



Environmental Pollution in Hermosillo II

Factual Record regarding Submission SEM-05-003

Prepared in accordance with Article 15 of the
North American Agreement on Environmental Cooperation

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Factual Record regarding Submission SEM-05-003

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Abbreviations, acronyms and definitions

Abbreviations and acronyms

AQI	Air quality index
BOES	Official Bulletin of the state of Sonora (<i>Boletín Oficial del Estado de Sonora</i>)
CEC	Commission for Environmental Cooperation
CEDES	Ecology and Sustainable Development Commission of the state of Sonora (<i>Comisión de Ecología y Desarrollo Sustentable del Estado de Sonora</i>)
COA	Annual Operating Report (<i>Cédula de Operación Anual</i>)
DGGCARETC	General Directorate for Air Quality Management and the Pollutant Release and Transfer Register (<i>Dirección General de Gestión de la Calidad del Aire y Registro de Emisiones y Transferencia de Contaminantes</i>) of Semarnat
DOF	Official Gazette of the Federation (<i>Diario Oficial de la Federación</i>)
EPA	US Environmental Protection Agency
Implan	Hermosillo Municipal Institute of Urban Planning (<i>Instituto Municipal de Planeación Urbana de Hermosillo</i>)
INECC	National Institute of Ecology and Climate Change (<i>Instituto Nacional de Ecología</i>) of Semarnat
JPAC	Joint Public Advisory Committee
LAU	Uniform Environmental License (<i>Licencia Ambiental Única</i>)
LEES	Ecological Balance and Environmental Protection Act for the state of Sonora (<i>Ley del Equilibrio Ecológico y la Protección al Ambiente para el Estado de Sonora</i>), abrogated upon the publication in the <i>BOES</i> of LEEPAS, 25 September 2008
LGEEPA	General Ecological Balance and Environmental Protection Act (<i>Ley General del Equilibrio Ecológico y la Protección al Ambiente</i>)
LEEPAS	Ecological Balance and Environmental Protection Act of the state of Sonora (<i>Ley del Equilibrio Ecológico y la Protección al Ambiente del Estado de Sonora</i>), presently in force, published in the <i>BOES</i> on 25 September 2008
LTES	Transportation Act of the state of Sonora (<i>Ley de Tránsito del Estado de Sonora</i>), published in the <i>BOES</i> , 27 February 1984 (in force on 30 January 2012)
NOM	Official Mexican Standard (<i>Norma Oficial Mexicana</i>)
NAAEC	North American Agreement on Environmental Cooperation
PAM	Mexican Environmental Program (<i>Programa Ambiental Mexicano</i>)
PAF	Border Environmental Program (<i>Programa Ambiental Fronterizo</i>)
PEMCA	Air Quality Assessment and Improvement Program (<i>Programa de Evaluación y Mejoramiento de la Calidad del Aire</i>)
Profepa	Office of the Federal Attorney for Environmental Protection (<i>Procuraduría Federal de Protección al Ambiente</i>)
RETC	Pollutant Release and Transfer Register (<i>Registro de Emisiones y Transferencia de Contaminantes</i>) of Semarnat
REIICA	State Air Quality Information and Infrastructure Network (<i>Red Estatal de Información e Infraestructura de la Calidad del Aire</i>)

RPCCA	Regulation to the LGEEPA respecting Air Pollution Prevention and Control (<i>Reglamento de la Ley General del Equilibrio Ecológico y la Protección al Ambiente en Materia de Prevención y Control de la Contaminación de la Atmósfera</i>)
Sedesol	Ministry of Social Development (<i>Secretaría de Desarrollo Social</i>)
Semarnat	Ministry of the Environment and Natural Resources (<i>Secretaría de Medio Ambiente y Recursos Naturales</i>) (formerly <i>Secretaría de Medio Ambiente, Recursos Naturales y Pesca</i> —Semarnap)
SIUE	Ministry of Urban Infrastructure and Ecology (<i>Secretaría de Infraestructura Urbana y Ecología</i>) of the State of Sonora
Sinaica	National Air Quality Information System (<i>Sistema Nacional de Información de la Calidad del Aire</i>)
UCAJ	Legal Affairs Coordinating Unit of Semarnat (<i>Unidad Coordinadora de Asuntos Jurídicos de la Semarnat</i>)

Definitions

Agreement	North American Agreement on Environmental Cooperation
Mexico	The United Mexican States
Notification	SEM-05-003 (<i>Environmental Pollution in Hermosillo II</i>), notification pursuant to Article 15(1) (4 April 2007)
Party	The Government of Mexico
Parties	The Governments of Canada, Mexico and the United States
Notification	SEM-05-003 (<i>Environmental Pollution in Hermosillo II</i>), Notification pursuant to Article 15(1) (4 April 2007)
Resolution	SEM-05-003 (<i>Environmental Pollution in Hermosillo II</i>), the Council's decision regarding the preparation of a factual record (15 June 2012)
Response	SEM-05-003 (<i>Environmental Pollution in Hermosillo II</i>), the Party's response (16 February 2006)
Secretariat	The Secretariat of the Commission for Environmental Cooperation
Sonora	The Free and Sovereign State of Sonora
Suba Program	Modernization of Urban Transportation Program
Submission	SEM-05-003 (<i>Environmental Pollution in Hermosillo II</i>), submission pursuant to Article 14(1) (30 August 2005)
Submitters	<i>Academia Sonorense de Derechos Humanos</i> Domingo Gutiérrez Mendívil

