Invalid – No Contact

- Specimen reported as invalid
- Specific gravity >1.0010 and <1.020 and creatinine <2.0
- 3 attempts to contact donor
- DER attempts to contact donor
- No contact?????

Second Invalid

- Donor finally surfaces
- Sent for collection
- Second result also invalid
  - Same reason
  - Different reason

Negative Dilute

- Initial specimen creatinine 4.5, specific gravity 1.002
- Donor offers no explanation
- Recollection under direct observation, no notice
- Second specimen also negative dilute

Invalid but also positive, adulterated and/or substituted

- Results – pH 3.7 and positive for Marijuana
- Donor offers no explanation for marijuana
- What do you report?

Agenda

- Part 40 Update – June 25, 2008
    - Effective date – August 25, 2008
- ODAPC Q&A
- Regulated
- Non-Regulated
- Alternative Specimens
Multiple non-negative results

- Results – positive for cocaine and marijuana and adulterated (refusal)
- What does MRO report

Multiple Non-Negative
Two specimens collected same time

- One negative and other non-negative both reported at same time
- First reported as negative – second pending
- First non-negative – second pending

Fail to Reconfirm

- Which requires donor interview?
  - Drugs not detected
  - Adulteration criteria not met
  - Substitution criteria not met
  - Split Specimen invalid
  - Split Specimen adulterated or substituted
  - Split Specimen not available for testing

Fail to Reconfirm

- Split Specimen adulterated or substituted
  - Medical explanation
  - No medical explanation

Fail to Reconfirm

- Primary specimen reconfirms the adulteration and/or substitution finding of the split
- Primary specimen fails to reconfirm the adulteration and/or substitution finding of the split specimen

Fail to Reconfirm

- Immediate recollection under observation always?
  - Drugs not detected
  - Adulteration criteria not met
  - Substitution criteria not met
  - Split Specimen invalid
  - Split Specimen adulterated or substituted
  - Split Specimen not available for testing
Flight attendant

- Urine specimen
- Collected 7/21 in California
- Received by Kansas lab 7/26
- Reported as invalid – abnormal ph
  - Assume prior to August 25, 2008
- Call Lab
  - pH 9.1

Flight attendant

- Increased storage temperatures associated with increased urine pH – usually 9.1-9.3
  - Never >9.5
  - Lab must now report pH
  

Flight attendant – Invalid

Elevated pH – Q & A 7/08

- No acceptable medical explanation
- Acceptable medical explanation

Insufficient Specimen

3 Hours?? - Q & A 7/08

- Donor attempts at 2 hours 50 min – still insufficient – testing ends
  - Cancel??
- Donor indicates at 2 hours 45 minutes, will not be able to provide specimen
  - Cancel?

Insufficient Specimen

3 Hours?? - Q & A 7/08

- Donor indicates at 2 hours need to pick up child
  - Cancel?
- Facility closes at 2 hour point
  - Cancel?

Internet Prescription

- Test positive for morphine
- Donor interview
  - On MS Contin
  - Request copy of label or print out from pharmacy
  - Donor explain internet pharmacy

Internet Prescription

- Evaluate how the prescription was obtained
- Determine whether there was a doctor-patient relationship established through formal examination?
  - Reviewing questionnaire does not create a doctor-patient relationship

Internet Prescription

- Determine whether there was evidence of ongoing medical treatment for the condition for which the medication has been prescribed?
- Evaluate whether the medication had been prescribed consistent with standard of care for this medication in the normal dosage and frequency.

Internet Prescription

- For documentation
  - Copy of the prescription and letter on office letterhead from prescribing physician
  - The physician MUST be located in the same state as the donor.
  - This letter must include:
    - Condition for which the donor was prescribed the medication, AND
    - Last date on which the prescribing physician examined the donor for this condition.

Positive Test for Marijuana

- Regulated test positive for Marijuana
- Donor indicates undergoing chemotherapy
- On Cesamet (Nabilone) for nausea and vomiting
- Told by his physician that Nabilone is a synthetic cannabinoid
- Valid explanation?

Professional Health Monitoring

- Test positive for oxycodone
- Provides documentation of prescription for Lortabs, Dilaudid, Tylenol with codeine
- Ok???

Synthetic Opioids

- Hydrocodone – Vicodin, Lortab, Lorcet, Norco
- Hydromorphone - Dilaudid
Synthetic Opioids

- Percodan, Percocet, Oxycontin

Professional Health Monitoring

- Test positive for alprazolam
- Provides documentation of Tylenol with codeine, Valium, Librium
- Ok???

