AB1900 Proposed Biomethane Monitoring Requirements - comments

There are a number of challenges with the Recommended Risk Management Levels and Constituents:

1.
Table 2. Recommended risk management level concentrations **(mg/m3 or ppmv)**

Unlike units for soil and water concentrations, mg/m3 are not equivalent to ppmV in air

mg/m3 is a weight-to-volume ratio, while parts per million in air is a volume-to-volume ratio.

The table should be revised to include both mg/m3 and ppmV units and values.
We can share the unit conversion calculations if you'd like – they are also available online.

2.
The **recommended trigger level** for some of these constituents may be highly impractical from a field sampling perspective or unachievable from a commercial laboratory perspective.
It may require 8-12 hours or longer to collect a single sample for metals, for example.
We are confirming with our colleagues regarding how much sample volume, at what flow rate and thus how long it will take to collect enough sample to achieve the trigger levels.

3.
Chlorocarbons as Cl, Fluorocarbons as F

EPA Method TO-15 does include chlorinated and fluorinated compounds in the target reporting lists of VOCs.

However, if the intention is to characterize all of the Cl or F in a matrix, this approach will likely significantly underrepresent the Cl or F in a matrix.

In order to report this, a lab will have to determine the number of Cl or F atoms in the analytes it is quantitating and reporting and will then calculate the concentration from the masses detected in the sample.

However,
* This will only yield the Cl and F for the VOCs for which the lab has a calibration standard and which the lab reports.
= There could be many other VOCs in the matrix that are not quantitated and reported by the lab because they are not on their target calibration list.
*There can also be many Cl and F species in the matrix that are not amenable to analysis by TO-15 - these would not be accounted for in this approach.
*There can be many Cl and F species in the matrix that are not amenable to sampling with a summa canister - these would not be accounted for in this approach.

The same goes for Sulfur Compounds as S -
if the lab reports this using the data from ASTM D5504, for example, it will only be able to yield the S content from the list of analytes for which it quantitates and reports -
The S content is essentially limited by the lab's target list.
Labs with longer target lists will yield results with higher S than labs with shorter target lists.
Also, there can be many species in the matrix that contain S that cannot be sampled or analyzed by ASTM D550, and they will not be accounted for by this approach.

4.
Table 3 Recommended Test Methods

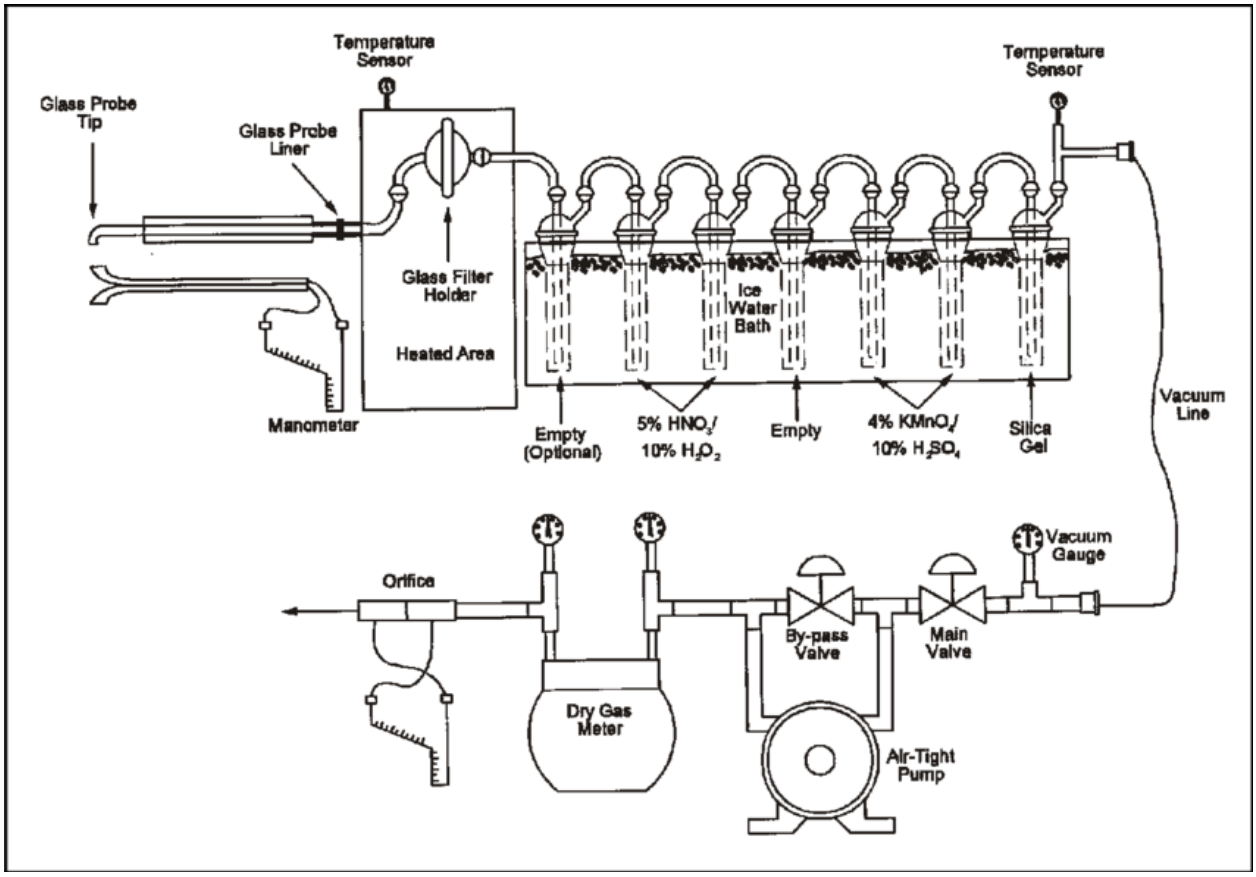
Many of these recommended methods would need to be modified for landfill gas, digester gas, biogas, specifically in the sampling approaches, yet there is no guidance, no standardization, in how these methods should be modified for this practice area.

