



Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

Forensic Awareness.



YN CYDWEITHIO WORKING IN COLLABORATION

CYD-UNED YMCHWILIADAU GWYDDONOL • JOINT SCIENTIFIC INVESTIGATION UNIT







DNA Clean Room

- * Blood screening.
- * Swabbing exhibits – DNA
- * Contingency hair and Fibres
- * Intel re Blood Pattern Analysis
- * Sexual offences advice.





Drugs

Examination and identification of all common drugs.

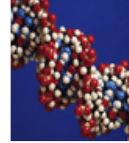
Identification/ Purity tests.

Drug comparisons





DNA submissions



Forensic Submissions





Forensic Development Unit





Fingerprint Bureau





Footwear

Footwear enhancement

Screening

Intelligence.





Forensic Imaging

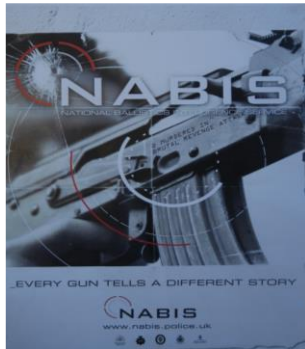
Photography at Post Mortems

Specialist Photography – UV

360 Digital Photography

Laser Scene Imaging – Vivian Road







Local clearing house (LCH) manages ballistic items within the force and records, retains and reviews recovered ballistics items from South-Wales, Dyfed-Powys and Gwent Police.

LCH is responsible for making decisions on ballistic items:

- Submission to a NABIS forensic hub.
- Retention of the ballistic item as evidence or for further enquiries;
- Destruction of the ballistic item when no longer required.





**Crime Scene Investigators work
0800-1800 hrs**

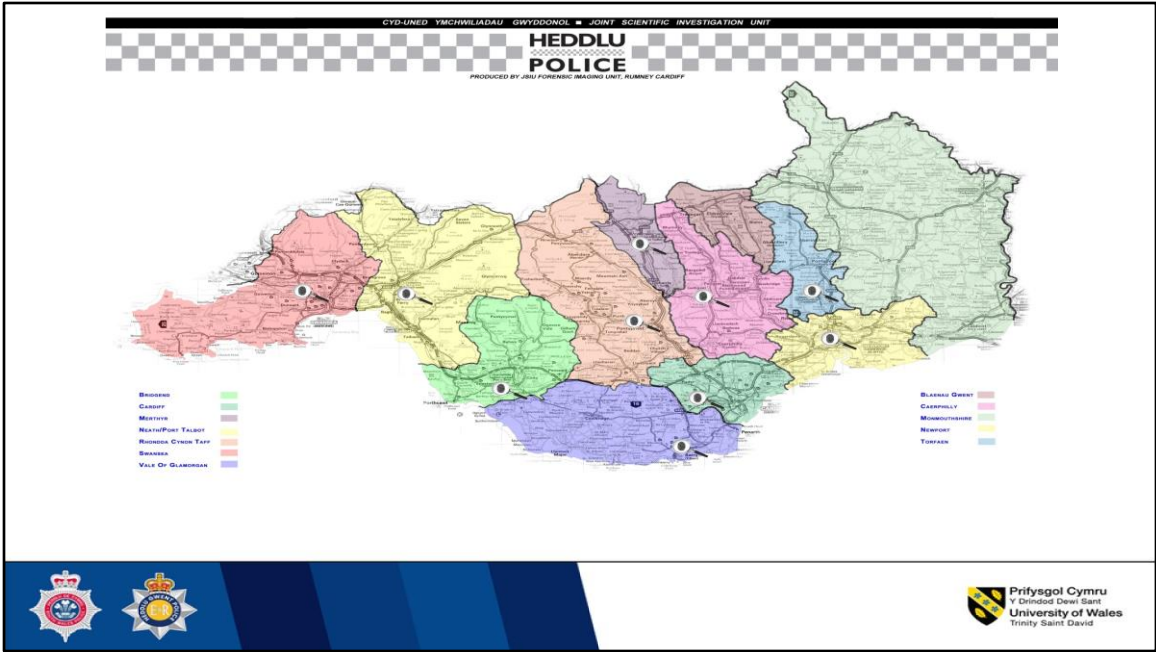
Afternoon shifts 1200 -2200 hrs.

On call 2200-0800hrs via Control Room.

**Points of contact via Airwave radio and
Samsung devices**

**Incidents are allocated via the Crime Scene
Investigation log on Niche on a daily basis.**







Locard's Principle

"Wherever he steps, whatever he touches, whatever he leaves, even unconsciously, will serve as a silent witness against him. Not only his fingerprints or his footprints, but his hair, the fibres from his clothes, the glass he breaks, the tool mark he leaves, the paint he scratches, the blood or semen he deposits or collects. All of these and more, bear mute witness against him. This is evidence that does not forget. It is not confused by the excitement of the moment. It is not absent because human witnesses are. It is factual evidence. Physical evidence cannot be wrong, it cannot perjure itself, it cannot be wholly absent. Only human failure to find it, study and understand it, can diminish its value."





“Every Contact Leaves a Trace”

**CONTROLLED ACCESS TO A SCENE
IS ESSENTIAL**





GLASS

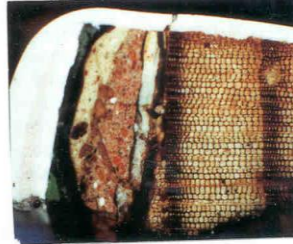




PAINT



Paint Flake (Ten layers)
flake from corner
Magnification
50



White Paint
X 100
of window frame x





FIBRES





Footwear Marks

The Importance of Footwear Marks at Crime Scenes

What can they tell us?

