Development of an air quality monitor siting plan for determination of compliance

Best practices

The purpose of this document is to outline the internal review and approval practice for regulated parties (Facility) that choose to develop and operate an ambient air quality network rather than conduct an ambient air quality modeling demonstration for compliance demonstration purposes. The practices provided below should assist staff with planning, language, and developing ambient air quality monitoring (monitoring) requirements.

Section 1 – Pre monitoring process

1. The Facility proposes monitoring in lieu of modeling as part of permit requirement/modification, Minnesota Pollution Control Agency (MPCA) air compliance and enforcement action, or other means. The Facility should not purchase any monitoring instruments or prepare any monitoring sites until they have an approved monitoring plan (Step 11).
2. The air quality permit is reviewed for parameters required to monitor (e.g. criteria pollutants, air toxics, etc.).
3. Air Enforcement or Air Permitting contacts Air Monitoring, Risk Evaluation and Air Modeling (REAM), and Environmental Data Quality (EDQ) units to give notification of the upcoming monitor requirement request. The Air Monitoring supervisor and/or staff are included for their expertise in air monitoring instruments, siting, and operations, but are not direct contacts for the Facility and are not responsible for approving any industrial monitoring plans.
4. EDQ unit calls an internal meeting to go over the Facility details and to determine preliminary monitoring expectations and options, quality assurance (QA), data reporting, etc.
5. Meet with the Facility to discuss monitor expectations and options, QA, reporting, modeling, etc. Provide the Facility representatives with a copy of Exhibit M.
6. The Facility conducts air quality dispersion modeling to provide additional monitor siting information using the MPCA REAM unit modeling Best Practices Manual, protocol, and reporting process.
7. The REAM unit reviews the final modeling results that will be included in the monitor equipment siting and placement agreement. REAM and the EDQ unit meet to discuss modeled results.
8. The Facility submits a Monitoring Plan and Quality Assurance Project Plan (QAPP), as needed, in accordance with Exhibit M.
9. EDQ unit reviews the Monitoring Plan and QAPP documentation. The Review will conclude with either an approval or a rejection. If the plan is approved, the QAPP may be implemented as submitted. If the QAPP is rejected, the Facility will need to revise and re-submit.
10. As needed, the EDQ unit and the Facility discuss QA requirements and necessary monitoring plan updates.
    A. EDQ unit meets with the Facility to confirm placement via on-site inspections. If monitoring locations are approved, the EDQ unit will follow up with the Facility, via email, notifying monitor placement is approved. If locations are not approved, the EDQ unit will review new proposed sites and will request an updated monitoring location.

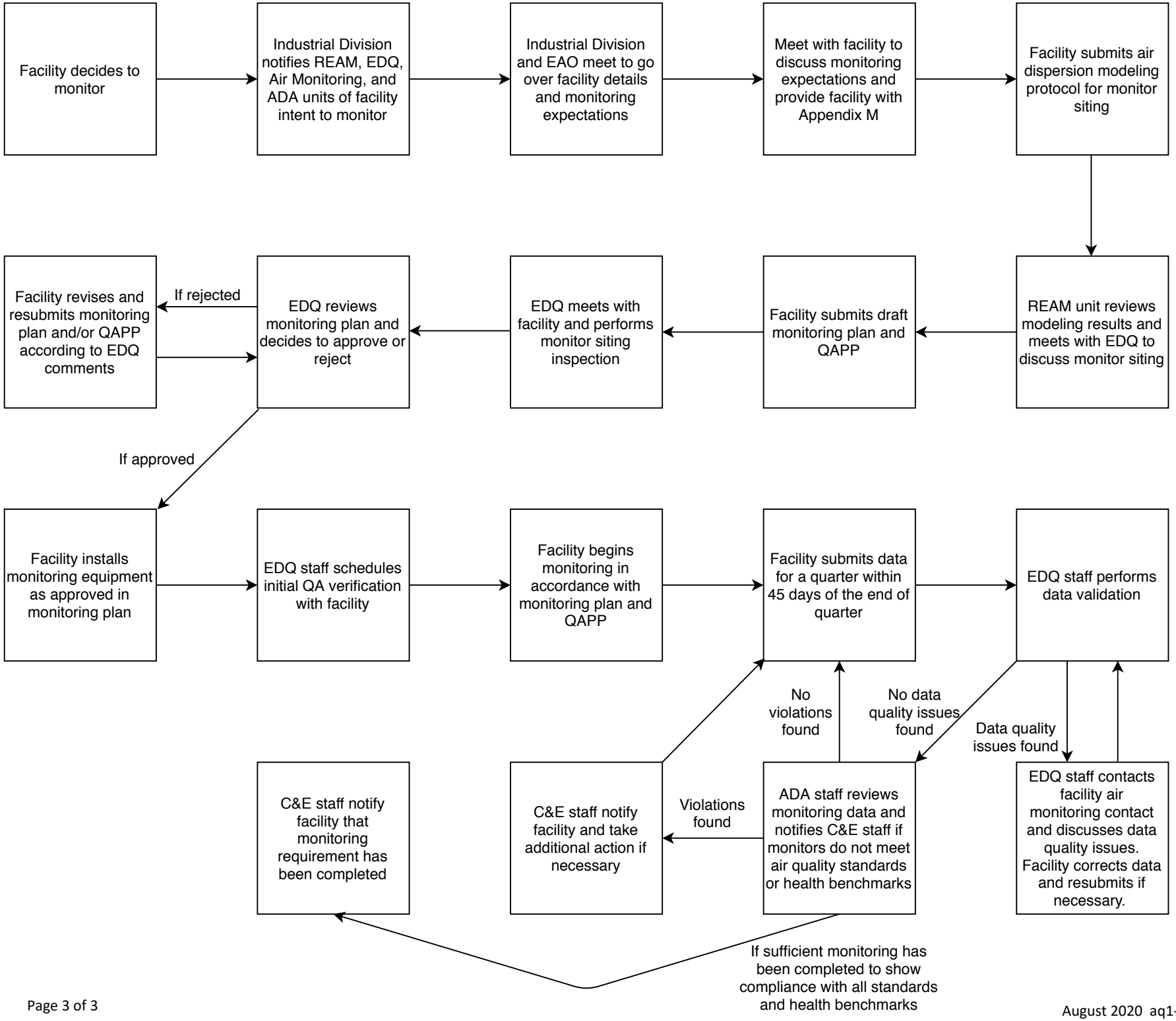
11. Upon approval of the Monitoring Plan and supporting information, the EDQ unit communicates with the Facility regarding equipment requirements, positioning of monitors, and potential plans for on-site reviews of monitoring locations.
12. The Facility installs the monitoring equipment as approved in the agreement. The EDQ QA staff will perform QA performance evaluation upon final installation to ensure flows, set up, and all field parameters meet method requirements.

