



Norbert Senf &lt;norbert.senf@gmail.com&gt;

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**MHA News: Fwd: [MHAtech] Who is James E Houck?**

1 message

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**Norbert Senf** <norbert.senf@gmail.com>  
To: Norbert Senf <norbertsenf@gmail.com>

Wed, Jun 21, 2017 at 11:19 AM

----- Forwarded message -----

From: **Norbert Senf** <norbert.senf@gmail.com>  
Date: Tue, Jun 20, 2017 at 4:11 PM  
Subject: Re: [MHAtech] Who is James E Houck?  
To: "mhatech@yahoogroups.com" <MHAtech@yahoogroups.com>

One important thing to realize about our mission at MHA and at the tech committee is our desire to work with EPA at whatever level we can. (snip) It is important for a company like Tulikivi to be able to obtain a label for their appliances that says "EPA certified", even if the certification method is flawed.

The fact that we were able to put together an (annual) event with 100 heater builders, build a test heater, and have not only EPA but a number of top level lab guys in an informal collaborative setting over an extended period, and do actual field testing, is worthwhile in itself and advances the art. We can already see real benefits for our membership from this approach and from the relationships that have been established, including this list.

Houck's article is great, the odd dig at EPA and "government" aside. It reinforces for me the beauty of the Condar, in all its simplicity. Once you calibrate it, there is nothing to get out of calibration on the PM sampling end. We've demonstrated 3.1% repeatability on PM on pellet stoves in a series of 18 runs, and some of that 3.1% can likely be attributed to the stoves and subtracted from the Condar.....N

On Tue, Jun 20, 2017 at 11:19 AM, Crispin Pemberton-Pigott [crispinpigott@outlook.com](mailto:crispinpigott@outlook.com) [MHAtech] <[MHAtech@yahoogroups.com](mailto:MHAtech@yahoogroups.com)> wrote:

That falls into the "Live and Learn Department" findings.

Thanks for that. I am going to rely on his EPA assessment for a discussion of uncertainties which are plaguing other methods as well. More on that as time goes by.

Thanks  
Crispin

On Tue, Jun 20, 2017 Norbert Senf [MHAtech] <[MHAtech@yahoogroups.com](mailto:MHAtech@yahoogroups.com)> wrote:

Jim Houck used to work at OMNI. I think at one time he was a partner.

A number of us met him in 1992 when OMNI put together a 2 day course for us on emissions and how to measure them.

I recorded and transcribed it, and it is available online. He has a PhD in organic chemistry or a similar subject. He is an expert on the chemistry of wood smoke, and OMNI has also done a lot of work with toxics in other fields.

A number of years ago, it had turned out that the (high) EPA estimate for the national emissions inventory for PCBs (*edit: should read "dioxins"*) from wood smoke traced back to one data source, which turned out to be 2 measurements that had been conducted at OMNI. Environment Canada paid to have some additional testing done at (*a laboratory*) in Montreal. Dr. Houck witnessed the testing. When he walked around outside at the industrial park, he noticed that there was a plastics molding company a couple of doors down. He asked the laboratory if they were running any blanks (filters), and they weren't. Simple science 101.

On a side note, ever since hearing that, I have always run a blank every time I weigh filters, and it has saved my bacon on more than one occasion. Same filter for 10 years now. It tells me right away if my scale is out of calibration (it never is) or if it needs releveling (occasionally), or if it doesn't match the scale at another lab. At one of the EPA accredited labs, they would use their 50 g calibration weight from time to time. When doing a differential measurement with maybe 0.08 g catch on a 1 g filter, I trust the blank filter more than the 50 g calibration weight. It is in the same ballpark as what is being measured. It also responds, very slightly, to humidity. The dessication routine in the EPA method is not needed, adds time and labor, and probably error. The filters are as dry as they are ever going to get as soon as they come out of the Condar. There is something hygroscopic in the catch, either the soot or maybe there is ash (which is very hygroscopic for sure). In the dessication routine, you are supposed to leave the filter in the dessication cabinet and weigh it regularly until the weight is stable - bad idea with an initially dry sample that can only gain water, not lose it.....N

On Sun, Jun 18, 2017 at 4:36 PM, Crispin Pemberton-Pigott [crispinpigott@outlook.com](mailto:crispinpigott@outlook.com) [MHAtech] <[MHAtech@yahoogroups.com](mailto:MHAtech@yahoogroups.com)> wrote:

This is right on the money from a number of points of view. It is going to be taken up on the Stoves discussion list at [bioenergylists.org](http://bioenergylists.org).

[http://www.hearthandhome.com/magazine/2017-04-25/straight\\_talk.html](http://www.hearthandhome.com/magazine/2017-04-25/straight_talk.html)

### Garbage In, Garbage Out

Anyone who has had scientific training is familiar with the concept called propagation of errors. It refers to the fact that when a final number such as the certification number, i.e., the weighted particulate emission rate (g/hr), for a wood heater is generated by various measurements that are used as input into complex equations, the uncertainties in each measurement are propagated to the final number.

For calculating the certification number, many measurements are made such as flow rates, the concentrations of various gases, the mass of the filter with the particulate catch, the mass of the blank filter, the moisture content of the wood fuel, the mass of the wood fuel, the mass of ash remaining, several temperatures, etc. All need to be measured, all have uncertainties associated with them and all contribute to the uncertainty of the final calculated certification value.



Thanks  
Crispin

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Posted by: Crispin Pemberton-Pigott <[crispinpigott@outlook.com](mailto:crispinpigott@outlook.com)>

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