DNA Decontamination Guidelines for Forensic Medical Examinations

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Amendment History

<table>
<thead>
<tr>
<th>Issue Number</th>
<th>Approved Date</th>
<th>Approved By</th>
<th>Details of Amendment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>16 Aug 2019</td>
<td>Lead Forensic Scientist</td>
<td>New Document</td>
</tr>
</tbody>
</table>
DNA Decontamination Guidelines for Forensic Medical Examinations

1. **Objective**

1.1 To provide a DNA decontamination procedure for the decontamination of Forensic Medical Examination facilities. This procedure is only relevant when a Forensic Medical Examination is required and the procedure should be applied immediately prior to and after each Forensic Medical Examination.

2. **Health and Safety**

2.1 Ensure you are familiar with local Risk Assessments and COSHH regulations relating to Virkon (See Appendix’s 2 and 3).

3. **References**

- National Infection Prevention Control Manual (NIPCM)  
http://www.nipcm.hps.scot.nhs.uk
- “Finding an effective cleaning reagent for surface decontamination of body fluids and DNA in forensic laboratories” MSc thesis, unpublished 2016, in conjunction with Strathclyde University.
- “Laboratory cleaning agent effectiveness in facilitating the removal of body fluids and detectable levels of DNA” MSc thesis, unpublished 2013, in conjunction with Strathclyde University.
- National Specification Document for Health Boards on Rape and Sexual Assault Healthcare and Forensic Services – currently in draft
- https://www.youtube.com/watch?v=175Lg7NWvGq

4. **Equipment**

Disposable mop heads  
Disposable cloths  
Non-latex, powder free gloves  
Hair net  
Surgical mask  
Beard snood (if applicable)  
Disposable gown/coverall  
Disposable cuffs (if applicable)  
Safety Glasses (optional)

5. **Reagents**

Virkon - 1% solution
6. **Procedure**

6.1 **General Principles**

6.1.1 This procedure aims to:

- Provide guidance on the DNA decontamination of facilities used for Forensic Medical Examinations.

- Provide a consistent minimum standard for DNA decontamination, across the country, to ensure facilities used for Forensic Medical Examinations are fit for purpose, ensuring the integrity of recovered Forensic material. This could be a specific purpose built room or suite or alternatively a multipurpose examination room.

- This procedure is in addition to current, local cleaning practices and is only relevant to the DNA decontamination of areas prior to and after, Forensic Medical Examinations. This protocol has not been designed to be used as a cleaning guide for any other non-Forensic areas, where local cleaning protocols are in use.

6.1.2 DNA contamination can be in the form of operator contamination, contamination from the sampling environment or sample-to-sample contamination. An item may become contaminated if the practitioner deposits their DNA directly onto the item when it is handled, or DNA may be transferred through activities such as speaking, coughing or sneezing if the practitioner comes into close proximity with an item. A practitioner's DNA can also be transferred to an item indirectly, i.e. from an intermediary surface on which their DNA has been deposited.

6.1.3 Due to the sensitivity of the DNA analysis techniques, any foreign DNA contaminating a sample may affect the subsequent DNA result by producing a false result or rendering a profile non-reportable. If contamination of a medical examination room or a sample is detected, a thorough investigation will be conducted to establish the root cause.

6.1.4 Thorough decontamination of the sampling environment is designed to minimise the risk of contamination of a sample from the environment. Subsequent monitoring of the environment is designed to detect any contamination of the environment which will be addressed appropriately to minimise the risk of any environment to sample contamination further down the line.

6.1.5 Virkon 1% is the decontamination agent currently used within all Forensic Laboratories within the Scottish Police Authority (SPA) Forensic Services in Scotland. It has been proven during SPA in-house validations to be the best decontamination agent for DNA purposes. As a UKAS accredited laboratory, SPA has carried out a number of validation studies and continuous environmental monitoring to ensure it adheres to decontamination standards.
7. **Personal Protective Equipment (PPE)**

7.1 A minimum of disposable gloves, mask, hair net and disposable coveralls or disposable sleeves should be worn when decontaminating an area to be used for Forensic Examination purposes. This is to minimise the risk of transferring the wearers DNA onto the PPE which could then be transferred onto any samples.

