OGMP2.0 – Recommendations on Continuous Monitoring

The utilization of continuous monitoring (CM) systems as the basis for (site-level) estimation and reporting of emissions currently presents limitations, as shown in real-field deployments and described in scientific literature (Day et al. 2024). Based upon peer-reviewed data for point sensors, currently available systems are not able to detect emissions reliably, and quantification capabilities are not accurate enough to compute annual emissions. Peer-reviewed data for imaging and line-laser continuous monitors has not yet undergone sufficient field testing and peer review to draw conclusions.

The efficiency in **detecting emissions** will depend on meteorological conditions, sensor detection limits, the number of sensors deployed, and sensor placement strategies (Chen et al., 2023). CM systems will detect large emission events if the right type of system is installed, i.e. a system with:

- Enough sensors
- Appropriate sensor sensitivity
- Sensors in the correct locations to sense emissions from expected emission locations
- An advanced analytical framework, coupled to the sensors, to analyze sensed data.
- Existing 'background' emissions – e.g. routine vented and combusted emissions – are clearly enough understood to set appropriate alert levels.

These parameters will be different for point sensors, line-laser sensors, or imagers.

Additionally, companies should identify sufficient resources to monitor data from the CM system, as elevated readings or detections will require the same type of substantial follow-up as any other detection method – and there will likely be many more detections.

Regarding **quantification of emissions**, not all CM systems produce quantification estimates, and those that do vary widely in accuracy (bias when averaging many estimates) and variability (uncertainty of any one estimate). In controlled testing environments, which are typically less complex than real field conditions, biases of multiple times actual emissions and uncertainties of an order-of magnitude are not uncommon (Ilonze et al. 2023; Bell et al. 2023). Therefore, quantification estimates may provide a useful guide for whether an emission event is 'large' or 'small,' but is not currently a substitute for other quantification methods.

When operators are disappointed with CM system performance, there is often a mismatch between their understanding of CM performance and their needs. In short, they may have picked the incorrect CM system for their problem. For example, an imaging solution may provide great detection diagnostics of intermittent problems but may not work well monitoring an entire facility. Conversely, a point sensor may monitor the entire facility for large events, but never identify an intermittent problem. It is important that the system selected is **'fit for purpose.'**

Continuous monitoring systems are a good tool to be part of a multi-tiered monitoring approach that provides useful information to the OGMP2.0 reconciliation process—however, they are insufficient as a single technology for site-level measurements. Operators that want to use CM must consider whether the technology is fit for purpose by understanding the performance in real-field conditions and its limitations for a given application, particularly for reporting purposes.

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