



**Air Quality Monitoring
Joint Advisory Committee
Comité Consultivo
Conjunto**

INTRODUCTION

Last July 2023, we presented Project AQM-TSC & Goals

Compare USA & MEX air monitoring networks management

Developed a questionnaire based on US-EPA air monitoring TSA

Objetives:

- To draw clear comparisons, highlighting similarities and differences, while illustrating intention & purpose when the regimes diverge.
- To provide recommendations for the agencies in focus to “harmonize” their monitoring approach.
- The recomendations should aim at improving comparability of the air quality data in terms of reliability & defensibility.

Participating Air Monitoring Networks



TCEQ-TX



NMED-NM



RMACJ-CH



Chihuahua
Gobierno del Estado

SEDUE-CH



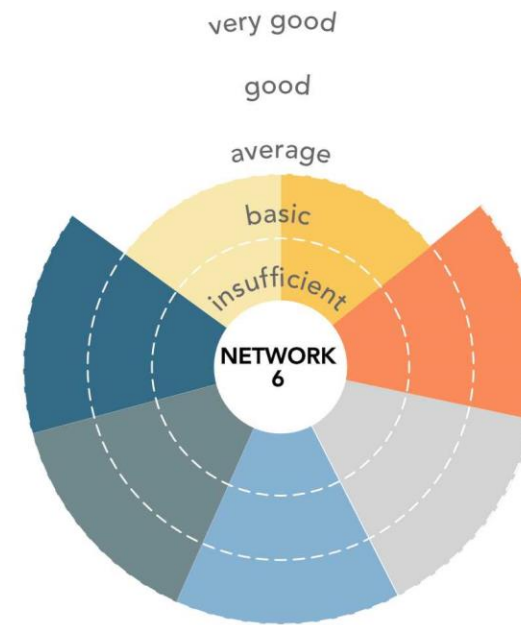
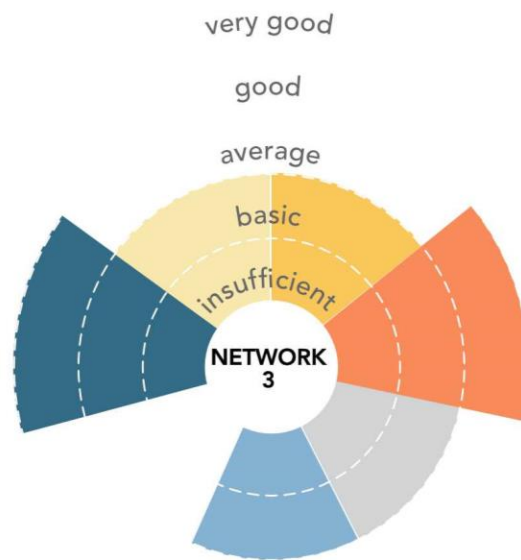
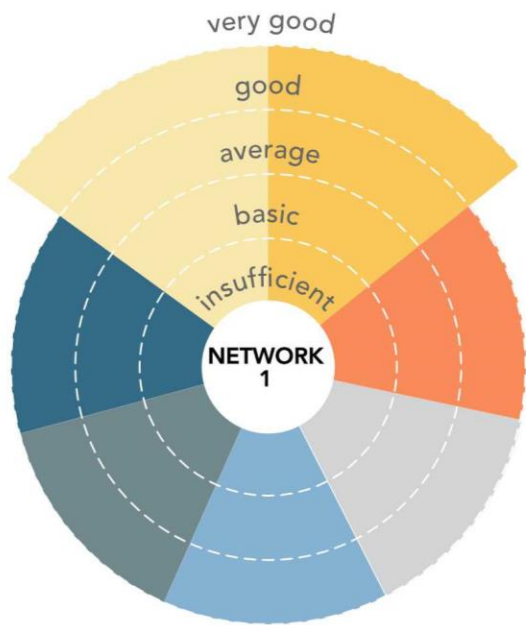
ACA-NL



SIMAT-CDMX

THANK YOU!

EXAMPLE OF PRELIMINARY RESULTS



Just a reminder...

