Forensic Assessment Centre to determine if a firearm analyst is available to attend the scene and conduct the restoration on site.

Physical matching (firearm/toolmark)

- Includes two or more items suspected to have been once part of a single component that contain fractured surfaces.
- **Do not** try to fit suspected fractured surfaces together.
- Keep fractured surfaces protected from damage.
- Carefully package the items to prevent loss of foreign material.
- Send the items in a tightly-packed box to prevent movement.

Tools (firearms/toolmark)

- Includes knives, bolt cutters, screwdrivers, pliers, saw, etc..
- **Do not** try to fit or place the tool in the toolmark. Keep tools isolated from the toolmarks that you suspect to be linked.
- Carefully package the ends of tools to prevent loss of foreign material.
- Use plastic bags or styrofoam cups taped over the ends to prevent further damage to the tool and to retain any foreign material.
- Send tools in a tightly-packed box to prevent movement.

- **Comparison sample:** Collect associated items for comparison purposes.

Toxicology

Blood (toxicology)

- Blood samples from a deceased will always be collected by a pathologist/medical examiner or designated assistant. Ensure the blood is obtained from an intact vessel (for example, femoral vein, cardiac blood). Pooled samples such as cavity fluid, pericardial fluid or chest blood should be avoided. Trauma to and/or decomposition of the body may require the submission of additional samples (for example, muscle, liver, spleen). If the deceased received medical attention before death, blood may have been collected for medical purposes (for example, antemortem samples). Ensure that any antemortem samples are seized and included in the submission to the National Forensic Laboratory Services.
- Blood samples from living individuals (that is, a suspect in impaired driving case, complainant in sexual assault case) will always be collected by a trained individual (for example, phlebotomist, nurse).
- Advise that the blood is being collected for toxicological analysis.
- Where possible, a Forensic Blood Collection Kit or sexual assault evidence kit, as applicable should be used. If unavailable, collect blood using two 10 mL (or largest size available) grey-stoppered vacuum tubes. If no grey stopper/cap tubes available, use the largest size lavender vacuum tubes. **Do not** use citrate (light-blue stopper/cap) or tubes containing a liquid additive.
- Grey-stoppered vacuum tubes contain anti-coagulants and preservatives. After the tube is sealed and labeled, invert the grey-stoppered vacuum tubes gently several times to mix contents.
- Samples taken at hospital (including serum/plasma) may be seized by warrant and submitted to the National Forensic Laboratory Services for testing.
- Blood samples should be refrigerated and submitted to the National Forensic Laboratory Services as soon as possible as some drugs can break down during storage.
- Do not freeze glass blood tubes, as these can break upon thawing.
- Ensure all vials are properly sealed and labeled.
- **Note on blood being submitted for drug-facilitated sexual assault:**
- When no urine sample is available:
- For alcohol only analysis, blood samples collected **more than 24 hours** after the incident **will not be accepted.**
- For drug analysis, blood samples collected **more than 72 hours** after the incident **will not be accepted.**
- When urine sample is available:
- Blood samples will be accepted for submission to the laboratory but may not be analyzed depending on the time of collection.
- Do not open sexual assault evidence kit/evidence bags to remove blood samples.

Food and beverages (toxicology)

- Food and beverage samples may be submitted for testing for alcohol, drugs or poisons.
- Collect in a leak-proof container, seal and label.
- Store refrigerated and submit to the National Forensic Llaboratory Services as soon as possible, as some drugs may break down during storage.
- Comparison sample: Submit a known comparison sample, where possible (for example, a sealed bottle of the same brand of wine).

Stomach contents (toxicology)

- Stomach contents are not typically accepted for analysis unless other more suitable samples (for example, blood, urine) are unavailable.
- A sample of stomach contents should be placed in a leak-proof container by the pathologist or coroner.
- Refrigerate the sample and submit to the National Forensic Laboratory Services as soon as possible as some drugs can break down during storage.

Syringes, pipes, powders, drugs, or drug residue (toxicology)

- Analysis to identify a controlled substance (for example, as obtained from drug seizures) is not conducted at the National Forensic Laboratory Services. Please contact Health Canada's Drug Analysis Service.
- Drug paraphernalia can include syringes, pipes, powders, tablets/capsules, or other residues (for example, drinking glasses suspected of containing a drugged beverage). These can be found at the scene and can be collected and submitted for analysis.
- For sharp objects (for example, syringes, pipes), package each item in a rigid puncture-resistant container, seal and label.
- For powders, tablets or capsules, place in a plastic or glass vial, seal and label.
- All drug paraphernalia should be treated as bio hazardous and labeled as such.
- Liquids should be collected in a leak-proof container.

