Behavioral Health is Essential To Health
Prevention Works
Treatment is Effective
People Recover
The Science of Hair Testing
Summary of Literature Review

Presented by
SAMHSA’s Division of Workplace Programs

June 11, 2014
Literature Summary – Topic Areas

- Articles from last 10 years
  - General Review (6)
  - Collection (1)
  - Passive Exposure in Children (9)
  - Proficiency Testing (1)
  - Decontamination procedures (6)
  - Drug specific studies (15)
  - Methodologies (3)
General Review

- Hair grows ~1.5cm per month
- Posterior vertex region of scalp preferred for collections
- Drugs can be deposited 3 ways
  - Blood supply
  - Sweat and sebum
  - External environment
    - i.e. Smoke, Surface transfer, Evidence handling
- Wash steps are critical
Collection

- Collection can vary from person to person
- Individual growth rates also affect amount collected
- Most important if segmented analysis is used
Passive Exposure in Children

- Children in drug user environments routinely test positive for drugs in hair
- Passive exposure can lead to both external contamination and absorption into the body
- Analysis of drug metabolites and ratios *can* be useful, but are not definitive
Proficiency Testing

- Historical values from 10+ years ago
- Shows steady improvement
Decontamination Procedures

- No industry standard
- Procedures involve organic and/or aqueous washes
- Length of washes – ongoing debate
- Commonly accepted that all external contamination cannot be removed
  - Wash criteria [factor of drug concentration in wash solutions] used for interpretation
Drug Specific Studies

  - Examined metabolite ratios in amphetamine class of drugs, variability
  - Proposed guidelines from 2004 would not be sufficient to distinguish contamination from use (metabolite ratios, cutoffs for minor alkaloids); melanin relation established
Drug Specific Studies

  - Helped distinguish external exposure in a couple; confirm a false negative; confirmed passive inhalation in a 2 year old

  - Presence/Detection of THC-COOH in hair is widely accepted to confirm use; also examines presence of THCA-A as a marker for side stream smoke contamination
Methodologies

  - Automated Solid Phase Extraction (SPE) method for GC/MS confirmation; included wash procedure and minimized carry over; for this study, found to be more efficient than liquid-liquid extraction.
Methodologies

  - 17 common drugs analyzed

Questions

- If you desire a list of references used for this summary or if you have any comments about the material presented today, send your requests or questions to: dwp@samhsa.gov

- Submitted questions and concerns will be discussed by the Board in closed session