7.2 Full PPE should be donned in the following order. See video link referenced on page 1:

- Face mask and beard snood (if applicable)
- Hair net
- Non-latex, powder free gloves (pair 1)
- Gown/coveralls/disposable sleeves
- Non latex, powder free gloves (pair 2)
- Safety glasses or goggles (optional)

8. **Work Area and Equipment DNA Decontamination Immediately Prior to and Following a Forensic Medical Examination**

8.1 Check the examination curtain. If this is soiled it should be removed prior to decontaminating the examination room. It is advised that disposable curtains should be replaced monthly or three monthly for infrequently used rooms however, as the set-up of each room will differ a judgement should be made by the practitioner depending on the proximity of the curtain to the examination area, for example if the curtain is in close proximity to the examination couch it is advisable the curtain is changed after each examination.

8.2 Remove the couch cover from the examination couch and discard as clinical waste. Any clinical waste bags should be tied and disposed of following the local Prevention and Control of Infection Policy Manual.

8.3 Laundry should be disposed of as per current guidance in the NIPCM.

8.4 All surfaces, with the exception of the floors, walls and ceilings should be decontaminated using a 1% Virkon solution, using the following methods;

- For flat surfaces for example, counter top or examination couch - Apply 1% Virkon solution to the area via spray or squirt bottle application. Leave for approximately 30 seconds - note that if applied via squirt bottle the solution may need wiping to evenly distribute across the work surface. After about 30 seconds wipe the work surface with a disposable cloth using a circular wiping motion and discard the cloth. Reapply 1% Virkon solution to the work surface, leave for approximately another 30 seconds (again, ensuring that the solution is applied evenly to the work surface), wipe again in a circular motion with a fresh disposable cloth, and discard the cloth. Finally dry the work surface with fresh WHITE paper towel and dispose of the used paper towel in clinical waste.
NOTE: Blue paper towels have shown to interfere with any subsequent fibre examination.

• For stationary items like pens etc., lighting and colposcope - wipe with 1% Virkon solution sprayed onto a disposable cloth, and use a fresh piece of white paper towel to dry the wiped areas. It is advised to keep work surfaces as clear of paperwork as possible.

• Floors, walls and ceilings should be cleaned as per the National Cleaning specification guidelines.

8.4.1 Ensure to record the operator, date, time and reason for entry on the Forensic Decontamination Log. The log must be completed prior to and post each forensic medical examination (Appendix 1).

8.4.2 The examination room should be decontaminated immediately before and after each use. For infrequently used rooms, the room should be decontaminated a minimum of once a month. Each decontamination and use of the room should be recorded on the Forensic Decontamination Log. This form can be used to check when the last person decontaminated the room. The decontamination log must also be completed if the room is entered for any other purpose.

8.4.3 Only use the room-specific cleaning equipment.

8.4.4 1% Virkon solution should be used as described in 8.4 to decontaminate surfaces/equipment. See video link referenced on page 1

8.4.5 The room must be locked after use and if possible, remain locked when not in use. If access to the room is required, the decontamination log must be completed.

9. Waiting Rooms, Bathroom, Interview Rooms and Shower Facilities

9.1 If the Forensic Medical Examination room forms part of a suite any adjoining rooms should contain furniture that is covered in a wipeable upholstery. For further guidance on furniture and fittings, see National Specification Document for Health Boards on Rape and Sexual Assault Healthcare and Forensic Services referenced on page 1.

The furniture should be wiped down with 1% Virkon solution, using a disposable, white paper towel prior to and after use.

9.2 Sinks, taps and toilet seats should be wiped down with 1% Virkon solution before and after use. The remainder of the bathroom e.g. walls, floor and shower can be cleaned following the usual cleaning procedures.
10 **After Decontamination**

10.1 After each use, the Forensic Decontamination Log must be completed to record operator, date, time and reason for entry. The log must also be completed if the room is entered for any other purpose (Appendix 1).

10.2 The room must be locked after use and if possible remain locked when not in use. This is to minimise the risk of contamination.