Lines of entry / exit.

Reconstruction of movements at a scene.

Minimum number of persons at a scene

Identify the type, make, size, male or female

Can lead to additional enquiries at a later date

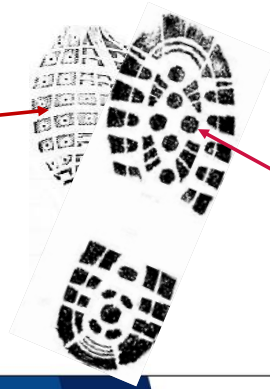
Partial marks can provide more information than complete marks





Preservation of scene marks is vitally important

Scene mark



Contaminating mark





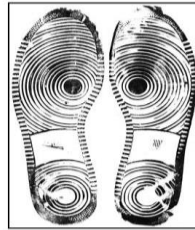
Footwear Marks





Occurrence Number 1700176801
Socrates Reference 17/10873
Scene Address Club X, Charles Offence Rape
Offence Date 28/05/11
Shoe Make Nike NFRC Code 719 Shoe
Type Trainer Commonality Rare
SOC Officer 55209 Lott-Miller

Surname	Forenames	CRO No	D.O.B
Spear	James	34891/16C	20/11/96
Cooper	Jordan	75479/09A	21/12/94





What is a Fingerprint?
Friction ridges :

Cover 5% Skin surface

Fingers

Palms

Soles of feet





**Fingerprints are deposited on surfaces
by sweat and contains approx:**

Water - 98.5%

Remaining 1-1.5%

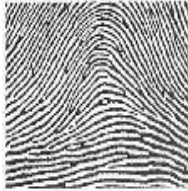
Amino acids

Fats

Chlorides

Salts

Latent (Invisible).



Arch



Loop



Whorl





Sweat leaves image of ridges on surfaces which can then be enhanced using powders i.e. on hard non porous surfaces such as glass



Fingerprints can also be enhanced using chemicals such as Ninhydrin on paper or Superglue on plastic.





DNA - Deoxyribonucleic Acid

Complex Chemical

Carries genetic information from one generation to the next

– varies highly between individuals

Codes for genetic characteristics such as gender, eye colour, hair colour

BLOOD

SEMEN

VAGINAL MATERIAL

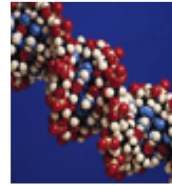
SKIN AND TISSUE

HAIR

NASAL SECRETIONS.

SALIVA

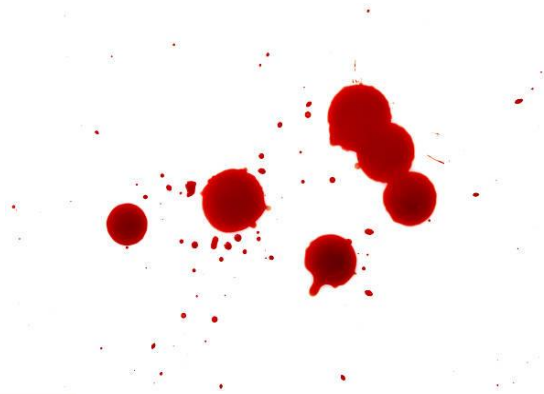
WASTE PRODUCTS





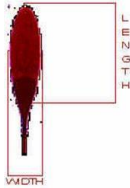
BLOOD PATTERNS

Droplets/Spots.
Impact spatter.
Contact stains.
Smears, drags, wipes, swipes
Fingerprint marks
Footwear impressions
Pooling





Directional blood staining



Direction of travel





Contact blood staining





Fingerprint / Footwear Marks





Pooling





Different types of Crime Scene

- Internal Crime Scenes
i.e. Inside of a house or car.
- External Crime Scenes
Scene open to the elements.





The Next slide
Contains a
Graphic Image





internal Scene





External Scene







Scene Preservation

- Cordons
- Scene log
- Common Approach Path
- PPE
- Health + Safety –
CBRN/Biohazard





**People who will need to enter a
Crime Scene:**

- First Response
- Crime Scene Investigator
- Criminal Investigation Dept.
- Major Crime: Forensic Medical Examiner
- Photographer/Video
- Forensic Scientists / Specialist
- Home Office Pathologist





**The next slide contains
a
Graphic Image**





Moving a body at a Crime Scene



Lividity





Actions that need to taken:

- Locate and confirm
- Use a Common approach path to avoid destroying evidence such as footwear.
- Mark the route you have taken
- Preservation of life
- Record details
- Withdraw from the scene taking the same route
- Call for assistance if suspicious
- Cordon off the area
- Remember Crime scenes are fluid and it important that the first attending officers are aware of the fragility of evidence types and aim to preserve the scene for later recovery.





Scene Preservation

It is important that attending units

DO NOT:

Walk around the scene.

Disturb the scene i.e. 'touch, or remove items from the scene unnecessarily'.

Major Crime.

Allow access to unauthorised persons.

Photograph or video the Scene.

Discuss the scene with witnesses or bystanders.

REMEMBER LOCARD'S PRINCIPLE!





In order to improve attendance at crime scenes during the all
important

‘GOLDEN HOUR’

and to maximise the potential for higher forensic recovery it is
important that all relevant information is passed as a matter of
URGENCY to the attending CSI and not left to the end of the
shift where evidence could be either lost or compromised.





Cross Contamination

Two Main Causes of Cross Contamination:

- **Secondary Transfer**
- **Poor Packaging – Storage.**



Any Questions?