Section 2 – Post monitoring process

1. The Facility will start collecting data. Forty-five days after the calendar quarter (3 months) ends, or as agreed upon by MPCA and the Facility, data is emailed to the Enforcement Air Mailbox. The Facility will continue to generate data and will continue to submit the data to the MPCA within 45 days of the end of the quarter.
2. Enforcement staff log the reported Facility ambient air quality data into Tempo and task EDQ unit for data validation and review of the monitoring data to ensure it is consistent with QA requirements.
3. The length of monitoring time required in the approved Monitoring Plan may vary based on the underlying rationale for the activity. Please be aware that the Facility may be required to monitor for a longer amount of time if monitoring results show violations or high risk of future air quality standard violations or if the monitoring does not meet the Monitoring Plan, QAPP, Appendix M, or 40 CFR part 58 requirements.
4. The Monitoring Plan and QAPP are reviewed periodically by the EDQ unit to ensure Federal and State standards are still being met.

Section 3 – Monitoring recommendations

1. When monitoring for National Ambient Air Quality Standard parameters ($PM_{2.5}$, PM_{10}, CO, N_{O2}, S_{O2}, $_{O3}$, Pb), the U.S. Environmental Protection Agency (EPA) requirements in the Code of Federal Regulations, Title 40, Part 58. Hydrogen sulfide monitoring will follow the Minnesota approved method. All other parameters should follow EPA requirements when possible.
2. The site should have a minimum of two monitoring stations. One will be upwind, the other downwind. More monitors may be necessary depending on modeling results.
3. If $PM_{2.5}$ or PM_{10} are monitored at the Facility, there should be at least one collocated monitoring site.
    A. The monitors should agree within 10% of each other for their reported results or meet the requirements in 40 CFR Part 58, Appendix A, Section 4.2.
    B. The two collocated monitors must be within 4 meters (inlet to inlet) of each other and at least 2 meters apart for flow rates greater than 200 liters/min or at least 1 meter apart for samplers having flow rates less than 200 liters/min to preclude airflow interference.
4. All collection and analytical methods will be performed by recognized EPA methods and approved by the State within the QAPP/monitoring plan.
5. All documentation, questions, data, etc. will flow to the Project Manager then to technical staff within the MPCA.
6. The MPCA reserves the ability to invalidate any monitoring results if it determines samples are not collected, analyzed, or reported in a way that meets the requirements of the Monitoring Plan, QAPP, Exhibit M, or 40 CFR part 58. The MPCA may request additional information related to air monitoring from the Facility to support the validity of questionable monitoring results. If the Facility does not provide the requested information to the MPCA in a timely manner, the MPCA may invalidate the monitoring results in question.


Facility decides to monitor
Industrial Division notifies REAM, EDQ, Air Monitoring, and ADA units of facility intent to monitor
Industrial Division and EAO meet to go over facility details and monitoring expectations
Meet with facility to discuss monitoring expectations and provide facility with Appendix M
Facility submits air dispersion modeling protocol for monitor siting
REAM unit reviews modeling results and meets with EDQ to discuss monitor siting
Facility submits draft monitoring plan and QAPP
EDQ meets with facility and performs monitor siting inspection
EDQ reviews monitoring plan and decides to approve or reject
If rejected
Facility revises and resubmits monitoring plan and/or QAPP according to EDQ comments
If approved
Facility installs monitoring equipment as approved in monitoring plan
EDQ staff schedules initial QA verification with facility
Facility begins monitoring in accordance with monitoring plan and QAPP
Facility submits data for a quarter within 45 days of the end of quarter
EDQ staff performs data validation
No violations found
No data quality issues found
Data quality issues found
EDQ staff contacts facility air monitoring contact and discusses data quality issues. Facility corrects data and resubmits if necessary.
ADA staff reviews monitoring data and notifies C&E staff if monitors do not meet air quality standards or health benchmarks
Violations found
C&E staff notify facility and take additional action if necessary
C&E staff notify facility that monitoring requirement has been completed
If sufficient monitoring has been completed to show compliance with all standards and health benchmarks