10.3 Mops, over shoes, hats, gloves, disposable cuffs and coveralls should be disposed of in clinical waste bags.

10.4 Laundry and theatre scrubs should be placed in a laundry bag and laundered as per current guidance in the NICPM.

It should be noted the owner of the DNA Decontamination Guidelines for Forensic Medical Examinations is the Scottish Police Authority Forensic Services. Any questions in relation to the protocol should be sent to Carol Rogers, Carol.Rogers@spa.pnn.police.uk, 01236 818286.
Appendix 1 - Forensic Decontamination Log (Ref: 069-003):

<table>
<thead>
<tr>
<th>Date/Time In/Out</th>
<th>Home and Organisation</th>
<th>Reason for Entry</th>
<th>Forensic Medical Examination</th>
<th>Reference Number</th>
<th>Counter Contamination Measures (refer to SSDF guideline 10.3)</th>
<th>Notes and Counter Contamination Measures (refer to SSDF guideline 10.3)</th>
<th>Precautionary Clothing worn</th>
<th>Comments/Issues Identified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
<td>Name/Designation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time In:</td>
<td>High</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time Out:</td>
<td>Organisation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Print)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For a complete log, refer to the provided form.
Appendix 2 - Risk Assessment for the Preparation and Use of 1% Virkon Solution (Ref: FS-RA-0105, Issue 2):
## DNA Decontamination Guidelines for Forensic Medical Examinations

### Risk Assessment Form

<table>
<thead>
<tr>
<th>Process:</th>
<th>FS-RA-0105 Preparation and Use of 1% Virkon Solution</th>
</tr>
</thead>
</table>

### DESCRIPTION OF WORK ACTIVITY

#### Chemical

**Preparation and Use of 1% Virkon Solution**

- **Activity:** Virkon tablets can initiate on contact with skin, eyes, ingestion and ingestion.
- **Risk:** The risks of Virkon in a 1% solution are significantly reduced; all cleaning products however have the potential to irritate and individual may be affected by inhalation, skin contact and ingestion.

### HAZARD

<table>
<thead>
<tr>
<th>RATING IMPACT X LIKELIHOOD = TOTAL</th>
<th>CONTROL MEASURES USED TO MITIGATE RISKS IN THE SCOTTISH POLICE AUTHORITY ARE:</th>
</tr>
</thead>
<tbody>
<tr>
<td>A 2 3 6 (AB=12) 2 5 6 D E F</td>
<td>Live System of Work: FS-EW-0066</td>
</tr>
</tbody>
</table>

1. Follow preparation instructions detailed in FS-SE-0022
2. Some Examination Counter Contamination Measures
3. Wearing protective clothing and designated COSHH labels
4. Wear PPEs in the preparation to protect against contact, accidental spills, and ingestion
5. Personal protective equipment (safety glasses, disposable gloves, disposable lab coat, or coverall suit, barrier mask)
6. Apply 1% solution in a plastic bag, or via syringe.
7. Application of the decontamination solution is not without risk in the workplace (e.g., office areas, kitchen areas).

### Physical

- **Slip hazard from liquid spill**

<table>
<thead>
<tr>
<th>RATING IMPACT X LIKELIHOOD = TOTAL</th>
<th>CONTROL MEASURES USED TO MITIGATE RISKS IN THE SCOTTISH POLICE AUTHORITY ARE:</th>
</tr>
</thead>
<tbody>
<tr>
<td>A 2 3 9 (AB=12) 2 5 9 D E F</td>
<td>Wear safety footwear, prepare solution in suitable workspace, ensure bottle is securely sealed and nolate application route to off during preparation or solution and when not in use. Protect injury, accidents, and near misses.</td>
</tr>
</tbody>
</table>

### Electrical

- **Application of electrical equipment (e.g., laptop, camera and video equipment)**

<table>
<thead>
<tr>
<th>RATING IMPACT X LIKELIHOOD = TOTAL</th>
<th>CONTROL MEASURES USED TO MITIGATE RISKS IN THE SCOTTISH POLICE AUTHORITY ARE:</th>
</tr>
</thead>
<tbody>
<tr>
<td>A 2 3 9 (AB=12) 2 5 9 D E F</td>
<td>Do not wet device directly with Virkon solution. Apply Virkon solution to paper towel and then wipe it.</td>
</tr>
</tbody>
</table>

This is a generic risk assessment and is based on the expected hazards for these processes. Staff must adapt this document in the preparation of specific Risk Assessments. Staff may come across other hazards while on crime and these will be tackled by adapting Dynamic Risk Assessment Techniques.