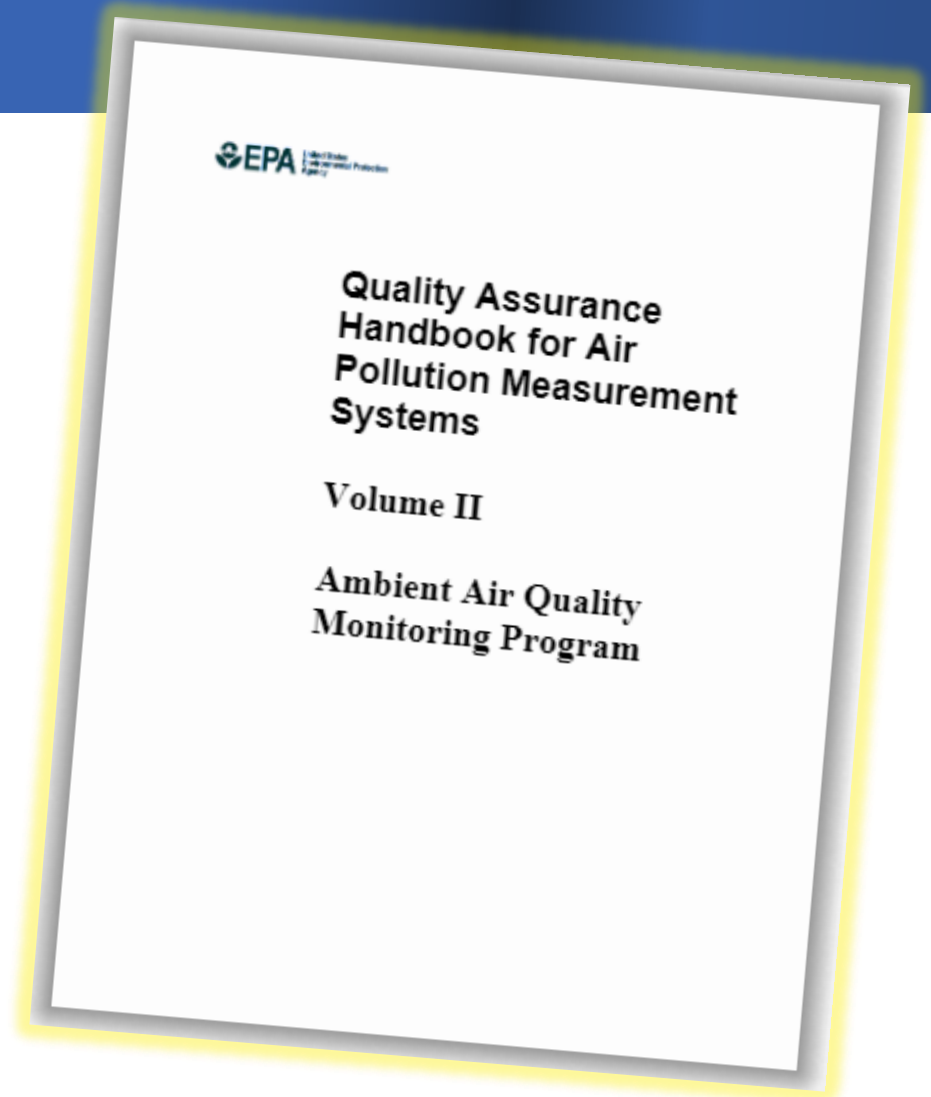
A TSA is a Technical System Audit.

It is a diagnostic tool used by regulatory agencies to evaluate a network.

US-EPA QA HANDBOOK VOL. II

Section 15.3 Technical Systems Audit

“A technical systems audit is an on-site review and inspection of a monitoring organization’s ambient air monitoring program to assess its compliance with ESTABLISHED REGULATIONS GOVERNING the collection, analysis, validation, and reporting of ambient air quality data.”



