On Wiping the Interior Walls of 37-mm Closed-face Cassettes: an OSHA Perspective

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OSHA’s Established Policy

• OSHA instructs Compliance Officers to sample with cassette inlet downwards
• OSHA considers any material that enters the cassette to be part of the sample
• Current methods posted on osha.gov
Cassette Wiping in OSHA Metal Methods

AA Methods

I-1 cassette wipe (1977)
ID-121 cassette wipe (1985)
ID-105 cassette wipe (1991)
ID-105, ID-121 explicit cassette wipe (2007)


ICP Methods

ID-125G cassette wipe (2002)
Purpose of OSHA’s Cassette Wiping Policy

- OSHA cassette wiping policy originally intended to help account for visible particles of loose dust
- 2004 OSHA AIHce poster presentation concluded that even invisible material on walls can be a significant fraction of total
OSHA’s Cassette Wiping Study

• Study included 40 random compliance samples analyzed by 13-element ICP/AES

• Sample results
  ✓ 520 results were possible
  ✓ 335 results were none detected
  ✓ 185 results were positive
Distribution of the 185 Positive Results

- Filter Only
- Wall Only
- Filter and Wall

Number of Results:

- ND
- 1
- 9
- 19
- 29
- 39
- 49
- 59
- 69
- 79
- 89
- 99
- 100

Percent Total on Walls
Cassette Wiping at SLTC

- Smear Tabs or Ghost Wipe section used to wipe cassettes for AA, ICP, and ICP/MS samples (nitric acid or sulfuric acid digestion)
- Ghost Wipes not used for solder analytes (hydrochloric acid digestion)
- Wipes added to beaker with sample filter and any rinse solution
To Rinse or to Wipe; That is the Question

• Simple cassette rinsing not effective by itself
• Wiping more effective
• Single wipe effective as shown by second wipe
Overall Conclusions

• OSHA concluded that ignoring wall deposits could underestimate worker exposures
• Increased accuracy of measurement outweighs increased analytical costs
• OSHA policy consistent with guidance in NIOSH MAM
Undecided?

...you don’t need a weatherman to know which way the wind blows...

Robert Zimmerman
OSHA adds value to business, work and life.