The National Center for Victims of Crime is pleased to provide the slides used in our June 23, 2014 Webinar, “Fighting Trafficking with the Power of Forensic Science.”

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Utilizing Forensic DNA Analysis to Combat Trafficking in Persons

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Presentation Hosted By: National Center for Victim’s of Crime
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1. Globally, the average cost of a slave is $90.

2. Trafficking primarily involves exploitation which comes in many forms, including: forcing victims into prostitution, subjecting victims to slavery or involuntary servitude and compelling victims to commit sex acts for the purpose of creating pornography.

3. According to some estimates, approximately 80% of trafficking involves sexual exploitation, and 19% involves labor exploitation.

4. There are approximately 20 to 30 million slaves in the world today.

5. According to the U.S. State Department, 600,000 to 800,000 people are trafficked across international borders every year. More than 70% are female and half are children.

6. The average age a teen enters the sex trade in the U.S. is 12 to 14-year-old. Many victims are runaway girls who were sexually abused as children.

7. California harbors 3 of the FBI’s 13 highest child sex trafficking areas on the nation: Los Angeles, San Francisco and San Diego.

8. The National Human Trafficking Hotline receives more calls from Texas than any other state in the US. 15% of those calls are from the Dallas-Fort Worth area.
Average slave in American south in 1850 costs $40,000. in today’s money.

today a slave costs on average $90.
This map illustrates the trafficking tier placement worldwide (defined below) from 2012.

**Tier 1** countries have governments that are fully compliant with the Trafficking Victims Protection Act (TVPA) standards to eliminate human trafficking.

**Tier 2** countries have governments that do not fully comply with TVPA standards, but are making significant efforts to do so.

**Tier 2 Watch List** do not fully comply with TVPA standards, but are making significant efforts to do so.

**Tier 3** countries are not compliant with TVPA minimum standards and are making no attempt to comply.
Slavery - Why does it exist today?

- This is a very complicated answer.
- To truly understand why slavery exists today, we would have to dig down into:
  - cultural practices and acceptances,
  - economic push and pull factors,
  - gender bias and inequality,
  - poor or non-existent laws,
  - lack of effective enforcement
  - Lack of resources, and
  - apathy
What can be done to stop it?

- Despite dedicated work of many we are losing the war
- Roughly 90% of girls ‘rescued’ from brothels return
- ‘Rescued’ girls are easily replaced
- More and more profitable
Supply and Demand

- One group wants to target the **demand side**; if we can stop the demand, we can stop the trafficking.

- Another group wants to target the **supply side**; if we educate the vulnerable people groups about trafficking and find them sustainable livelihoods, we can stop the trafficking.

- **Never going to stop the demand** for cheap labor or women and children to sexually exploit.

- **Never going to stop the supply of victims** being trafficked as long as there is a profit to be made.

- Human trafficking and slavery is a very profitable business and as such, we need to **ATTACK it** like we would attack a business to shut it down.
US TIP Investigations - Issues

- Identifying a TIP victim
- Getting victim cooperation
- Proving Crime of Trafficking: force, fraud, or coercion
- Going the next step
- Reactive – Proactive – Disruptive
- Need a large commitment to investigate an Organized Criminal Network
Major Objectives

- Improve investigative outcomes and increase successful prosecution
- Reduce secondary victimization and unnecessary victim trauma
- Introduce new forensic science applications and advances at the local level, building local capacity
- Secure input and explore collaboration
Value of DNA Analysis For Investigations Involving Human Trafficking

- Provide Victims with a Permanent Identity
- Reduce dependency on victims & trauma associated with legal proceedings
- Provide investigative leads; also identify links between victims, traffickers, and locations
- Assist in successful prosecutions
- Aid in identification of victims perpetrators
- Database for those at risk as well as current victims
- Multiple options depending on specific case issues
Sample Types

- Known Buccal from Victim’s
  - Crime Scene
  - Undercover Suspect
- Post Arrest Suspect Buccal
- Pre-Victimization and border control
Collection of Known Samples
Known Buccal Swabs
Touch DNA
Clothing, bedding, other surfaces
Identification Issues
Forced Begging
Gypsy Camps
Biometric Data Collection
Integration of Systems

Crime scene
Portable DNA analyzer
Mobile unit
  - Fingerprint ID
  - Facial ID

Multi-source biometrics identification system
  - Fingerprint DB
  - Face DB
  - DNA DB
Following the Victims – Transit Routes
Small Towns - Transit Stations
Life in a “Cabin Restaurant”
Targeting & Identifying Perpetrators
‘18’ year olds – Supporting Family
Transvestite Population
“Everyone is sooo friendly”