### Appendix 3 - COSHH Form for Virkon Tablets (Ref: FS-COSHH-0643, Issue 1):

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**OFFICIAL**  
FS-BIO-0180  
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### DNA Decontamination Guidelines for Forensic Medical Examinations

**Product Information**

**Name of Substance:** Virkon-S Disinfectant Tablets

**Use:**
Used frequently in a diluted form (1%) throughout laboratory and office areas to clean instruments, equipment, benches, desks and other work surfaces as part of counter contamination measures. The 1% working solution is dispensed from wash bottles. Also used in bath form to allow contaminated items, such as stepping plates, to soak.

**Manufacturer:** Antiac International Ltd (subsidiary of DuPont (UK) Ltd)

**Emergency Telephone:**
- +44 (0) 8436 006640
- 01787 377320

**FIRST AID**

**EYE CONTACT:** General
- If you feel unwell seek medical advice.

- In case of eye contact
  - Remove contact lenses if appropriate. Rinse immediately with plenty of water and seek medical advice.

**SKIN CONTACT:**
- In case of skin contact
  - Wash off immediately with plenty of water. Consult a physician if irritation or soreness develops. Launder contaminated clothing before re-use.

**INGESTION:**
- If swallowed
  - Do NOT induce vomiting. If conscious, drink plenty of water. Call a physician immediately.

**INHALATION:**
- If inhaled
  - Remove from exposure. Keep warm and at rest. If discomfort persists seek medical advice.

**HAZARD**

**Hazard Identification**
- Irritating to skin.
- Risk of serious damage to eyes.

**Potential Health Effects**
- Eyes: Causes irritation, redness and non-reversible local damage if not immediately rinsed away after contact.
- Skin: Causes irritation and redness.
- Ingestion: Will irritate and cause soreness to mouth, throat and digestive system.
- Inhalation: Dust may cause soreness and irritation of the mucous membrane and the respiratory system.
## DNA Decontamination Guidelines for Forensic Medical Examinations

### PROTECT - MANAGEMENT

#### Health and Safety

**C.O.S.H.H. Form**

Control of Substances Hazardous to Health Regulations 2002 (Amended 2003)

<table>
<thead>
<tr>
<th>SAFETY INFORMATION:</th>
<th>Exposure controls/Personal protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>(e.g., Personal protective equipment)</td>
<td><strong>Personal protective equipment</strong></td>
</tr>
<tr>
<td><strong>Respiratory protection:</strong> A FFP2 dust mask should be worn when handling the tablets. No respiratory protection is required if used in a fume cupboard or when using the 1% working solution.</td>
<td></td>
</tr>
<tr>
<td><strong>Ventilation:</strong> A fume cupboard is not required when using the tablets or the 1% working solution however they should be used in a well ventilated area.</td>
<td></td>
</tr>
<tr>
<td><strong>Hand protection:</strong> Nitrile gloves (or other disposable protective glove type if nitrile allergies exist) should be worn when handling the tablets or when using the working solution.</td>
<td></td>
</tr>
<tr>
<td><strong>Eye protection:</strong> Wear safety glasses when handling tablets or making up the working solution. Safety glasses should also be worn when working with large volumes of the 1% working solution. No safety glasses are required when using lower volumes, such as dispensing from a wash bottle.</td>
<td></td>
</tr>
<tr>
<td><strong>Skin and body protection:</strong> No additional protection is required however disposable lab coats/suits should be used when working with large volumes of working solution.</td>
<td></td>
</tr>
<tr>
<td><strong>Hygiene measures:</strong> Wash hands immediately after handling the tablets or working solution. Also wash hands before breaks and at the end of work day.</td>
<td></td>
</tr>
</tbody>
</table>