ATTENTION



DISCLAIMER:

- **We did not fully implement a TSA**, rather we modified the EPA-TSA 2023 audit questionnaire to evaluate not just one network but six.
- **The focus of the project is a comparison between TCEQ and the Ciudad Juarez networks.**
- The resulting comparison and values assigned to the evaluation of any and all-participating networks in this project are the conclusions of an evaluation protocol. We, the evaluators, strived to eliminate personal biases and let the responses be evaluated by themselves according to said protocol. **Therefore, the value of the comparison results and conclusions are entirely dependent of the responses provided to the questionnaire by the respondents.**

About the Questionnaire

Total Questions

- 415 in English & 425 in Spanish
- Inquired in 7 areas of interest with 46 sub-areas

Areas Included

- General & Regulatory Info
- Administration
- Network Management
- Quality Management
- Field Operations
- Lab operations
- Data Management

10/19/2023

Focus on

REGULATIONS
IMPLEMENTATION

EPA

NOM

Norma Oficial Mexicana

QUESTIONNAIRE AQM-TSC

EVALUATION PROTOCOL

SUB-AREAS OF INTEREST

AREAS OF INTEREST

CATEGORIES

SUB-CATEGORIES

**E
V
A
L
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A
T
I
O
N**

- a) Identification
- b) Number of Personnel
- c) General Monitoring Regulatory Policies
- d) General Documentation Policies
- e) Personnel Training
- f) Oversight of Contractors and Supplies

1) General Information

- a) Status of the QA & QC Program
- b) Internal Performance Evaluation Audits
- c) Stations Siting Criteria
- d) QMP, QAPP, & SOP Planning Documents
- e) Corrective Action
- f) Performance Evaluation
- g) Quality Improvement

2) Quality Management

- a) Air Quality Monitoring Network Design & Plan
- b) Air Monitoring Stations Siting
- c) Operational Waivers
- d) Station Documentation

3) Network Management

- a) Technical Staff Training
- b) Field Support
- c) Instruments & Equipment Acceptance
- d) Gaseous calibrations
- e) Transfer Standards
- f) Repairs
- g) Record Keeping

4) Filed Operations

- a) Met sensors Installation & Operation
- b) Met Training
- c) Met Sensors Calibration
- d) Met Sensors Repair
- e) Record Keeping

5) Field Operations for Met

- a) PM Filter Lab Staff Training
- b) PM Routine Lab Operations
- c) PM Lab Quality System
- d) PM2.5 specific Lab Quality Control
- e) PM Lab Preventive Maintenance
- f) PM Lab Record Keeping
- g) PM Lab Data Acquisition and Handling
- h) PM2.5 Specific Operations Questions

6) PM Lab Operations

- a) Data Handling
- b) Data Management and Software Usage
- c) Data Validation and Correction
- d) Data Processing
- e) Data Completeness
- e) Suficiencia de datos

7) Data Management

1) Administration

2) Planning

3) Technical

4) QA/QC

5) Data Analisis & Validation

- a) Knowledge and application of rules and regulations
- b) Network management and operation.
- c) Management of human resources and budgets
- d) Quality management plan
- e) Quality assurance project plan
- f) Standard operating protocols
- g) Implementation of QA/QC protocols
- h) Professional training
- i) Technical training
- j) Specialized training
- k) Evaluation plans
- l) Trained service providers

EVALUATION EXAMPLES

				ADM	PLN	TEC	QAQC	DVAL	SUM	AVG	RANG
1c5	Does the agency receive and utilize Federal guidance?	Yes	NO COMMENT	1.0	1.0	1.0	1.0	1.0	5.0	1.0	Very Good
1c6	Does the agency receive and utilize State (i.e. PQAQO) guidance?	Yes	NO COMMENT	1.0	1.0	1.0	1.0	1.0	5.0	1.0	Very Good

Clear objectives

				ADM	PLN	TEC	QAQC	DVAL	SUM	AVG	RANG
2c8	¿En la planificación del programa de monitoreo se encuentran definidos los objetivos de monitoreo de cada estación de acuerdo con las directrices del 40CFR, parte 58, apéndice D o de la NOM?	Sí	NO COMMENT	0.80	0.40	0.80	0.40	0.40	2.80	0.56	Average

Incomplete objectives

				ADM	PLN	TEC	QAQC	DVAL	SUM	AVG	RANG
2f4	¿La agencia certifica su fotómetro de referencia de O3 Nivel 2 contra un Fotómetro Estándar de Referencia de Nivel 1 una vez al año (conforme al QA Handbook Vol. II Apéndice D de la US EPA)?	No	NO COMMENT	0.00	0.00	0.20	0.00	0.00	0.20	0.0	Insufficient