Tissues (liver, brain, muscle) (toxicology)

- Tissues are only accepted for analysis when more suitable specimens (blood and urine) are unavailable. Bone, teeth and hair are not acceptable specimens and will be rejected.
- Approximately 25 grams of tissue should be placed in a leak-proof container, sealed and labeled by the pathologist or coroner.
- Do not use a fixative or submerge the tissue in any liquid.
- Refrigerate the sample and submit to the National Forensic Laboratory Services as soon as possible as some drugs can break down during storage.

Urine (toxicology)

- Urine samples should be collected in a leak-proof urine collection jar.
- Ensure jars are closed tightly, sealed and labeled.
- Urine samples can also be collected in grey-stoppered vacuum tubes, sealed and labeled.
- Fill urine containers only ¾ full to avoid leakage during transport.
- If using a Doxtech Urine Specimen Collection Kit, disregard instructions that ask you to place the label **inside** the container. The label should be affixed **outside** the container.
- Samples must be refrigerated and sent to the National Forensic Laboratory Services as soon as possible as some drugs can break down during storage.
- Urine samples collected **more than 36 hours** after the incident will **not** be accepted for alcohol only analysis for any case.

- For drug-facilitated sexual assault investigations, urine samples collected **more than 120 hours** after the incident will not be accepted for drug analysis.
- For other case types, urine samples collected **more than 72 hours** after the incident will **not** be accepted for drug analysis.

Vitreous humour (toxicology)

- Vitreous humour refers to the transparent jellylike tissue filling the eyeball behind the lens.
- The medical examiner should collect the vitreous in a 10 mL grey-stoppered vacuum tube. The vitreous humour from each eye should be collected into separate tubes.
- Ensure the contents are sealed and labelled.
- Refrigerate the samples and submit to the National Forensic Laboratory Services as soon as possible.

Trace evidence analysis

Fire debris / ignitable liquid residue (trace evidence analysis)

The information in this section is only for materials suspected to contain ignitable liquid residue (for example, fire debris, clothing, empty containers). For information about testing samples suspected to be ignitable liquids, see Accelerants / ignitable liquids section.

- Place fire debris in clean, lined metal cans, or in wide-mouth canning jars, or in nylon bags. Unlined metal cans are also suitable but they are prone to rusting and run the risk of not being airtight upon arrival at the National Forensic Laboratory Services should they rust through (damp and wet fire debris can be quite corrosive). The metal can or jar must be unused, direct from supplier with lid on. For metal cans, ensure the lid of the can is securely pounded down (metal can clips are also available to further secure the lid in place). If submitting debris in a canning jar, ensure the rubber seal on the lid of the jar is seated against the mouth of the glass jar.
- **Do not** re-use other types of jars, such as pickle or jam jars.
- Large exhibits that cannot be reduced to fit into canning jars or paint cans may be packaged in nylon bags or other special bags sold for packaging fire debris.
- Cut up large pieces of debris and fill container one-half to two-thirds, leaving at least 3 to 5 cm of space at the top of the can or jar, free of debris.
- **Do not** dry exhibits before packaging.
- Properly packaged exhibits may be stored in an explosion-proof refrigerator or freezer prior to submission.
- Package and ship separately from suspected ignitable liquids.
- If a swab (for example, gauze pad) is used to soak up a liquid at a fire scene, package the swab in a new metal paint can or glass canning jar as described above. An unused swab should also be packaged separately and sent in as a control sample.

Accelerants / ignitable liquids (trace evidence analysis)

- The information in this section is only for samples of liquids that are suspected to be ignitable liquids. For information about testing other materials for the presence of ignitable liquid

residue (for example, fire debris, clothing, empty containers, etc.) See Fire debris/ignitable liquid residue section.

- Send ignitable liquids to the National Forensic Laboratory Services using shipping containers that comply with Transport Canada's Transportation of Dangerous Goods Regulations.
- For small amounts of liquid found in a container (for example, jerrycan or solvent bottle), and for large amounts of liquid, transfer up to 4 mL of the liquid to a new glass vial with a chemical resistant screw-cap lid (Teflon-lined), provided with the ignitable liquid transport container.
- For empty containers suspected of containing an accelerant (for example, empty jerrycan or bottle), package in an approved air-tight container in the same manner as for fire debris. See Fire debris / ignitable liquids residue section.
- If a swab (for example, gauze pad) is used to soak up a liquid at a fire scene, package the swab in a new metal paint can, or glass canning jar as described in the Fire debris / ignitable liquids residue section.
- An unused swab should also be packaged separately and submitted as a control sample.
- Package, store and ship suspected ignitable liquids separately from any samples of fire debris or clothing that are to be examined for ignitable liquid residue.
- Do not store samples of suspected ignitable liquids in a conventional refrigerator or freezer. Vapor leakage could produce an explosion set off by the compressor motor.