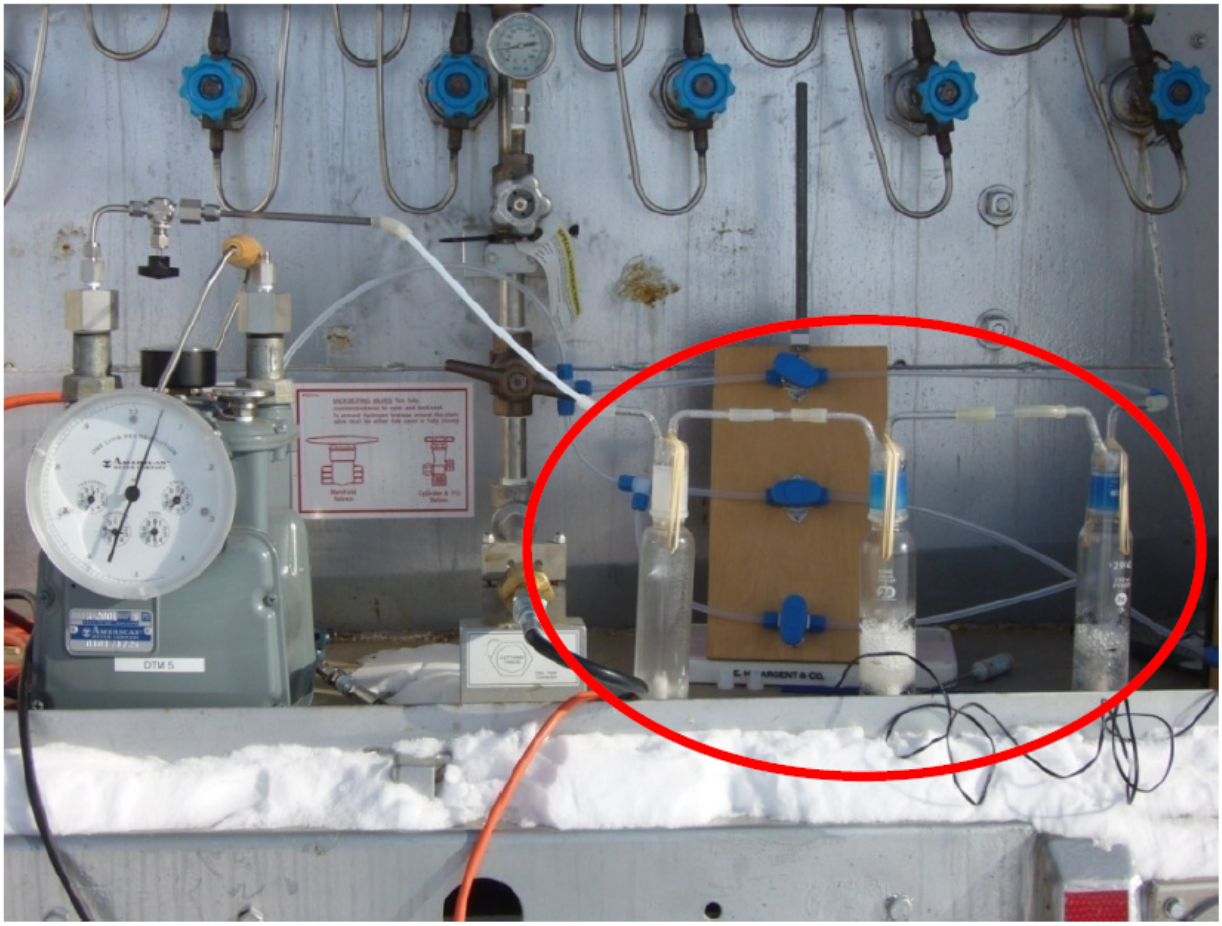
Ex. NDPA
EPA Method TO-13A
This is an **ambient air** method that utilizes a PUF/XAD-2 resin filter.
This is a glass filter with about a 1-2" opening - how would one connect this to a system?
Field samplers in the biogas field generally have pretty limited sampling experience. They are familiar with Tedlar bags. Anything else can be rather challenging.
Recommended flow rate is up to 5L/min for up to 7200 L of sampling volume
How might this be modified to collect LFG?
See attached for sampling directions.