#### ADDITIONAL ADVICE:

<table>
<thead>
<tr>
<th>Handling and Storage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Handling:</strong> Avoid dust formation in confined areas. Avoid contact with skin and eyes. When using do not eat drink or smoke.</td>
</tr>
<tr>
<td><strong>Storages:</strong> Store tablets in the original container. Store upright in a cool, dry, well-ventilated area. Keep away from combustible materials. Avoid exposure to direct sunlight or sources of heat. Keep containers closed when not in use.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stability and Reactivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stable under recommended storage and usage conditions.</td>
</tr>
<tr>
<td><strong>Conditions to avoid:</strong> Avoid exposure to moisture.</td>
</tr>
<tr>
<td><strong>Incompatibility with other materials:</strong> Avoid contact with strong bases and combustible materials.</td>
</tr>
<tr>
<td><strong>Hazardous decomposition products:</strong> Sulphur dioxide, Hypochlorite and Chlorine.</td>
</tr>
<tr>
<td><strong>Hazardous reactions:</strong> No dangerous reactions known under normal use.</td>
</tr>
</tbody>
</table>

#### SUMMARY OF SIGNIFICANT FINDINGS:

- This is a commercial cleaning product – avoid direct contact with the tablets or dust by wearing appropriate PPE. For normal daily use the risk is considered low.

#### CAN SUBSTANCE BE SWITCHED FOR ONE LESS DANGEROUS?

- Yes/No: **NO**
  - If yes – name of substance:

#### HAVE APPROVED CONTROL MEASURES BEEN USED?

- Yes/No: **YES**

#### ARE PLANS IN PLACE TO ENSURE THAT

- Yes/No: **YES**
  - Details: A robust cleaning, counter-contamination and environmental
DNA Decontamination Guidelines for Forensic Medical Examinations

<table>
<thead>
<tr>
<th>PROTECT - MANAGEMENT</th>
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<td>Health and Safety</td>
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<tr>
<td>C.O.S.H.H. Form</td>
</tr>
<tr>
<td>Control of Substances Hazardous to Health Regulations 2002 (Amended 2003)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CONTROL MEASURES ARE KEPT CLEAN? (inc. P.P.E.)</th>
<th>monitoring regime is in place. Disposable laboratory coats are used.</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOTE ANY OF THE FOLLOWING THAT APPLY.</td>
<td>Special procedures apply for: Carcinogens, Biological Agents and substances that cause Occupational Asthma: N/A</td>
</tr>
<tr>
<td>ARE ASPHYXIANTS IN USE?</td>
<td>Yes/No: NO If there are present contact the Safety Officer.</td>
</tr>
<tr>
<td>ARE SUBSTANCES MIXED OR ARE TWO OR MORE SUBSTANCES IN USE AT ONE TIME?</td>
<td>Yes/No: YES Valcro tablets are dissolved in water (1 tablet added to 500ml water to give a 1% working solution) If there are present contact the Safety Officer.</td>
</tr>
<tr>
<td>ARE CONTRACTORS LIKELY TO COME INTO CONTACT WITH SUBSTANCE?</td>
<td>Yes/No: NO Details of procedures:</td>
</tr>
<tr>
<td>INCIDENTS &amp; ACCIDENTS</td>
<td>Fire Risk Assessments have been carried out and D.S.E.A.R. Assessments have been completed where required.</td>
</tr>
<tr>
<td>Acidental release measures</td>
<td>Personal precautions: wear Personal Protective Equipment. Avoid prolonged contact with the tablets or working solution.</td>
</tr>
<tr>
<td>Environmental precautions: Keep large spills out of sewers. Small spills may however be safely flushed away to foul sewer with plenty of water.</td>
<td></td>
</tr>
<tr>
<td>Spill clean up methods: Contain and absorb with material such as earth, sand or absorbent granules/bowels. Remove contaminated material to plastic containers and thence to safe location for subsequent disposal.</td>
<td></td>
</tr>
<tr>
<td>Fire-fighting measures (for tablets only)</td>
<td>Fire-fighting instructions: Keep people away. In the event of an adjacent fire, cool containers with water spray.</td>
</tr>
<tr>
<td>Specific hazards during fire-fighting: Do not allow run-off from fire-fighting to enter drains or water courses.</td>
<td></td>
</tr>
<tr>
<td>Special protective equipment for fire-fighters: Wear self-contained breathing apparatus and protective suit.</td>
<td></td>
</tr>
<tr>
<td>Hazardous combustion products: During a fire, smoke may contain the original material in addition to unidentified toxic and/or irritating compounds. Hazardous combustion products may include and are not limited to sulphur dioxide and chlorine.</td>
<td></td>
</tr>
</tbody>
</table>

Signed: Derek Scrimger Dated: 15/12/2016