DNA Decontamination Guidelines for Forensic Medical Examinations

Controlled Copy Number _____

Any printed copies of this document are 'uncontrolled' unless a copy number is stated above.

Amendment History

Issue Number	Approved Date	Approved By	Details of Amendment
1	16 Aug 2019	Lead Forensic Scientist	New Document

Date printed: 16 August 2019

Issue No.1

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an effective cleaning reagent for surface decontamination of body fluids and DNA in forensic laboratories" MSc thesis, unpublished 2016, in conjunction with Strathclyde University.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cleaning agent effectiveness in facilitating the removal of body fluids and detectable levels of DNA" MSc thesis, unpublished 2013, in conjunction with Strathclyde University.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=175Lg7NWvGg

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.

DNA Decontamination Guidelines for Forensic Medical Examinations

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.

DNA Decontamination Guidelines for Forensic Medical Examinations

Appendix 1 - Forensic Decontamination Log (Ref: 069-003):

OFFICIAL

SCOTTISH POLICE AUTHORITY

Forensic Medical Examination Suite – Forensic Decontamination Log

This form requires to be completed in every circumstance when a forensic medical examination is undertaken

Date/ Time in Time out	Name and Organisation	Reason for Entry	Forensic Medical Examination	Reference Number		Counter Contamination Have you been in contact with others or scenes connected to this investigation or engaged in activities which might introduce a contamination risk?	Notes and Counter Contamination Measures (detail measures taken, consider clothing change, time lapsed, showering, new PPE)	Protective Clothing Worn (to undertake forensic decontamination)	
Date:	Name/ Designation:		Pre Examination clean undertaken by (sign)	Incident No.	☐	Yes/No (If yes detail below)		Face Mask	☐
				Crime Ref No.	☐			Beard Snood	☐
Time in:	Sign:			Self-Referral Ref No.	☐			Hair Net / Hat	☐
				Ref:				Gloves (1)	☐
Time out:	Organisation:		(Print)					Gown/coverall	☐
			Post Examination clean undertaken by (sign)					Gloves (2)	☐
								Safety Glasses	☐
			(Print)						
Comments/any issues identified:									

OFFICIAL

069-003 Page 1 of 2 V1-A0219

DNA Decontamination Guidelines for Forensic Medical Examinations

SCOTTISH POLICE AUTHORITY

Forensic Medical Examination Suite – Forensic Decontamination Log

This form requires to be completed in every circumstance when a forensic medical examination is undertaken

Date/ Time in Time out	Name and Organisation	Reason for Entry	Forensic Medical Examination	Reference Number		Counter Contamination Have you been in contact with others or scenes connected to this investigation or engaged in activities which might introduce a contamination risk?	Notes and Counter Contamination Measures (detail measures taken, consider clothing change, time lapsed, showering, new PPE)	Protective Clothing Worn (to undertake forensic decontamination)	
Date:	Name/ Designation:		Pre Examination clean undertaken by (sign)	Incident No.	☐	Yes/No (If yes detail below)		Face Mask	☐
				Crime Ref No.	☐			Beard Snood	☐
				Self-Referral Ref No.	☐			Hair Net / Hat	☐
Time in:	Sign:							Gloves (1)	☐
			(Print)	Ref:				Gown/coverall	☐
								Gloves (2)	☐
Time out:	Organisation:		Post Examination clean undertaken by (sign)					Safety Glasses	☐
			(Print)						
Comments/any issues identified:									

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

Health and Safety

Risk Assessment Form

FORENSIC SERVICES | SCOTTISH POLICE AUTHORITY

Process: FS-RA-0105 Preparation and Use of 1% Virkon Solution

DESCRIPTION OF WORK ACTIVITY	HAZARD	RATINGS IMPACT X LIKELIHOOD = TOTAL			CONTROL MEASURES USED TO MITIGATE RISKS IN THE SCOTTISH POLICE AUTHORITY ARE:	REDUCED RATINGS IMPACT X LIKELIHOOD = TOTAL		CURRENT RESIDUAL RISK
		A	B	A*B=C	Use Safe System of Work FS-SSW-0056	D	E	D*E=F
Preparation and Use of 1% Virkon Solution	**Chemical** Tablets: Virkon tablets can irritate on contact with skin, eyes, inhalation and ingestion. Solution: The risks of Virkon in a 1% solution are significantly reduced; all cleaning products however have the potential to irritate and individuals *may* be affected by inhalation, skin contact and ingestion.	2	3	6	1) Follow preparation instructions detailed in FS-SE-0032 Scene Examination Counter Contamination Measures 2) All working bottles of solution must be clearly labelled with contents, Irritant and Corrosive COSHH labels. 3) Wear PPE for preparation to protect against contact / accidental spillage (disposable gloves, safety glasses, disposable lab coat or scene suit, barrier mask 4) Wear PPE for application to protect against contact / accidental spillage (disposable gloves, safety glasses, disposable lab coat or scene suit, barrier mask) 5) Apply using 'STREAM' option on trigger head, or via swan neck bottle to minimise aerosolisation 6) Follow up application of the solution with water wipe where PPE is not typically worn in the workspace (e.g. office desks, vehicles) 7) Ensure eye irrigation is available in case of contact with eyes; 8) If solution makes contact with skin, apply clean water to further dilute the solution to prevent irritation	1	1	1
	Physical: Slip hazard from liquid spill.	3	3	9	Wear safety footwear; prepare solution in suitable workspace; ensure bottle fully sealed and nozzle applicator turned to 'off' during preparation of solution and when not in use; Report injuries, accidents and near misses	1	1	1
	Electrical: Anti-Contamination of electrical equipment (e.g. laptop, camera and video equipment)	3	3	9	Do not wet device directly with Virkon solution. Apply Virkon solution to paper towel and then wipe item.	1	1	1

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 scene and these will be tackled by staff using Dynamic Risk Assessment Techniques.