Another recommended method for NDPA is **EPA 8270**
This is a **soil and water method**. The normal sample collection is a jar or bottle.
What might one use to collect a biogas sample, using this method reference?
One option could be an OVS XAD-7 tube, but if this is not specified, it leaves the door open for samplers and labs to pick many different sampling media.

ex. Metals by **EPA Method 29**
EPA Method 29 is a source testing method for sampling and testing stacks, emissions.
It utilizes a sampling probe that is inserted into the source, at extremely high temperatures, and the samples are collected in a series of impingers with acid solutions, chilled in an ice bath.
Is this necessary for LFG? Digester gas?
Probably not, but how should samplers and labs modify it?
There is currently no direction on how it should be modified from its original content.

Below is a diagram of the actual Method 29 sample train, as well as an excerpt from GTI regarding how they modified it in the field.
The modification may or may not be suitable – it is unclear if any comparability or validation studies of this approach have been conducted by anyone.


Temperature Sensor
Glass Probe Tip
Glass Probe Liner
Glass Filter Holder
Heated Area
Manometer
Temperature Sensor
Ice Water Bath
Empty (Optional)
5% HNO3/ 10% H2O2
Empty
4% KMnO4/ 10% H2SO4
Silica Gel
Vacuum Line
Vacuum Gauge
Orifice
By-pass Valve
Main Valve
Dry Gas Meter
Air-Tight Pump



5.
SVOCs, VOCs, and Alkyl Benzenes

Why are these grouped together?
Analytically, SVOCs and VOCs are different, and they involve very different sampling and analytical approaches.
Putting them together implies they can be sampled, analyzed and reported together.

Alkyl benzenes are a subset of VOCs - why are they called out separately?
Alkylbenzenes are derivatives of benzene - there can be many of these. Which ones?

6.
EPA Method TO-14

EPA Method TO-14 was obsoleted in 1999 by EPA Method TO-14A.

EPA TO-14A has generally been supplanted by EPA Method TO-15, as TO-15 is a broader, more robust method.

The intention is not to suggest that any of these points or issues are insurmountable; rather, the issue is that, unless there is some guidance or direction regarding how this field of practice should/could modify existing sampling and analytical methodologies from other practice areas (like ambient air, source testing, IH methods), the resulting data is going to be significantly variable and generally incomparable, which will not be constructive for end data users or regulators.

More discussion and engagement with commercial analytical laboratories regarding what the challenges are and even what science, what terminology is correct and appropriate would likely yield better outcomes for CARB and other stakeholders.

I have submitted these comments via the website as well.

Thanks very much for the consideration -

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