Paint (trace evidence analysis, comparison and physical match)

During an investigation, you may come across paint in three different forms:

- **vehicle paint:** National Forensic Laboratory Services can provide make/model and year information from paint left at a crime scene such as a break and enter (where a car smashed through a door, gate, wall) or a hit and run scene from vehicle parts left at the scene, or on a pedestrian's clothing, bicycle, etc.
- **architectural paint:** National Forensic Laboratory Services can conduct comparisons of:

  1. paint transferred to an object (for example, door, window) from a painted tool; and

  2. paint transferred to a tool from an object on which the tool was used.
- **spray paint:** National Forensic Laboratory Services can compare spray paint on a vandalized wall or vehicle (for example, graffiti epitaph at homicide scenes) to a spray paint can seized from the suspect.
- Examiners will attempt to physically match broken objects (for example, vehicle parts) between different separate scenes, or from a scene and victim (for example, paint chips from clothing).
- If foreign paint is present on an object, submit the entire object to the National Forensic Laboratory Services. If it is not practical to submit the entire object, **do not** attempt to separate the foreign paint from the surface of the object. Instead, cut out a portion of the object around the foreign paint and submit to the National Forensic Laboratory Services.
- If the object is too large to submit or the object cannot be cut, remove the foreign paint and include any underlying paint layers as one sample.
- If the object cannot be sent to the lab for exam, remove each paint sample with a new, disposable scalpel, being careful to obtain all layers of paint present.
- Submit scalpel with the sample in the same container.
- Package each sample in a piece of folded paper, a leak-proof metal canister, or a plastic vial. Place inside a sealed canister, plastic evidence bag or envelope.
- Submit parts of the damaged material if possible, especially if smearing is present (for example, bumper extensions, parts of door frames).

- Vehicle parts - it may be possible to identify the make/model and year of a motor vehicle from a painted part left at the scene.
- Submit entire articles of clothing when paint smears are suspected.
- **Do not** use adhesive tape to lift paint or to store a sample of the paint.
- Submit liquid paint samples in paint tins or place on a glass slide, dry and submit.
- Liquid samples (for example, aerosol paint canisters) must be shipped in accordance with the Transportation of Dangerous Goods Act.
- For instructions related to the packaging of tools, see Tools section.
- **Comparison samples:** Take separate paint samples from all damaged areas of vehicles, buildings (for example, door frame), fences, posts, safes. Use a new scalpel for each sample and package each sample separately, as described above, taking care to avoid contamination between samples. Include the vehicle identification number, make, model and year of each vehicle sampled and the location of each sample.

Adhesive tape (trace evidence analysis, comparison and physical match)

- **Fingerprinting** on any adhesive tape-related exhibits must be done prior to submitting for trace evidence analysis. Contact your local forensic identification unit for fingerprinting services. Advise the person who is fingerprinting that trace analysis will also be done and advise the National Forensic Laboratory Services that the exhibit was first sent for fingerprinting.
- Examiners will attempt to physically match pieces of tape from different separate scenes, or from a scene and a roll of tape from suspect.
- Pieces of tape from a crime scene can be compared to a roll of tape associated with the suspect or to pieces of tape from other scenes.
- Submit the tape for analysis without removing it from the taped object, if possible.
- If removal from taped object is necessary, handle the ends of the tape as little as possible to allow for possible physical matching. Place adhesive-side down onto a new document protector.
- If cutting the tape is necessary in order to remove it from the object/person, mark the cut ends with permanent marker.
- **Do not** separate or straighten pieces.
- Package in tamper-proof evidence bags or rigid plastic or metal containers.
- **Do not** package in paper or cardboard containers.
- **Comparison samples:** In tamper-proof evidence bags, submit all partial rolls and pieces of tape that are similar in size, colour and texture. Do not mark or handle ends.

Bank dye packs (trace evidence analysis)

Exploding bank dye packs are used by some banks to identify bank robbers. Disguised as a pack of bank notes, the pack is passed to a bank robber by the bank teller. Using a transmitter, the pack detects when the robber has left the bank and then it will emit a large cloud of red smoke and dye which will stain the bank notes and/or the robber's clothing.

