

Stove Testing Recommendations

(Humble opinions by) Tami Bond

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What do you need?

- Extraction & collection method
 - hood, chamber? (don't suck air from chimney)
- Emission analysis equipment
 - definitely: CO, PM
 - would be nice: O₂? NO? UHC?
 - method of relating to quantity burned (CO₂, weight)
- Data acquisition
 - computer, HOBO, pen and clipboard?
- A plan!!
 - what are you investigating? how many tests does your hypothesis require? are you sure your burn is representative? etc...

Scenario #1: Stove design lab

■ Focus:

- *Evaluate* design choices
- *Demonstrate* stove improvements-- possibly for obtaining dissemination funding

■ Recommendation:

- Extraction: exhaust hood & pump (salvage, \$1k)
- Emissions: CO/CO₂ by NDIR (\$10k), PM by DataRAM (\$5k), O₂ and NO at stove exit (\$5k)
- Data acquisition: PC package (~\$2k)

Scenario #2: In-field monitoring

■ Focus:

- *Rapid feedback* to stove artisans
- *Widespread* data measurements

■ Recommendation:

- Extraction: room method?
- Emissions: CO by thermochemical (\$150), PM by opacity (need cheap labor to develop), CO₂ (ditto)
- Data acquisition: HOBO (\$200); still need a computer somewhere

(Scenario #3: High-end testing)

- Focus:

- *Validate* less-expensive measurements (or define bounds of validity)

- Recommendation:

- Stove testing at any university, national lab, etc. should include simultaneous recording of one or more “lower-tech” instruments!!

Last note: Is CO a good proxy for PM?

Some (very smart) people say YES...

Tom Reed has suggested it on “stoves” list...

Kirk Smith & coworkers also...

Some correlation observed in (open) biomass burning...

Show me the data!