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

DNA Decontamination Guidelines for Forensic Medical Examinations

PROTECT - MANAGEMENT

FORENSIC SERVICES | SCOTTISH POLICE AUTHORITY

Health and Safety
C.O.S.H.H. Form

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

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: Emergency Telephone:	Antec International Ltd (subsidiary of Dupont (UK) Ltd) +44 (0) 8456 006640 or 01787 377305
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	**Hazards 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.

PROTECT - MANAGEMENT

Page 1 of 3

FS-COSHH-0643
Issue 1, 19 Dec 2016

DNA Decontamination Guidelines for Forensic Medical Examinations

PROTECT - MANAGEMENT

FORENSIC SERVICES | SCOTTISH POLICE AUTHORITY

Health and Safety
C.O.S.H.H. Form

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

SAFETY INFORMATION: (e.g. Personal protective equipment)	**Exposure controls/Personal protection** **Personal protective equipment** **Respiratory protection:** 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. **Ventilation:** A fume cupboard is not required when using either the tablets or the 1% working solution however they should be used in a well ventilated area. **Hand protection:** 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. **Eye protection:** 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 the from a wash bottle. **Skin and body protection:** No additional protection is required however disposable lab coats/suits should be used when working with large volumes of working solution. **Hygiene measures:** Wash hands immediately after handling the tablets or working solution. Also wash hands before breaks and at the end of work day.
ADDITIONAL ADVICE:	**Handling and Storage** **Handling: Avoid dust formation in confined areas.** Avoid contact with skin and eyes. When using do not eat drink or smoke. **Storage:** 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. **Stability and Reactivity** Stable under recommended storage and usage conditions. **Conditions to avoid:** Avoid exposure to moisture. **Incompatibility with other materials:** Avoid contact with strong bases and combustible materials. **Hazardous decomposition products:** Sulphur dioxide, Hypochlorite and chlorine. **Hazardous reactions :** No dangerous reactions known under normal use.
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

PROTECT - MANAGEMENT

Page 2 of 3

FS-COSHH-0643
Issue 1, 19 Dec 2016

PROTECT - MANAGEMENT

FORENSIC SERVICES | SCOTTISH POLICE AUTHORITY

Health and Safety
C.O.S.H.H. Form
Control of Substances Hazardous to Health Regulations 2002 (Amended 2003)

CONTROL MEASURES ARE KEPT CLEAN? (inc. P.P.E.)	monitoring regime is in place. Disposable laboratory coats are used.
NOTE ANY OF THE FOLLOWING THAT APPLY.	Special procedures apply for: Carcinogens, Biological Agents and substances that cause Occupational Asthma : **N/A** If these are present contact the Safety Officer.
ARE ASPHYXIANTS IN USE?	Yes/No: **NO** If these are present contact the Safety Officer.
ARE SUBSTANCES MIXED OR ARE TWO OR MORE SUBSTANCES IN USE AT ONE TIME?	Yes/No: **YES** Virkon tablets are dissolved in water (1 tablet added to 500ml water to give a 1% working solution)
ARE CONTRACTORS LIKELY TO COME INTO CONTACT WITH SUBSTANCE?	Yes/No: **NO** Details of procedures:
INCIDENTS & ACCIDENTS	Fire Risk Assessments have been carried out and D.S.E.A.R. Assessments have been completed where required. **Accidental release measures** **Personal precautions:** wear Personal Protective Equipment. Avoid prolonged contact with the tablets or working solution. **Environmental precautions:** Keep large spills out of sewers. Small spills may however be safely flushed away to foul sewer with plenty of water. **Spill clean up methods:** Contain and absorb with material such as earth, sand or absorbent granules/towels. Remove contaminated material to plastic containers and thence to safe location for subsequent disposal. **Fire-fighting measures** (for tablets only) **Fire-fighting instructions:** Keep people away. In the event of an adjacent fire, cool containers with water spray. **Suitable extinguisher media** : Foam, Dry powder, Carbon dioxide (CO2) **Specific hazards during fire fighting** :Do not allow run-off from fire fighting to enter drains or water courses. **Special protective equipment for fire-fighters** : Wear self-contained breathing apparatus and protective suit. **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.

Signed:	**Derek Scrimger**	Dated:	**15/12/2016**

PROTECT - MANAGEMENT

Page 3 of 3

FS-COSHH-0643
Issue 1, 19 Dec 2016