- Use extreme caution when handling these dye packs to prevent contamination.
- To avoid contamination, dye samples from suspects and those from the scene should be collected by different investigators.
- Samples from the scene should be double-bagged in tamper-proof exhibit bags and submitted separately from samples from suspects.
- Large surfaces such as the interior of vehicles can be swabbed using a gauze or cotton-tipped applicator that is wet with rubbing alcohol (isopropanol), methanol or acetone. If none of these solvents are available, then water may be used.

- Allow time for swabs to dry completely before packaging.
- Ensure that dye packs are made safe (that is, no unexploded secondary packs) before moving exhibits or obtaining swabs.

Safe insulation (trace evidence analysis and comparison)

Safe insulation is a light, easily fractured mortar-like material used by safe manufacturers. Often, safes are broken into by cutting into the wall of the safe. Cutting through the wall of the safe will release the safe insulation causing particles to be dispersed on the suspect's clothing, tools, vehicle, and/or residence. Many of the particles of safe insulation will be microscopic and so the suspect may not even be aware that they are present.

- Examiners will analyse and compare insulation between different scenes or from a scene to a suspect (for example, found from clothing).
- Package materials containing suspected samples of safe insulation - such as clothing, footwear, vehicle, floor mats, and tools - in tamper-proof evidence bags or new, brownpaper evidence bags.
- For suspected safe insulation material found on larger objects, such as vehicle interiors, truck beds, or truck liners, manually recover as much material as possible and package in tamper-proof evidence bags or new, brownpaper evidence bags.
- Refer to Clothing and Tools sections for packaging instructions.
- Comparison samples: Collect samples of safe insulation from each damaged area of the safe. Package in leak-proof vials or tins, and seal in tamper-proof evidence bags. Keep separate from clothing and tools. Include information about make, model, year and serial number of the safe on form C-414.

Building products (trace evidence analysis and comparison)

- Examiners will analyse and compare residual building products between different scenes or from a scene to a suspect (for example, found on clothing).
- Fragments of building products, such as drywall, caulking or insulation may be found on clothing, tools and vehicles.
- Collect a comparison sample from the scene.
- **Do not** attempt to remove particles from clothing or tools - submit these items "as is".
- Collect particles from larger objects, such as vehicles, and submit in leak-proof containers, such as plastic vials with tightly sealed lids or metal tins.
- **Comparison samples:** Comparison samples should be collected from the damaged area(s) of the building. Package separately in leak-proof containers. Mark container as comparison sample.

Clothing (trace evidence analysis)

- **Clothing with paint or other foreign particles (trace evidence analysis)**
  - ▻ Wear a protection suit to prevent contamination - change suits for each suspect.
  - ▻ Ensure the floor where the individual will undress is clean.
  - ▻ Have each individual stand on a double stack of paper (at least two sheets) when removing clothing.
  - ▻ Handle each item of clothing separately - take care to prevent any transfer of material between exhibits.
  - ▻ Take care not to shake off any trace evidence adhering loosely to the garment.
  - ▻ Ensure that fallen particles are captured on pieces of paper placed underneath the exhibits.
  - ▻ If clothing is wet or moist, allow time for it to dry completely before packaging. Air-dry wet

clothing from different individuals in separate rooms. **Do not** air-dry if the clothing is from an arson suspect and is to be tested for the presence of an accelerant.

- ▻ Package, seal and label each article of dry clothing separately in tamper-proof evidence bags or new, brownpaper evidence bags.
- ▻ Describe the location of any observed stains of interest on the accompanying form C-414. **Do not** place any marks directly onto the clothing.
- ▻ Also submit the upper sheet of paper where the individual was standing. Carefully fold the paper to retain loose debris. Package and label it in a separate sealed tamper-proof evidence bag or new, brown paper evidence bag. Discard the bottom sheet of paper that was in contact with the floor.
- ▻ If articles of clothing have been packaged together (for example, when removed at hospital), leave them all together - **do not** repackage separately.
- ▻ If space is not available, wet exhibits may be packaged in tamper- proof evidence bags and submitted immediately to the National Forensic Laboratory Services. Indicate on form C-414 that the clothing is wet.
- ▻ Clothing exhibits may also be frozen prior to submission.