Benzodiazepines

- Alprazolam
- Alprazolam metabolite
- Clonazepam
- Clonazepam metabolite
- Lorazepam
- Lorazepam
- Midazolam
- Midazolam metabolite
- Zolpidem
- Zolpidem metabolite

Workplace Non-Regulated

- Employee on MS Contin for chronic low back pain
- Test results
  - Morphine – 30,000
  - Hydromorphone – 240
- No documentation for hydromorphone or hydrocodone

Morphine – Hydromorphone

- Codeine - Hydrocodone

  - High levels of morphine
    - Small amount (<1%) of hydromorphone
    - May also be found
  - High urine codeine levels
    - Small amount (<1% typically) of hydrocodone.
  - Genetic polymorphism for drug metabolism


Benzodiazpine

- Positive oxazepam and nordiazepam

  - Positive for both oxazepam and nordiazepam.
  - Valid prescription for oxazepam but nothing to explain the nordiazepam
  - 2 different labs reconfirm
  - Nordiazepam present but below the reporting level.
Benzodiazepine
Positive oxazepam and nordiazepam
• Only difference between nordiazepam and oxazepam is a hydroxyl group (OH) at the 3-position of the ring structure of oxazepam which is not present on nordiazepam
• Possible that the body will remove the hydroxyl group from the ring structure to a small extent during metabolism
  — small amount of nordiazepam if large quantity of oxazepam

Non-Regulated Client Wants
Alternative to Urine Testing
• Had been doing Pre-employment, random and post-accident
• Wants same reasons but prefers hair
  — First Pre-employment comes back
    • Cocaine 8.9 ng/10ml
    • Benzylamine – 0.00

Ethyl Gluuronide – Ethyl Sulfate
• Minor metabolites of ethanol – any source
  — Detected in serum, urine and hair
  — Serum detection – up to 36 hours after heavy drinking
  — Urine detection – up to 5 days after heavy drinking
  — Urine alcohol – detectable 4 – 6 hours
• Ideal cut-off – undetermined
  — 100 - 1000

Ethyl Gluuronide – Ethyl Sulfate
— Detected level varies greatly
• Amount of alcohol intake
• Duration of time over which the alcohol was consumed
• Duration since the last drink
• Individuals metabolism
  — genetic activity of their liver enzyme systems
• Amount of water in the urine
• Other - body size, medications

Ethyl Gluuronide – Ethyl Sulfate
Possible Sources of Incidental Exposure
• Foods cooked with or containing alcoholic beverages (vodka, sherry, wine, etc)
• Foods containing significant amounts of vanilla extract wine vinegar, soy sauces
• Communion Wine
• “Alcohol-free” Beer and Wine, etc

Ethyl Glucononide
EtG U100 Creatinine
• Takes urine concentration into account
• (EtG) cut-off levels and the interpretation of positive results.
• Calculated by the following formula;

\[ \text{EtG U100} = \frac{\text{Urine EtG} \times 100}{\text{Urine creatinine}} \]

• If the EtGU100 Creatinine is below the cut-off
  — May be due to accidental / incidental exposure
Compassionate Use THC

• Locomotive Engineer
• AIDS
• California
• Traditional medications not effective
• Recommended use of THC
• Has card

Compassionate Use THC

• Production line worker
• Hawaii
• Traditional medications not effective
• Recommended use of THC
• Has certificate

States with Medical Marijuana Laws

• Drug testing programs mandated by the Federal government (e.g. DOT, HHS, NRC)
  — Schedule 1 drugs are prohibited.
• Non-regulated
  — Should address this in their Drug Free Workplace Policy
  — Most companies will mirror Federal Guidelines

States with Medical Marijuana Laws

• If employer permits medical marijuana use – negative if;
  — Donor must live and work in State that has a medicinal marijuana law
  — Donor must have a "Medical Marijuana" therapeutic recommendation from a physician dated within one year of the test.
  — The physician recommending marijuana use must be licensed in the state where the donor lives and works.
• Safety concern

Spousal Medical Marijuana

• Reports wife had head injury
• Had been on meds for severe headaches
• Now medical marijuana – 6 cigarettes per day
• Has high tech HVAC system in house
• Home sick 6 days straight
• Passive inhalation

“False Positives”

• Donor is positive for
  — Cocaine – "knows that Amoxicillin will cause false positive"
  — Marijuana - “knows that Protonix will cause false positive”
  — Buprenorphine- “knows that Tramadol will cause false positive”
• NOT ON GC/MS
THC - Substances or Conditions which can cause false positives

- Ibuprofen; (Advil, Nuprin, Motrin, Excedrin IB etc)
- Ketoprofen (Orudis KT)
- Kidney infection (Kidney disease, diabetes)
- Liver Disease
- Naproxen (Aleve)
- Promethazine (Phenergan, Promethegan)

Cocaine - Substances or Conditions which can cause false positives

- Kidney infection (kidney disease)
- Liver infection (liver disease)
- Diabetes
- Amoxicillin, tonic water