Missing objectives, not in compliance

				ADM	PLN	TEC	QAQC	DVAL	SUM	AVG	RANG
2g5	¿Cumple su agencia con los objetivos de incertidumbre de medición acorde a los requisitos de la NOM o según 40 CFR Parte 58 Apéndice A?	Sí	NO COMMENT	0.4	0.2	0.2	0.2	0.2	1.2	0.2	Insufficient

Incomplete objectives, not in compliance

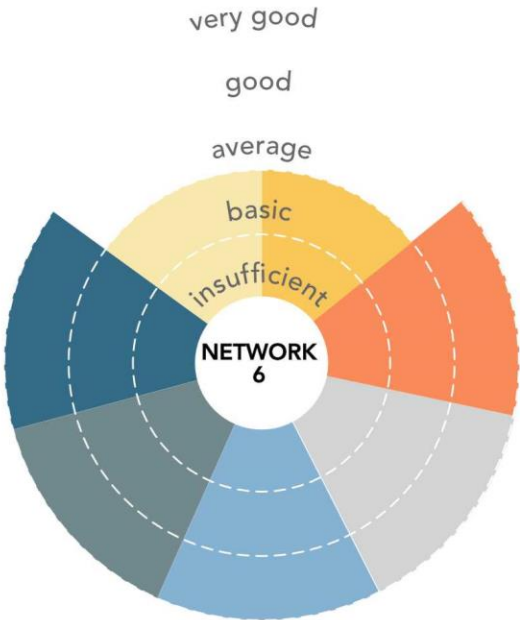
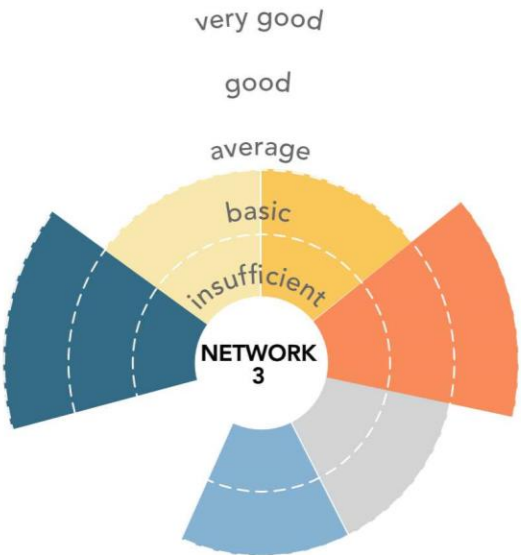
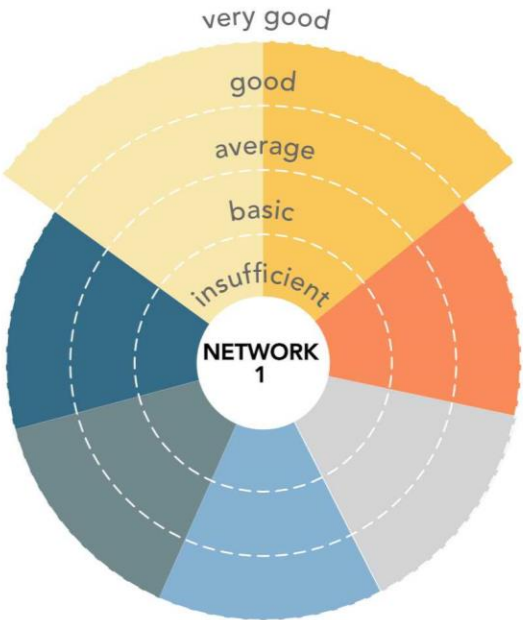
THE RESULT

The screenshot shows the Microsoft Excel interface with the following elements:

- File Name:** TablaResumenALL Mozaico-eval_...
- Search:** Search bar with a magnifying glass icon.
- Home Tab:** Ribbon with various toolbars including Clipboard, Font, Alignment, Number, Styles, Cells, Editing, and Analysis.
- Cell Styles:** A purple circle highlights the 'Cell Styles' button in the Styles group of the Home tab.
- Worksheet:** Sheet1 with columns A through K and rows 3 through 24. The data is organized into sections: 'SECTION 1', 'GENERAL OPERATIONAL INFORMATION', and 'Personnel'. The columns are labeled A1 through A6. The data cells are highlighted in pink.
- Formula Bar:** Shows the formula =A1.
- Status Bar:** Shows 'Ready' and 'Accessibility: Investigate'.