Units of measurement, chemical elements, substances and abbreviations used in data reporting

°C	Degrees centigrade or Celsius
CO	Carbon monoxide
CO₂	Carbon dioxide
GHGs	Greenhouse gases
HC	Hydrocarbons
m/s	Meters per second
N₂O	Nitrous oxide
NO	Nitric oxide
NO₂	Nitrogen dioxide
NO_x	Nitrogen oxides
O₃	Ozone
PAN	Peroxyacyl nitrates
PM	Particulate matter
PM_{2.5}	Particulate matter with an average diameter less than 2.5 micrometers (µm)
PM₁₀	Particulate matter with an average diameter less than 10 micrometers (µm)
SO₂	Sulfur dioxide
t	Metric tons
TSP	Total suspended particulates. Total suspended particulates up to a maximum size of approximately 100 micrometers (µm)
VOCs	Volatile organic compounds

Explanatory note

Due to the length of some of the Internet addresses in this document, URLs were abbreviated using Google Shortener <<http://goo.gl/>>. In every case, the corresponding link was tested and the date the site was viewed, specified.

The maps and other illustrations included in this factual record are based on publicly available sources. These maps and illustrations are not to scale and are included for illustrative purposes only.

Information on air quality monitoring depended on data availability obtained by the Secretariat.

1. Executive Summary

1. Articles 14 and 15 of the North American Agreement on Environmental Cooperation (NAAEC or the “Agreement”) provide for a process allowing any person or nongovernmental organization to file a submission asserting that a Party to the NAAEC is failing to effectively enforce its environmental law. The Secretariat of the Commission for Environmental Cooperation (the “Secretariat” of the “CEC”)¹ initially considers submissions to determine whether they satisfy the criteria specified in NAAEC Article 14(1). When the Secretariat finds that a submission meets these criteria, it then determines, pursuant to the provisions of NAAEC Article 14(2), whether the submission merits a response from the concerned Party. In light of any response from the concerned Party, and in accordance with NAAEC and the Guidelines, the Secretariat may notify the Council that the matter warrants the development of a factual record, providing its reasons for such recommendation in accordance with Article 15(1).² Following a two-thirds vote, the Council may instruct the Secretariat to develop a factual record.³
2. On 30 August 2005, the *Academia Sonorense de Derechos Humanos* and Domingo Gutiérrez Mendivil (the “Submitters”) filed a submission with the CEC Secretariat in accordance with Article 14(1) of the NAAEC (the “Submission”).⁴ In submission SEM-05-003 (*Environmental Pollution in Hermosillo II*), the Submitters assert that Mexico is failing to effectively enforce its environmental law in relation to the prevention and control of air pollution in the city of Hermosillo, Sonora.⁵ The Submitters assert that in the state of Sonora, and particularly in the municipality of Hermosillo, the authorities of the three levels of government are failing to monitor and enforce air pollution control standards.⁶ The Submitters hold the following entities responsible for failing to effectively enforce the environmental law in question: the Ministry of the Environment and Natural Resources (*Secretaría de Medio Ambiente y Recursos Naturales*—Semarnat),⁷ the Federal Attorney General for Environmental Protection (*Procuraduría Federal de Protección al Ambiente*—Profepa),⁸ the federal government’s Ministry of Health,⁹ Sonora’s Ministry of Urban Infrastructure and Ecology (*Secretaría de Infraestructura Urbana y Ecología*—SIUE),¹⁰ and the municipality of Hermosillo.¹¹
3. According to the Submitters, Mexico’s alleged enforcement failures include: not updating an environmental contingency response plan and an environmental quality program; a lack of air pollution control, monitoring and information; and no mandatory vehicle inspection program.¹² The Submitters assert that the lack of plans and programs to control emissions constitutes non-compliance with obligations imposed by the environmental law in force in this municipality.
4. On 9 November 2005, the Secretariat determined that the Submission met Article 14(1) requirements and considered that in light of the criteria established in Article 14(2), the Submission warranted requesting a response from Mexico with respect to the assertions made therein.¹³
5. On 16 February 2006, pursuant to Article 14(3) of the NAAEC, Mexico sent its response (the “Response”) to the Secretariat.¹⁴
6. Mexico’s response indicated actions carried out by the three levels of government to counter environmental pollution in Hermosillo.¹⁵ At the federal level, Mexico asserted that since 1998 the following activities had been conducted through Semarnat: monitoring of environmental pollutants emitted by establishments under federal jurisdiction;¹⁶ implementation of the Pollutant Release and Transfer Register (*Registro de Emisiones y*

Transferencia de Contaminantes—RETC);¹⁷ granting of operating licenses and uniform environmental licenses (*Licencia Ambiental Única—LUA*);¹⁸ and updating of the Annual Operating Report (*Cédula de Operación Anual—COA*).¹⁹ Furthermore, Profepa carried out inspection visits, conducted enforcement activities, assessed fines and imposed safety measures.²⁰ Semarnat also coordinated with the municipality of Hermosillo in the control of atmospheric emissions from the brick-making industry, and in the operation of air quality monitoring equipment.²¹