- **Clothing from arson investigation (suspected ignitable liquid residue)**
  - ▻ Immediately place clothing in large wide-mouth (2L) canning jars or large (1-10 gallon) clean metal cans (new paint cans can be found at a local hardware store), or in a nylon bag. **Do not** package the clothing in paper bags, as these do not provide an air-tight seal which is required for fire debris analysis.
  - ▻ If using nylon evidence bags, secure with an air-tight heat-seal.
  - ▻ Rolling down the top of the bag at least six times and then securing with packing tape will also provide an air tight seal.
  - ▻ **Do not** air-dry if the clothing will be tested for the presence of ignitable liquids (for example, solvents, fuels, or other volatiles). If the clothing is wet, seal it in a plastic bag (air tight seal) and freeze to retard mould growth and to prevent microbial action that will consume the ignitable liquids and retard mould growth.
  - ▻ Freeze the clothing prior to submission, if possible.
  - ▻ **Note:** Paper bags and ordinary plastic bags are not suitable for exhibits that are to be examined for the presence of accelerants.
- **Clothing for gunshot residue analysis**
  - ▻ See Gunshot residue section.

Explosive debris (post-blast trace evidence analysis)

- If swabs have been collected, at least two clean (unused) swabs must also be submitted for analysis as control samples.
- Be alert for damaged metal fragments, tape fragments, pieces of wire, shredded explosive wrappers (paper or plastic), clock mechanism parts, fuse, and/or battery parts - collect these and package each separately.
- Collect debris and/or swabs from the seat of the blast as identified by the local forensic identification services and Explosive Disposal Unit, once the Explosive Disposal Unit has searched for secondary explosives and/or hazardous devices (chemical, biological, radiological and nuclear) and declared it safe for entry and exhibit collection.
- Following the instructions of the Explosive Disposal Unit or forensic identification services, search outward from the seat of the blast in a systematic pattern and collect debris showing signs of explosive or heat damage. Large objects

or surfaces too big to collect should be swabbed for residue.

- Certain items can be sent to the National Forensic Laboratory Services for both explosives and DNA examination, in particular fragments that a suspect may have handled (for example, container fragments, tape, device concealment packaging, switches or string). Such items should be packaged to preserve the priority evidence. If DNA is the priority, the exhibit should be packaged in a paper bag first, and then inserted inside a sealed air-tight container.
- When possible, place debris in air-tight containers (for example, canning jars, nylon evidence bags and lined metal cans).
- If any non-initiated explosive material is visible, remove from the debris and send it separately. Refer to Explosive substances section.
- **Comparison samples:** Certain samples or items seized from different scenes may be suitable for comparison and must always be packaged separately.
  - ▻ Any debris or samples or items collected from a post-blast crime scene must always be packaged separately.
  - ▻ Any samples or items collected from suspect or residences must be packaged and kept separate from post-blast scene debris and samples.
  - ▻ Non-initiated explosives from a scene or seized elsewhere (suspect or residence) can be sent in the same Explosive Transport Container.
  - ▻ Contact the Forensic Assessment Centre to ask a specialist to triage and identify what samples or items can be compared or not, where they should be sent, and for what type(s) of examinations (physical match, explosive analysis).

Explosive devices (trace evidence analysis)

- **Do not** touch.
- Contact the nearest Explosive Disposal Unit to render the device safe. Live devices will not be received / examined by the National Forensic Laboratory Services.
- Once the device is rendered safe, device components (for example, power sources, timing units, wires, blasting cap, tape) should be collected and seized as post-blast evidence. Device components may be examined by the local Explosive Disposal Unit.
- Place device components in air-tight containers such as canning jars, lined metal cans or nylon evidence bags. Submit to the National Forensic Laboratory Services for explosives analysis. Refer to Explosive debris section.
- If a non-initiated explosive substance is found and analysis is required, refer to Explosive debris section.

Explosive substances (live explosive classification)

- Contact the nearest Explosive Disposal Unit for assistance in determining the stability of the suspected explosive substance.
- The Explosive Transport Container is the only approved shipping container for non-initiated explosive samples.
- When sending non-initiated explosives to the National Forensic Laboratory Services use the following procedure:
  - ▻ Contact the Forensic Assessment Centre to obtain an Explosive Transport Container.
  - ▻ Following the instructions that come with the Explosive Transport Container, use the vials provided and package the explosive in 1- 2 teaspoon quantities per vial.
  - ▻ Suspected peroxide explosives must be diluted or slurried with 1:10 isopropyl alcohol (rubbing alcohol).
  - ▻ Complete the documentation exactly as indicated in the instructions provided with the Explosive Transport Container and ship

to the National Forensic Laboratory Services by courier.

- ▷ **Note:** If you are uncertain of the stability or hazards associated with an unknown substance, contact the Forensic Assessment Centre and request a specialist to advise you on safe handling and desensitization procedures before touching the substance.
- ▷ **Comparison samples:** Refer to Explosive debris section.