Reviewed September 3, 2013
Wow! When I saw the reasonable rate, I asked my friends about the hotel. They tried to dissuade me, telling me to stay at a classier place, but boy were they wrong. The people there really take notice of you. I've been trying to exercise lately and have lost a few pounds and boy did the ladies notice. You just...
14 years old: $400 per session
“I’m Special”
Child Exploitation – Parent Involvement
Complexity of Undercover Operations
SecurSwab™ DUO-V Swab System

The National Forensic Science Technology Center (NFSTC) releases an NIJ funded “Swab Collection Study” on April 24, 2012 – Bode’s SecurSwab DUO-V Swab System Ranks #1. Click here for the study.

Only Bode’s Collectors are Forensic Investigation Qualified

The SecurSwab DUO-V is a complete collection system that uses SecurSwab technology to optimize evidence sample collection.

The SecurSwab DUO-V contains 2 cotton tipped swabs that enable the user to perform wet/dry sample collection for forensic evidence.

The collection device is a complete system that includes components for Collection, Preservation & Drying, Protection, Tracking & Transport.
Drying in Less than 6 Hours

SecurSwab DUO-V Collectors dry samples in less than 5-6 hours. 150uL of water was added to one of the swabs to simulate the saturation from a wet/dry collection. Swabs were then sealed and reweighed to determine how much of the sample had dried. The data is shown below.

Table 1: Drying times of samples collected using the SecurSwab collector

![SecurSwab DUO-V Drying Time: Wet/Dry Collection Graph]
Rapid DNA Analysis: An Enabling Technology

Rapid DNA Analysis is the automated generation of STR profiles (DNA fingerprints) by non-technical operators outside the laboratory.

- Law Enforcement & Military
- Victim Identification at Mass Disaster Sites
- Immigration and Border Monitoring
- Human Trafficking
ANDE Rapid DNA Analysis System
NetBio Systems

Sample Collection Swab → BioChipSet™ Cassette → Fully Automated Instrument
Operating the ANDE System: Insert Sample into the BioChipSet Cassette
Operating the ANDE System:
Load the BioChipSet Cassette
BioChipSet Cassette: Fully Integrated Lab-on-a-Chip
Victim Self Buccal

Allele Report

Signal Strength (rfu)

Fragment Length (bases)
Cigarette Butt
Swab from Drinking Glass

Allele Report  

D3S1358  TH01  D21S11  D18S51  PentaE
15  17  6  9  30.2  32.2  14  15

D3S818  D13S317  D7S820  D16S539  CSF1PO  PentaD

Am  vWA  D8S1179  TPOX  FGA
10  12  11  12  8  10  9  11  9  10

X  Y  16  17  15  8  11  20  26
Excellent results on known buccal swabs from victims

No real difference with victim’s taking their own samples

Partial and Full (less frequently) results from swabs taken from:

- Water and soda bottles
- Shot and wine glasses
- Straws
- Cigarette butts

Ability to obtain profiles from separate swabs taken from inside and outsides of used condoms
Rapid is only one answer!
The other Issues....

- Mixtures
- Low Copy Number
- Need for Fast results with STR methods
- Local Database capacity
- Sample collection and preservation in difficult environments
Mixture Cases
DNA- STR-
Short Tandem Repeat
Y-STRs

“detects male component of a mixture”

SCENARIO #1

SCENARIO #2
MITOCHONDRIAL DNA TESTING

[Diagram showing the structure of a cell with a focus on mitochondrial DNA.]
Hair Analysis – Microscopic vs. DNA
General use of DNA Databases

- Catch repeat offenders sooner
- Prevent violent crimes
- Exonerate the innocent
- Protect civil liberties
- Minimize racial bias
- Reduce criminal justice costs
- Provide Investigative Leads
- Increase Prosecutions
- Support Victim Testimony
DNA Databases - Facts

- **DOES NOT** Contain: Name, identification number, or any identifying data

- Various Databases: CODIS, local area, Interpol, single computer

- Varied search parameters: known to alleged known, offender and evidence sample, unknown to known

- All matches confirmed

- Regulated and controlled access and dissemination

- US Courts have ruled no different than fingerprints (Maryland v. King)
Local DNA Databases

- CODIS compliant, Interpol option
- Note: RAPID DNA data not allowed in CODIS at this time
- Agencies maintain their own database
- Real-time matching technology
- Audit trail
- Generates Investigative leads
- Flexible Match Stringency
- Random Match Probabilities
- Relationship Index
- Case Management
Collaborations in Nepal, Latin America, Mexico
Thank You !!

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