7. At the state level, Mexico highlighted the following as enforcement actions: conditional environmental impact authorizations and state operating licenses and COAs in relation to air pollutant emitting activities;²² site inspection of facilities in the city of Hermosillo to verify compliance with state environmental legislation, and imposing penalties and corrective measures between 1999 and 2005;²³ formalization of the agreement between Semarnat and Sonora on transferring the operation of atmospheric monitoring equipment to the State;²⁴ the allocation of resources to pave streets in the city of Hermosillo in 2005; and the implementation of the Urban Transportation Modernization Program known as “Suba.”²⁵
8. In its response, Mexico indicated the actions taken at the municipal level included: the launching of the Air Quality Assessment and Improvement Program (*Programa de Evaluación y Mejoramiento de la Calidad del Aire—PEMCA*);²⁶ reducing concentrations of total suspended particulates (TSP) and of particulate matter less than ten micrometers in diameter (PM₁₀);²⁷ establishing conditions on permits and authorizations granted by the municipality as a means of counteracting air pollution;²⁸ launching a public environmental complaints system;²⁹ development of an environmental contingency response program and a tire recycling program;³⁰ actions to address atmospheric emissions from the brick-making industry;³¹ and elaboration of a draft Ecology and Environmental Protection Regulation.³²
9. In its Response, the Party observed that Hermosillo was not conducting vehicle inspections because it lacked the information necessary to develop such a program.³³
10. After reviewing submission SEM-05-003, in light of the Response, on 4 April 2007 the Secretariat notified the CEC Council (the “Council”) that it warranted the preparation of a factual record.³⁴ The Secretariat considered that the Response left open central questions regarding: the establishment and operation of vehicle inspection centers for private motor vehicles and public transportation services;³⁵ the implementation of plans for the verification, monitoring and control of the reference values established in Official Mexican Standards NOM-020-Ssa1-1993 to NOM-026-Ssa-1993³⁶; and the launching of specific measures to control air quality in Hermosillo, Sonora.³⁷
11. On 15 June 2012, in Resolution 12-04, the Council unanimously decided to instruct the Secretariat to prepare a factual record on submission SEM-05-003.³⁸
12. Pursuant to Council Resolution 12-04, this factual record presents relevant factual information on the assertions made and on the provisions of the following environmental laws:
 - a) effective enforcement of LGEEPA Articles 7, section III, and 8, section III; RPCCA Article 4, section III; and Articles 111, sections V and VII, and 119, section II, paragraph b) of the Ecological Balance and Environmental Protection Act of the state of Sonora (*Ley del Equilibrio Ecológico y la Protección al Ambiente del Estado de Sonora—LEEPAS*) regarding the establishment of mandatory vehicle inspection programs and the establishment and operation of inspection centers;³⁹
 - b) effective enforcement of LGEEPA Article 7, section XIII; RPCCA Articles 16 and 41, section I, of the RPCCA; and LEEPAS Article 111, sections VI and IX, regarding the adoption of plans for the verification, monitoring and control of the pollutant emissions referred to in the Official Mexican Standards (NOMs) issued by Semarnat;⁴⁰

- c) effective enforcement of RPCCA Article 13 with respect to the implementation of specific measures to reduce and control emissions of air pollutants in the municipality of Hermosillo; and
 - d) effective enforcement of Article 8, section XV, of the LGEEPA, regarding the launching of the Municipal Environmental Protection Program.
13. In accordance with Article 15(5) of the Agreement, on 30 August 2013, the Secretariat submitted the draft factual record of submission SEM-05-003 (*Environmental Pollution in Hermosillo II*) to Council, from which date, the Parties had 45 days to provide comments on the document's accuracy.⁴¹
 14. On 21 October 2013, Mexico submitted its comments on the accuracy of the draft factual record. Canada submitted comments on 5 November while the US did not submit any comments. Pursuant to Article 15(6) of the Agreement,⁴² the Secretariat incorporated the comments as appropriate into the final version of the factual record and submitted it to the Council on 27 November 2013⁴³ for a vote in accordance with Article 15(7) of the Agreement].⁴⁴
 15. It should be noted that, during an effort to modernize the submission process, on 11 July 2012, the Council adopted, via Council Resolution 12-06, modifications to the *Guidelines for Submissions on Enforcement Matters under Articles 14 and 15 of the North American Agreement on Environmental Cooperation*, after the Council voted to instruct the Secretariat to prepare this factual record. As the modified Guidelines of 11 July 2012 establish timelines for each phase of the process, the Executive Director and the Submissions on Enforcement Matters Unit of the Secretariat undertook, to the extent practicable, to meet applicable timelines in the development of this factual record.
 16. As with all previous factual records, the Final Note (in section 12 of this factual record) includes a synopsis of the key findings of the factual record.