Gunshot residue (trace evidence analysis)

- See National Forensic Laboratory Services Information Centre: Gunshot Residue Information Sheet.
- Follow all the instructions that come with the gunshot residue kit.
- Collect samples from the hands and face of a suspect as soon as possible.
- **Note about gunshot residue** persistence: gunshot residue particles are quickly lost and do not adhere on skin. They will be removed (lost) from skin over time.
- Do not collect gunshot residue samples on clothing if the exhibit has been authorized for gunshot residue testing at the National Forensic Laboratory Services.
- When collecting articles of clothing from suspects, submit outermost layer of clothing only. Ensure that each item is packaged separately in paper bags.
- National Forensic Laboratory Services **will not** accept the following exhibits:
  - ▷ gunshot residue samples from the face and/or hands of suspected shooters more than twelve hours after the shooting incident;
  - ▷ gunshot residue samples taken from a shooting victim;
  - ▷ **Note:** We would expect to see gunshot residue on a victim and there is no forensic value to that type of examination since analyzing lifter samples (stubs) for gunshot residue from a shooting victim can never prove whether the subject is a victim of a suicide, a homicide or an accident.
  - ▷ articles of clothing from shooting victims.
- See the National Forensic Laboratory Services Information Centre for purchasing gunshot residue kits.

Metals (identification)

- Request an elemental analysis to determine sample composition and possible sources (for example, metal filings, metal fragments from fire and explosion scenes).
- Submit suspect samples in tamper-proof exhibit bags.
- For metallurgical examinations (for example, metal fatigue), contact the Forensic Assessment Centre to obtain a potential list of metallurgists.

Tools (trace evidence analysis)

Tools may be used to pry or cut an object at a crime scene, including screwdrivers, pry bars, pliers, bolt cutters, knives, and saws. Paint may be transferred from a door, window, safe, etc. to a tool, and/or paint from a tool may be transferred to the object being pried or cut open.

- Carefully package the ends of tools to prevent loss of foreign material.
- Use plastic bags or styrofoam cups taped over the ends to prevent further damage to the tool and to retain any foreign material.

- Send tools in a tightly-packed box to prevent movement.
- For sharp objects, see packaging for sharp objects.
- **Comparison sample:** Collect associated items for comparison purposes.

Unknown materials (identification)

- Contact the Forensic Assessment Centre for instructions on how to screen materials for chemical, biological, radiological, nuclear threats prior to submission (chemical, biological, radiological and nuclear materials are not examined at the National Forensic Laboratory Services).
- Submit in glass vials or bottles with Teflon-lined screw cap closures (wide-mouth sample containers can be purchased).
- Submit the entire sample unless it exceeds 250 grams (about 1 cup) of solid material or 500 mL (about 2 cups) of unknown liquid.
- If only a small amount of material is available, for example, powder mailed in an envelope, do not attempt to remove the powder from the envelope. Package entire envelope and its contents in a leak-proof plastic evidence container or bag.
- Use glass containers to store the unknown materials.
- Do not use metal cans, plastic vials or plastic bags to sample possible chemical, biological, radiological and nuclear materials.
- Decontaminate the outside of the sample container after filling and before packaging for submission by wiping it with a towel moistened with water or rubbing alcohol.
- Seal all samples in a tamper-proof evidence bag.

Submitting evidence

Note on fingerprints: Almost all exhibits, including firearms or ammunition, could have fingerprints. Fingerprints should be processed before the exhibit is sent to the RCMP's National Forensic Laboratory Services. If a fingerprint examination is needed, consult with your local forensic identification unit before submitting exhibits. Some possible exceptions include exhibits where trace evidence could be lost with fingerprinting.

Contact the Forensic Assessment Centre

All requests for service to the National Forensic Laboratory Services must go through the Forensic Assessment Centre for authorization prior to the submission of exhibits. The only exception is for counterfeit submissions, which go directly to the National Forensic Laboratory Services National Anti-Counterfeiting Bureau.

Following is a general outline of the submission process:

1. Complete service request form C-414, Request for Forensic Laboratory Analysis. It can be found by RCMP members on RCMP Forms or by contacting the Forensic Assessment Centre. Other check-sheets or forms may be required, depending on the investigation.
2. Send the completed form C-414 and other applicable checksheets or forms to the Forensic Assessment Centre by email (preferred) to fac-cej@rcmp-grc.gc.ca or by fax at 1-877-243-5047.
3. A Forensic Assessment Centre representative will contact you to authorize the service request or discuss the file. This may include discussion about exhibit selection and prioritization of exhibits.

The National Anti-Counterfeiting Bureau

Submit suspected counterfeit bank notes, negotiable instruments, travel and indentification documents, Canadian $1 and $2 circulation coins and payment cards directly to the National Anti-Counterfeiting Bureau.
Depending if the evidence is required in court, will determine what form to complete.