		A1	A2	A3	A4	A5	A6	
3								
4	1b	0.0	0.4	0.2	0.0	0.0	0.0	
5	1b1	0.0	0.4	0.2	0.6	0.0	0.0	1b1
6	1b2	0.0	0.6	0.2	0.2	0.0	0.0	1b2
7	1b3	0.0	0.6	0.2	0.2	0.0	0.6	1b3
8	1b4	1.0	0.6	0.2	0.2	0.0	0.6	1b4
9	1b5	0.0	0.0	0.2	0.6	0.2	0.0	1b5
10	1c1	1.0	1.0	0.0	0.0	0.0	0.0	1c1
11	1c2	1.0	1.0	0.0	0.0	0.2	0.0	1c2
12	1c3	1.0	1.0	0.0	0.0	0.2	0.0	1c3
13	1c4	1.0	1.0	0.2	0.0	0.2	0.2	1c4
14	1c5	1.0	1.0	0.0	0.0	0.4	0.0	1c5
15	1c6	1.0	1.0	0.2	0.0	0.2	0.0	1c6
16	1c7	0.0	0.0	0.0	0.0	0.0	0.0	1c7
17	1c8	0.0	0.6	0.0	0.0	0.0	0.0	1c8
18	1c9	0.0	0.0	0.0	0.0	0.0	0.0	1c9
19	1d1	1.0	1.0	0.0	0.2	0.2	0.0	1d1
20	1d2	1.0	1.0	0.0	0.2	0.2	0.0	1d2
21	1d3	1.0	1.0	0.0	0.0	0.0	0.0	1d3
22	1d4	1.0	1.0	0.2	0.2	0.2	0.0	1d4
23	1d5	0.0	0.0	0.0	0.0	0.2	0.0	1d5
24	1d6	0.0	0.0	0.0	0.0	0.0	0.0	1d6