2. Summary of the Submission

17. The Submitters assert the alleged failure on the part of the federal, state and municipal governments to enforce, promote and recommend compliance with the legal provisions designed to control air pollution in Hermosillo.⁴⁵
18. The Submitters assert that Semarnat, Profepa and the Ministry of Health are failing to enforce and promote compliance with the NOMs on air pollution in the state of Sonora and, in particular, in the municipality of Hermosillo.⁴⁶ They assert that Semarnat and Profepa are failing to recommend air pollution prevention and control actions to the Government of the state of Sonora and the municipality of Hermosillo.⁴⁷ Furthermore, they assert that the federal authorities are not incorporating air quality data from the city of Hermosillo into the National Air Quality Information System (*Sistema Nacional de Información de la Calidad del Aire—Sinaica*).⁴⁸
19. At the state level, the Submitters assert that SIUE and the Ministry of Health of the state of Sonora are failing to carry out air pollution prevention and control measures in assets and areas under state jurisdiction.⁴⁹
20. The Submitters assert that the Government of Sonora's enforcement failures consist of: the alleged absence of air pollution planning, regulation, monitoring and supervision;⁵⁰ the non-issuance of environmental technical standards regarding control of emissions;⁵¹ failure to establish, implement and operate inspection centers for vehicles intended for use in public transportation services authorized by Sonora;⁵² failure to issue regulations and administrative instructions to promote observance of the Environmental Law of the state of Sonora;⁵³ absence of a proposal on, and updating of, the state environmental plan regarding air pollution

prevention and control,⁵⁴ and the absence of plans regarding verification, enforcement and control of reference values established in the following official standards issued by the Ministry of Health: NOM-020-Ssa1-1993, NOM-021-Ssa1-1993, NOM-022-Ssa1-1993, NOM-023-Ssa1-1993, NOM-024-Ssa1-1993, NOM-025-Ssa1-1993 and NOM-026-Ssa1-1993, all of which concern controlling air pollutants.⁵⁵

21. The Submitters also assert that the Municipality of Hermosillo: is failing to implement air pollution prevention and control measures in assets and areas under municipal jurisdiction;⁵⁶ has not defined zoning for polluting industries in the Municipal Urban Development Program;⁵⁷ is failing to monitor and enforce compliance with NOMs on air pollution control;⁵⁸ and that it has not established and implemented mandatory vehicle inspection programs and vehicle inspection centers.⁵⁹ The Submitters also assert that the Municipality of Hermosillo has not formed the Municipal Environmental Commission (*Comisión Municipal de Ecología*);⁶⁰ has not issued the regulations and administrative instructions necessary to promote observance of the Environmental Law of the State of Sonora;⁶¹ and, in summary, it has not carried out actions to reduce or control air pollutant emissions.⁶²

3. Summary of Mexico's Response

22. Mexico expressed its disagreement with the Secretariat's decision to admit the Submission and, consequently, argues that its response is *ad cautelam*⁶³ regarding the assertions made in submission SEM-05-003. In its response, Mexico presented information related to enforcement of the environmental law at issue and explained why it considered the elaboration of a factual record unwarranted.⁶⁴
23. Mexico affirmed that the Submission did not comply with some of the admissibility requirements of Article 14 of the NAAEC, specifically, the Submitters did not pursue the available remedies in accordance with terms stipulated under the law, since they only filed information requests, which do not constitute an administrative review;⁶⁵ did not provide legal or technical information to support their assertions;⁶⁶ did not specify harm and did not furnish documentation demonstrating the harm done to the Submitters or to the residents of the city of Hermosillo;⁶⁷ and they allegedly based their submission primarily on news reports from the media.⁶⁸
24. Mexico invoked Article 45(1), paragraphs (a) and (b), to argue that the authorities allocate resources to higher priority issues in Hermosillo.⁶⁹ Furthermore, Mexico considers that there is no mandatory requirement to exercise its authority for issuing standards under environmental law. Mexico points out that despite the environmental laws gives authority to issue regulations, it is not a mandatory exercise and thus powers are discretionary and not subject to deadlines, and in any case depend on an adequate regulatory framework and available resources.⁷⁰
25. Mexico indicates that it exercises its discretionary powers in a reasonable fashion and that, furthermore, it enforces the legislation in question with respect to priority environmental issues. Consequently, under Article 45(1) of the NAAEC, Mexico must not be deemed as failing to effectively enforce its environmental law.⁷¹ The Party maintains that, in terms of regulation: it uses its discretion to promote the issuance of NOMs and other legal measures;⁷² that the actions enumerated in the Submission are not mandatory;⁷³ that examining assertions on the issuance of standards is not mandated by the submissions process;⁷⁴ that it has issued air pollution control regulations and NOMs on measuring pollutant concentrations, fixed source emissions and mobile source emissions;⁷⁵ and that the local legislation in force at the time⁷⁶ authorized the enforcement of federal LGEEPA regulations on a supplementary basis, which, therefore means that the existence of a "regulatory vacuum" cannot be asserted.⁷⁷
26. Mexico argues that Sonora's climatologic and topographical conditions are the principal factors causing air pollution in Hermosillo⁷⁸ and that consequently the local authorities assigned their resources to paving

283,909 m² of roads.⁷⁹ The Response observes that, according to an EPA study,⁸⁰ unpaved streets are the source of up to 78 percent of suspended particulates.⁸¹ Consequently, Mexico indicates, “upon considering the available resources, it prioritized other issues of an environmental nature.”⁸²