When evidence is required for court

- Complete service request form C-414, Request for Forensic Laboratory Analysis. Provide details of the occurrence and a clear indication that the analysis is required for court purposes. Specify date of court proceedings, if known.
- To avoid interfering with the forensic examination, do not place any markings on the exhibits (for example, never write 'counterfeit' or 'fake' on any exhibit).
- If fingerprint analysis is needed, submit exhibits to the National Anti-Counterfeiting Bureau first and indicate special handling is required. (Note: all fingerprinting must be arranged separately by your service).
- Please ensure that you include your email address.
- Seal exhibits in an exhibit bag and mark with initials and date.
- Forward your exhibits along with a copy of form C-414 to the National Anti-Counterfeiting Bureau.
- Results for bank note and coin submissions include: a forensic laboratory report; a Certificate of Examiner of Counterfeits and/or an affidavit (not applicable for genuine notes).

When no criminal charges are anticipated:

- When no criminal charges are anticipated and there are no suspects identified at time of submission, exhibits will be processed as a "non-court" submission.
- Complete form 3774, Request for Analysis of Non-Court File Submissions (contact nacb@rcmp-grc.gc.ca for the form) and provide details of the occurrence.
- Forward your exhibits along with a copy of form 3774 to the National Anti-Counterfeiting Bureau.
- **Note:** All non-court submissions are retained at the National Anti-Counterfeiting Bureau for a minimum period of 6 months, after which they are destroyed. If a suspect is identified during the retention period, please notify the National Anti-CounterfeitingBureau and notes will be treated as evidence for court.

To submit exhibits to the National Anti-Counterfeiting Bureau

> **By courier, registered mail or priority post:**
> National Anti-Counterfeiting Bureau NPS Building
> 73 Leikin Drive
> Ottawa ON K1A 0R2

Post forensic analysis

Return of exhibits and master files

All master files, reports, documentation and exhibits examined by the National Forensic Laboratory Services belong to the submitting agency. The National Forensic Laboratory Services returns all exhibits to the agency, including all National Forensic Laboratory Services generated sub-samples (for example, DNA extracts, swabs). Exceptions include:

- exhibits consumed in analysis and uninitiated explosives;
- ammunition components are retained in archive for possible future comparison to cases linked via Canadian Integrated Ballistic Identification Network matches (if ammunition components are required for court purposes, it is your responsibility to contact the National Forensic Laboratory Services Forensic Assessment Centre to initiate exhibit return);
- requests received from submitting agency to destroy exhibits;
- the National Anti-Counterfeiting Bureau assumes

responsibility for destroying all counterfeit notes (when the notes are no longer needed or are not required for court);

- uninitiated explosive samples submitted for analysis using the Explosive Transport Container are normally not returned to the submitter and are destroyed locally.

Retention of exhibits by investigating agency

National Forensic Laboratory Services does not retain exhibit material, master files, reports and related documentation beyond two years. Once exhibits are returned to the investigating agency, the National Forensic Laboratory Services will have limited information available to conduct future analyses.

Biological specimens, such as blood spotted on treated cards or chemically-treated filter paper (FTA cards) may be stored at room temperature.

Biological specimens (material from human body, for example, liquid blood, muscle tissue) for DNA analysis should be stored in either a refrigerated or frozen state to preserve exhibit integrity or if they are to be resubmitted for analysis at a later date.

DNA extracts (product from the DNA analysis process) should be stored in a frozen state (-20 degrees Celsius) to preserve exhibit integrity or if they are to be resubmitted for analysis at a later date.

Note: It is the agency's responsibility to ensure retention of exhibit material, master files and related documents are according to its policies.

If further forensic examination is required, it is the responsibility of the lead investigating agency to submit and/or re-submit exhibits and related documentation for further analysis.

Re-submission of cases may be **declined** if original master file is not available to the National Forensic Laboratory Services.

Disclosure

Disclosure of National Forensic Laboratory Services documents prior to the return of the exhibit to the submitting agency can be requested by contacting the Forensic Assessment Centre. In consultation with the Crown Attorney, complete the National Forensic Laboratory Services Request for Disclosure form.

Request of disclosure for National Anti-Counterfeiting Bureau documents should be made directly to the National Anti-Counterfeiting Bureau.

National Forensic Laboratory Services requires 30 days notice in order to provide documents. Please use the latest request form.

Other forensic resources

This guide pertains exclusively to the National Forensic Laboratory Services; however, investigators should be acquainted with other local points of reference and forensic services that are available to them.