SUMMARIZING THE RESULTS



3 Participating Networks

COMPARISON OF CRITICAL NORMS, REGULATORY POLICIES & TECHNICAL GUIDANCE

 ESTADOS UNIDOS MEXICANOS				 UNITED STATES OF AMERICA			
SOURCE:	Ley General de Equilibrio Ecológico y Protección al Ambiente			SOURCE:	Clean Air Act		
RESPONSIBLE:	MEXICO SECRETARIA DEL MEDIO AMBIENTE Y RECURSOS NATURALES			RESPONSIBLE:	UNITED STATES ENVIRONMENTAL PROTECTION AGENCY		
GUIDANCE REQUIRED	GUIDANCE AVAILABLE	COMPLETE	MISSING DETAILS AND/OR INFORMATION	GUIDANCE REQUIRED	GUIDANCE AVAILABLE	COMPLETE	MISSING DETAILS AND/OR INFORMATION
Network Operation	NOM-156-SEMARNAT-2012, INECC MANUALES 1 THRU 6, SINAICA	No	Network Design Criteria, Quality System Requirements, Monitoring Methodology, Data Management Guidance, Monitoring Objectives, Data Quality Objectives, Data Quality Indicators, Audits & Evaluations, Performance Metrics, Meteorology Guidance, Data Acquisition Guidance, Data Capture and Transmission, Training Plan, Corrective Action Plan, Guiding Rules.	Network Operation	40CFR Parts 50, 53, 58 QA Handbooks Volumes I through V, NAAQS, AQS, AirNow	Yes	
O3	NOM-036-SEMARNAT-1993 NOM-020-SSA1-2021	No	Acceptance Test, Setup, Operation Parameters, Calibration Parameters, QA/QC Guidance, Traceability Guidance, Detection Limits, Data Quality Objectives	O3	40CFR Part 50, 53, 58 QA Handbook Vol. II	Yes	
NO2	NOM-037-SEMARNAT-1993 NOM-023-SSA1-2021	No	Acceptance Test, Setup, Operation Parameters, Calibration Parameters, QA/QC Guidance, Traceability Guidance, Detection Limits, Data Quality Objectives	NO2	40CFR Part 50, 53, 58 QA Handbook Vol. II	Yes	
CO	NOM-034-SEMARNAT-1993 NOM-021-SSA1-2021	No	Acceptance Test, Setup, Operation Parameters, Calibration Parameters, QA/QC Guidance, Traceability Guidance, Detection Limits, Data Quality Objectives	CO	40CFR Part 50, 53, 58 QA Handbook Vol. II	Yes	
SO2	NOM-038-SEMARNAT-1993 NOM-022-SSA1-2019	No	Acceptance Test, Setup, Operation Parameters, Calibration Parameters, QA/QC Guidance, Traceability Guidance, Detection Limits, Data Quality Objectives	SO2	40CFR Part 50, 53, 58 QA Handbook Vol. II	Yes	
PM2.5	NOM-025-SSA1-2021	No	Acceptance Test, Setup, Operation Parameters, Calibration Parameters, QA/QC Guidance, Traceability Guidance, Detection Limits, Data Quality Objectives	PM2.5	40CFR Part 50, 53, 58 QA Handbook Vol. II	Yes	
PM10	NOM-025-SSA1-2021	No	Acceptance Test, Setup, Operation Parameters, Calibration Parameters, QA/QC Guidance, Traceability Guidance, Detection Limits, Data Quality Objectives	PM10	40CFR Part 50, 53, 58 QA Handbook Vol. II	Yes	
MET	Not available	N/A	Acceptance Test, Setup, Operation Parameters, Calibration Parameters, QA/QC Guidance, Traceability Guidance, Detection Limits, Data Quality Objectives	MET	QA Handbook Vol. IV	Yes	Federal referencing
Transfer Standards	Ley Federal sobre Metrología y Normalización	No	Quality System Requirements, Data Management Guidance, Standards Quality indicators, Metrology Methodology	Transfer Standards	40CFR Part 58, QA Handbook Vol. II, O3 TAD	Yes	
AQI	NOM-172-SEMARNAT-2019 10/19/2023	No	It requires fulfillment of all that is above,; therefore, is incomplete due to all that is missing from the pollutant criteria guidance and lack of meteorological data guidance.	AQI	40 CFR Parts 50 & 58 QA Handbook Vol. II	Yes	

SIGNIFICANT DIFFERENCES

Derived from the review of the responses & analyses of the norms & regulations

THE MOST SIGNIFICANT DIFFERENCES ARE WITHIN THE REGULATORY POLICIES BETWEEN THE USA & MEX.

- The observable reasons are:

- MEX regulatory norms are not fully developed.
- MEX QA/QC norms point to USEPA regulations, but fulfillment is not required, nor verified.
- In the US is mandatory to have an EPA approved QAPP from the start of any air monitoring program
- In the US audits are network & data quality improvements tools, there are not negative outcomes

THE MEXICAN FEDERAL OVERSIGHT IS LIMITED IN MOST CASES.

- This impacts QA internal policies on each MEX agency and their data quality.
 - It generates confusion & freedom of interpretation of norms and regs requirements.
 - The lack of complete & regular oversight fosters situations of data incomparability.

THE MEXICAN LIMITED RESOURCES CURTAILS ADVANCEMENTS IN ALL AREAS.

VALUABLE FINDINGS

The norms, rules and reg similarly aim to protect public health.

Both countries recognize EPA guidance for network management

MEX complements QA practices using EPA guidance

Staff strives towards meeting understood objectives

Staff performs monitoring duties according to local expectations

Staff recognize importance of training & tech knowledge.

Agencies are receptive to evaluations, hence their acceptance to participate.

FINAL REMARKS

Conclusions are still being discussed. Will be available in final the report.

Recommendations for harmonizing monitoring efforts will be focus on the TCEQ-UACJ examination, as per project agreement.

Expected delivery of reports is October 31, 2023.

THANK YOU!

We appreciate any and all feedback!

Please, send us your comments and questions.

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10/19/2023