27. At the federal level, Mexico explains that Semarnat has been monitoring environmental pollutants emitted by establishments under federal jurisdiction since 1998, and that it is presently implementing the RETC.⁸³
28. Regarding enforcement efforts, Mexico states: that Semarnat has granted a total of 92 operating licenses and Uniform Environmental Licenses (*Licencias Ambientales Únicas*—LAUs) in the state of Sonora, which impose conditions on the operation of air pollution sources;⁸⁴ that the 2003 COA report provided data on 943,959 tons of air pollutant emissions in Sonora, which may be consulted by type of pollutant;⁸⁵ and that the federal Semarnat delegation in Sonora, in coordination with the Hermosillo municipal government, is addressing the pollution generated by the brick-making industry.⁸⁶ Mexico also states that between 1998 and 2005 Profepa conducted 18 site visits to verify compliance with environmental law in Hermosillo, which resulted in 16 administrative rulings,⁸⁷ and that the irregularities detected through Profepa inspections resulted in technical corrective measures,⁸⁸ including three administrative proceedings that concluded with agreements, and two on-going administrative proceedings and fines in the amount of 325,050 pesos.⁸⁹
29. At the state level, Mexico indicates that the SIUE carries out air pollution control by: granting licenses with conditions attached that derive from 451 environmental impact rulings;⁹⁰ issuing a total of 91 state operating licenses and 228 COAs;⁹¹ and, between 1999 and 2005, conducting 90 inspection visits of Hermosillo establishments to verify compliance with state environmental law.⁹²
30. Mexico maintains that Sonora has coordinated with other levels of government regarding the transferring and operation of atmospheric monitoring equipment⁹³ by allocating resources to pave 283,909 m² of streets in Hermosillo, in 2005,⁹⁴ and by implementing the Suba Program to counter air pollution from particulates in Hermosillo.⁹⁵ Furthermore, the Party indicates that Sonora has a State Development Plan that includes a section, Orderly Cities and Housing, which serves to promote the strengthening of its environmental law, to consolidate its system of cities and to incorporate an environmental perspective in land-use planning.⁹⁶
31. Mexico explains that at the municipal level, Hermosillo has implemented PEMCA through which it plans to establish and operate atmospheric monitoring stations in Hermosillo.⁹⁷ Mexico affirms that, through PEMCA, monitoring is conducted:

[...] to evaluate air pollution levels by comparing them with the Official Mexican Standards issued by the Ministry of Health on TSP (total suspended particulates) and PM₁₀ (particulates less than ten micrometers in diameter).⁹⁸

Furthermore, Mexico states that:

As a result of monitoring, annual Technical Reports of ambient air particulates have been produced [...] describing the behaviour of particulates during given periods and compare the results with the Environmental Health Standards [...]⁹⁹

32. The Response affirms that, according to its technical monitoring reports, there has been a reduction in TSP and PM₁₀ concentrations in Hermosillo.¹⁰⁰
33. Mexico also affirms that Hermosillo conducts environmental impact assessments within the purview of its jurisdiction¹⁰¹ and that the municipality is endowed with an environmental complaints mechanism that includes inspection.¹⁰² Mexico states that Hermosillo has an environmental contingency response program,¹⁰³ a tire recycling program,¹⁰⁴ and a municipal urban development program that specifies zoning for

different industrial uses.¹⁰⁵ In addition, Mexico indicates that Hermosillo is implementing actions to address atmospheric emissions from the brick-making industry,¹⁰⁶ and that it is working on a draft Ecology and Environmental Protection Regulation.¹⁰⁷ Mexico asserts that Hermosillo is effectively implementing air pollution related NOMs and that it is not conducting vehicle inspections due to the absence of the accurate information needed to develop such a program.¹⁰⁸ In this regard, Mexico argues that:

[...] year after year, the city faces extreme climatic variations. This natural situation prevents precise analysis of monitoring data, i.e., the very data required to develop and operate a vehicle inspection program.

The preceding point is of capital importance regarding the cost-benefit considerations that such a program must satisfy for it to represent an effective and economically viable program, given the existence of other environmental problems [...]¹⁰⁹

34. Mexico states that Hermosillo did not establish its Municipal Ecology Commission as per Article 138 of the LEES, then in force, but, pursuant to the supplementary enforcement provided for under said law's Provisional Article 4, it operates a Sustainable Development Advisory Council.¹¹⁰
35. Mexico concludes that in light of the foregoing the necessary conclusion is that it has not failed in its "compliance with legal provisions concerning environmental matters nor in the effective enforcement thereof."¹¹¹

4. Scope of the Factual Record

36. This section outlines the scope of the factual record on submission SEM-05-003 (*Environmental Pollution in Hermosillo II*), filed with the CEC's Secretariat on 30 August 2005.
37. Council Resolution 12-04 may be consulted in Appendix 1 and accordingly, this factual record only presents information on: the actions directed at implementing mandatory vehicle inspection programs; the adoption of plans to verify, monitor and control the pollutant emissions identified in Semarnat issued NOMs; actions to reduce and control air emissions; and the launching of the municipal environmental protection program, referred to in sections 8, 9, 10 and 11 of the present document.¹¹²

5. Information-gathering Process

38. Pursuant to instructions in Council Resolution 12-04,¹¹³ on 9 August 2012 the Secretariat published its overall plan for development of the factual record (see Appendix 3) and forwarded it to the NAAEC Parties and the Submitters.¹¹⁴ The Secretariat updated the plan on 27 February and on 10 June 2013.¹¹⁵
39. Pursuant to Article 15(4) of the NAAEC, in preparing a factual record:

[...] the Secretariat will consider any information provided by a Party and may consider any relevant technical, scientific or other information that is: a) publicly available; b) submitted by interested non-governmental organizations or persons; c) submitted by the Joint Public Advisory Committee (JPAC); or d) developed by the Secretariat or independent experts.¹¹⁶
40. On 21 August 2012, the Secretariat issued an information request (see Appendix 4), and between that date and 18 September 2012, the information request was sent to the Governments of Mexico,¹¹⁷ the United States¹¹⁸ and Canada,¹¹⁹ as well as to JPAC¹²⁰ and the Submitters.¹²¹

41. Between 23 and 28 August 2012, the Secretariat sent information requests to various government agencies located in the city of Hermosillo, Sonora (see Appendix 5). The only response the Secretariat received was from the Profepa delegation in Sonora, notifying that the information request was being processed by its liaison at Semarnat, i.e., the Legal Affairs Coordinating Unit (*Unidad Coordinadora de Asuntos Jurídicos*—UCAJ).¹²²
42. On 2 October 2012, the Secretariat received Mexico's response to its information request. In its information request response Mexico consolidated information from the Municipal Ecology Institute of the Hermosillo municipal government (*Instituto Municipal de Ecología del Ayuntamiento de Hermosillo*), the General Directorate for Air Quality Management and the Pollutant Release and Transfer Register (*Dirección General de Gestión de la Calidad del Aire y Registro de Emisiones y Transferencia de Contaminantes*—DGGCARETC) of Semarnat, the National Institute of Ecology and Climate Change (*Instituto Nacional de Ecología y Cambio Climático*—INECC) and the Semarnat delegation in Sonora.¹²³ The Secretariat received no response from the Governments of Canada and of the United States, nor from JPAC and the Submitters.
43. On 30 January 2013, the Secretariat requested additional information from the Government of Mexico on the implementation of the vehicle inspection program and the implementation of the road paving program. The Government of Mexico responded to the latter request on 25 February 2013.¹²⁴
44. In preparing the factual record, the Secretariat requested assistance from technical and legal consultants. Researcher Xóchitl Cruz assisted the Secretariat in the compiling and organization of the information to be incorporated into the factual record.¹²⁵ Professor Graciela Jasa assisted the Secretariat in a similar fashion regarding information on the effective enforcement of the environmental law in question.¹²⁶
45. The Secretariat consulted other sources of publicly available information to prepare this factual record. Such information included epidemiological and toxicological studies on the presence in ambient air of particulate matter, sulfur oxides and nitrogen oxides,¹²⁷ as well as information on air quality measurement systems.¹²⁸

6. Environmental Law in Question

46. This section presents information on: LGPEEA Articles 7, sections III and XIII, and 8, sections III and XV; RPCCA Articles 4, section III, 13, 16 and 41, section I; and LEEPAS Articles 73, sections V, VII and IX, and 85, section I, paragraph b); as well as on the abrogation of LEES. In the following paragraphs, the Secretariat presents information on the content of the environmental law in question. Information is also provided on amendments to the environmental law in question from the date of the Submission on 30 August 2005 to the date of Council Resolution 12-04 on 15 June 2012.
47. The text of the provisions of the LGPEEA and the RPCCA, of the LEEPAS and LEES, and information related to the NOMs issued by Semarnat and by the Ministry of Health, may all be consulted in Appendix 8. For the purposes of this factual record, references to the environmental law in question concern the provisions in force on 15 June 2012, the date of Council Resolution 12-04, unless otherwise indicated.

6.1 Validity of the environmental law in question

48. Between the filing of submission SEM-05-003—on 30 August 2005—and the release of Council Resolution 12-04, the provisions of LEES for which a factual record was recommended, were abrogated upon publication of LEEPAS on 25 September 2008.¹²⁹ However, with respect to said provisions “the substance of the Articles... remained untouched except for their numbering”¹³⁰ such that:

- LEES Article 73, sections V and VII is now LEEPAS Article 111, sections V and VII;
 - LEES Article 85, section I is now LEEPAS Article 119, section II, paragraph b); and
 - LEES Article 73, sections VI and IX is now LEEPAS Article 111, sections VI and IX.
49. LEEPAS Articles 111, sections V, VI, VII and IX, and 119, section II, paragraph b)¹³¹ were not amended between the date of their publication on 25 September 2008 and the issuing of Council Resolution 12-04 on 15 June 2012. The rest of the provisions in question have not changed since the filing of the submission on 30 August 2005.
50. The Secretariat, in order to provide context for understanding the law in question and the NOMs at issue, considers it helpful to the reader to briefly outline how NOMs operate. For example, with respect to Official Mexican Standards, Article 3 of the Federal Law on Metrology and Standardization (*Ley Federal sobre Metrología y Normalización*—LFMN) defines them as follows:
- Article 3. For the purposes of this Law:
- XI. Official Mexican Standard: a mandatory technical regulation issued by the competent authorities, in accordance with the purposes established in Article 40, which establishes rules, specifications, attributes, guidelines, characteristics or requirements applicable to a product, process, installation, system, activity, service or method of production or operation; such technical regulations may also apply to terminology, symbols, packaging, marking or labeling, as well as with compliance or enforcement [...]
51. LFMN Article 40 which establishes the purposes of a NOM, reads as follows:
- Article 40. The purpose of the Official Mexican Standards shall be to establish:
- [...]
- X. The characteristics and/or specifications, criteria and procedures that enable protection of the environment and ecosystems, the promotion of improvements to same, and the conservation of natural resources;
- XI. The characteristics and/or specifications, criteria and procedures that enable the protection and promotion of human, animal or plant health;
- [...]
52. NOMs determining acceptable levels of criteria pollutants in the environment¹³² in order to protect human health, establish the requirements, specifications, conditions, procedures, parameters and permissible limits which must be observed by the competent authorities responsible for air pollution prevention, measurement and control.¹³³
53. Between the filing of submission SEM-05-003—on 30 August 2005—and the release of Council Resolution 12-04, the following NOMs issued by Semarnat in relation to air pollutant emissions remained unchanged: NOM-043-SEMARNAT-1993 (NOM-043), NOM-121-SEMARNAT-1997 (NOM-121), NOM-048-SEMARNAT-1993 (NOM-048) and NOM-050-SEMARNAT-1993 (NOM-050), though there is a requirement in LFMN that NOMs shall be updated every five years.¹³⁴
54. Before the filing of submission SEM-05-003, NOM-040-SEMARNAT-2002 (NOM-040) was updated in 2004.¹³⁵ The changes to this standard did not create new obligations for individuals, nor did they make existing obligations stricter, create or modify administrative procedures, or reduce or restrict rights defined therein.¹³⁶ Between filing of the Submission and before the Council Resolution was issued, NOM-041-SEMARNAT-2006 (NOM-041) and NOM-045-SEMARNAT-2006 (NOM-045) were updated in 2006 and NOM-085-SEMARNAT-2011 (NOM-085) was updated on 2 January 2012.

55. The Secretariat presents general information to contextualize the Council Resolution's statement of "equivalence" between the air pollution NOMs issued by the Ministry of Health (NOM-020-Ssa1-1993 to NOM-026-Ssa1-1993), and the NOMs issued by Semarnat (NOM-034-SEMARNAT-1993 to NOM-038-SEMARNAT-1993), mindful however of the Council's instructions to avoid presenting information on enforcement of the Ministry of Health NOMs.
56. Based on the available information, there are generally two categories of NOMs for the prevention and control of air pollution: those that set maximum permissible levels for pollutants or stipulate the technical requirements of the methods employed for measuring them (e.g. those issued by Semarnat) and those that establish limit values or criteria which must not be exceeded within certain time periods, in order to avoid affecting human health (e.g. those issued by the Ministry of Health).¹³⁷
57. Due to their effects on public health, some air pollutants are regulated and their permissible levels in ambient air are established through so-called "criteria pollutants."¹³⁸ NOMs establishing permissible concentrations of air pollutants set maximum limit values to ensure that such concentrations in ambient air are breathable and do not affect human health; these criteria pollutants are: ozone (O₃), carbon monoxide (CO), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), lead (Pb) and particulate matter, i.e., suspended particulates less than 10 and less than 2.5 micrometers in diameter (PM₁₀ and PM_{2.5}).¹³⁹
58. The Ministry of Health and Semarnat may, within their respective jurisdictions, set parameters for environmental quality by issuing NOMs, which are then integrated into the air quality measurement and control regulatory system at the national level.¹⁴⁰ Different techniques and systems have been developed for measuring concentrations of criteria pollutants. Semarnat develops NOMs focusing on determining concentrations of criteria pollutants in ambient air and the calibration procedures for measuring devices. The Ministry of Health develops NOMs that evaluate air quality with respect to specific criteria pollutants and determines limit values for the concentrations of said criteria pollutants that assist in evaluating air quality in accordance with environmental law.¹⁴¹
59. The following NOMs were issued by Semarnat to establish measurement methods for determining the concentrations of criteria pollutants—ozone (O₃), carbon monoxide (CO), sulfur dioxide (SO₂) and nitrogen dioxide (NO₂) and suspended particles—in ambient air and standards for calibration procedures for measuring equipment:¹⁴² NOM-034-SEMARNAT-1993, NOM-035-SEMARNAT-1993, NOM-036-SEMARNAT-1996, NOM-037-SEMARNAT-1993 and NOM-038-SEMARNAT-1993. The purpose of these NOMs is to establish the methods and procedures for measuring and monitoring concentrations of a substance or pollutant present in the air in a specific time and place. These NOMs establish standardized techniques and procedures for measuring concentrations of air pollutants. Between the filing of the Submission and the issuing of Council Resolution 12-04, the NOMs referred to here were not updated.¹⁴³ No Semarnat issued NOMs were identified regarding the prescription of measurement methods for determining concentrations of Pb, PM₁₀ and PM_{2.5}.
60. In contrast with NOM-034-SEMARNAT-1993 to NOM-038-SEMARNAT-1993, which establish standardized techniques and procedures for measuring concentrations of air pollutants, NOM-020-Ssa1-1993 to NOM-026-Ssa1-1993 establish the values of criteria pollutants: ozone (O₃),¹⁴⁴ carbon monoxide (CO),¹⁴⁵ sulfur dioxide (SO₂),¹⁴⁶ nitrogen dioxide (NO₂),¹⁴⁷ total suspended particulates (TSP),¹⁴⁸ particulate matter under ten micrometers in diameter (PM₁₀),¹⁴⁹ particulate matter under 2.5 micrometers in diameter (PM_{2.5})¹⁵⁰ and lead concentrations (Pb).¹⁵¹ The purpose of implementing the latter such NOMs is to ensure that air quality is "satisfactory in every community and region of the country."¹⁵² Air quality is determined by measuring these attributes.¹⁵³ NOM-020-Ssa1-1993 to NOM-026-Ssa1-1993 serve to identify the pollution index, assess air quality problems in relation to them and, on that basis, determine air quality management measures.¹⁵⁴ As per Council Resolution 12-04, the Council does not consider these latter NOMs to be environmental law in accordance with NAAEC Article 45(2)(a), and they do not, according to the Council, "have as their primary purpose the protection of the environment, or the prevention of a danger to human life or health,"