Following are some additional resources to consider:

National DNA Data Bank of Canada

The National DNA Data Bank stores DNA profiles recovered from crime scenes and from convicted offenders as well as DNA profiles that are part of the National Missing Persons DNA Program (refer to the National Centre for Missing Persons and Unidentified Remains section below).
When investigators submit biological (DNA) evidence to the National Forensic Laboratory Services, the qualifying DNA profiles developed from the crime scenes are uploaded and compared to other profiles as permitted by legislation.

Convicted offender biological samples are collected and submitted directly to the National DNA Data Bank. Only biological samples that have been collected with the approved National DNA Data Bank Sample Collection Kit will be accepted by the National DNA Data Bank for convicted offender samples. For more information about the Sample Collection Kits, contact the National DNA Data Bank by email at: nddb-bndg@rcmp-grc.gc.ca.
For a list of designated offences or for other forms, visit the National DNA Data Bank website.

Convicted Offender National DNA Data Bank Sample Collection Kits

- To request a Sample Collection Kit, please contact nddb-bndg@rcmp-grc.gc.ca.

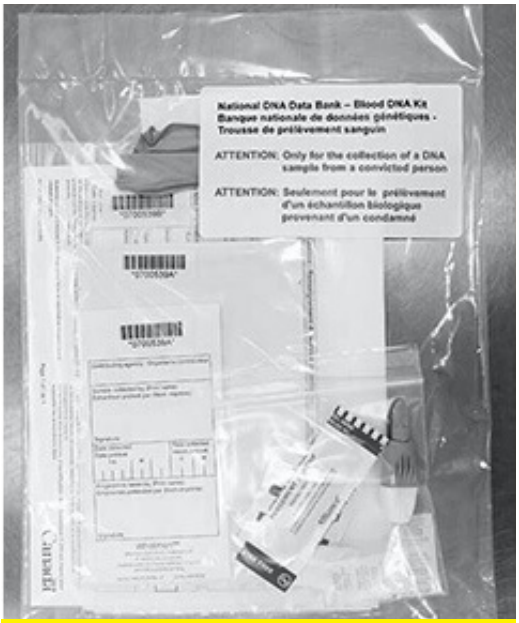


Figure 2: National DNA Data Bank - Blood DNA Kit Attention: Only for the collection of a DNA sample from a convicted person.

- Sample Collection Kits (see Figure 2), are available for blood, buccal or hair samples.
- The use of any other collection kit will cause the sample to be rejected.
- RCMP Detachments may also contact Divisional Stores directly.

National Centre For Missing Persons and Unidentified

Remains The National Centre for Missing Persons and Unidentified Remains is Canada's national centre that provides law enforcement, medical examiners and chief coroners with specialized investigative services in support of missing persons and unidentified remains investigations. Contact ncmpur@rcmp-grc.gc.ca for authorization before submitting samples to the National Missing Persons DNA Program and for program- specific submission form(s), information and sampling guidelines.

Forensic Identification Units

Forensic identification is an area that provides essential support to criminal investigations, including bloodstain pattern analysis, crime scene examination for physical evidence such as fingerprints, and footwear or tire impressions. Specialists in these units can attend crime scenes or can be called upon to provide advice on the collection and packaging of evidence. Refer to your local point of contact.

Technological Crime Units

Technological crime units assist investigators with forensic analysis on various pieces of equipment such as computers, smart phones, tablets or other sophisticated technical products. Refer to your local point of contact.

Explosives Disposal Units

Explosive Disposal Units provide expertise in relation to the handling of explosives and the investigation of post-blast scenes. They can assist in the examination and rendering 'safe' of suspicious packages and improvised explosive devices including the disposal of military ordinance and ammunition. Many units are responsible for first response to chemical, biological, radiological, nuclear and explosives events. Refer to your local point of contact.

Firearms Reference Table

The Firearms Reference Table is produced by the Canadian Firearms Program and incorporates both text and images, which aids investigators in the identification of firearms. For assistance or to request a copy of the Firearms Reference Table, send an email to web-frt-traf@rcmp-grc.gc.ca or call 1-800-731-4000, ext.1082. See the Firearms Reference Table website.

National Weapons Enforcement Support Team

The National Weapons Enforcement Support Team offers personnel and resource support to law enforcement agencies across the country on all aspects of firearms investigations and prosecutions. Refer to your local/regional point of contact.

Footnotes

1. Joelle f. Olson, Marc Eaton, Stephen A. Kells, Victor Morin, Cahnglu Wang, Cold Tolerance of Bed Bugs and Practical Recommendations for Control, Journal of Economic Entomology, Volume 106, Issue 6, 1 December 2013, Pages 2433-2441.

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