and thus no information on enforcement of air quality monitoring in Hermosillo is permitted in this factual record. Thus, Council Resolution 12-04 implies that the Secretariat erroneously determined in accordance with Article 14(1), that the Ministry of Health NOMs cited by the Submitter indeed comport with the definition of environmental law in Article 45(2)(a),¹⁵⁵ although no reasoning for such a finding in the Council Resolution was provided, despite the Executive Director of the Secretariat's request for that information to be made public.¹⁵⁶ Instead the Council stated in Council Resolution 12-04 that it was "informed" that equivalent Semarnat NOMs exist that do meet the definition of environmental law.

6.2 Atmospheric emissions authority

61. The following are provisions that may aid the reader in understanding the regulatory context for enforcement of the laws at issue,¹⁵⁷ as well as the distribution of powers for regulating air pollution emissions in Mexico.
62. LGEEPA Articles 5, 6, 7 and 8 focus in the distribution of powers on environmental issues between the federation, states and municipalities.¹⁵⁸ Furthermore, said articles determine when powers are exercised in an exclusive or concurrent fashion by different levels of government.¹⁵⁹
63. Distribution of powers on atmospheric emissions is organized in accordance with "sources" and "zones" under local and federal jurisdiction.¹⁶⁰ LGEEPA Article 5, section XII establishes that the federation has the authority to regulate air pollution "originating from any type of emissions source," as well as to prevent and control same in zones or, as required, from sources under federal jurisdiction."¹⁶¹ The "zones" under federal jurisdiction are enumerated in RPCCA Article 11, section I.¹⁶² Emissions "sources" under federal jurisdiction are enumerated in section II.¹⁶³ LGEEPA Article 111 *bis* second paragraph also identifies the sectors of industrial activity considered to be under federal jurisdiction.¹⁶⁴ Furthermore, RPCCA Article 17 *bis* includes a specific listing of 113 subsectors.¹⁶⁵
64. The subjects under state jurisdiction in terms of environmental issues are listed in LGEEPA Article 7 and those under municipal jurisdiction are identified in Article 8.
65. LGEEPA Article 7, section III empowers the states to prevent and control "air pollution generated by fixed sources that function as industrial establishments and air pollution by mobile sources," provided that such sources are not under federal jurisdiction:

Article 7. In accordance with the provisions of this Law and the relevant local laws, the following powers and responsibilities fall to the states:

[...]

III. The prevention and control of air pollution generated by fixed sources that function as industrial establishments, as well as air pollution from mobile sources, which, in accordance with the provisions of this Law, are not under federal jurisdiction;

[...]

66. In this regard, LEEPAS reiterates the state of Sonora's jurisdiction regarding the prevention and control of air pollution from fixed sources that function as business establishments and from mobile sources which are not under federal or municipal jurisdiction.¹⁶⁶
67. LGEEPA Article 7, section XIII, establishes that the states are empowered to enforce NOMs dealing with emissions:

Article 7. In accordance with the provisions of this Law and the relevant local laws, the following powers and responsibilities fall to the states:

[...]

XIII. Enforcing compliance with Official Mexican standards issued by the Federation, regarding the matters and events referred to in sections III, VI and VII of this Article;

[...]

68. Under LGEEPA Article 8, section III, the municipalities are—in conjunction with the role that falls to the states—responsible for enforcing the provisions on the prevention and control of air pollution generated by fixed sources functioning as business or services establishments, and of air pollution generated by mobile sources not under federal or state jurisdiction, such as new motor vehicles:

Article 8. Under the provisions of this Law and of the relevant local laws, the following powers fall to the municipalities:

[...]

III. The enforcement of legal provisions on the prevention and control of air pollution generated by fixed sources that function as *business* or services establishments, as well as air pollutant emissions from mobile sources not considered under federal jurisdiction, in conjunction with the role that falls to the states as provided for under state legislation; [Emphasis added]

[...]

69. Likewise, in the State law under LEEPAS Article 8, section III, —*n.b.* not part of the analysis section in this Factual Record— the municipalities have—in conjunction with the corresponding role assigned to states—jurisdiction to enforce legal measures with respect to prevention and control of air pollution generated by fixed sources functioning as business or services establishments, as well as that generated by mobile sources not under federal or state jurisdiction.¹⁶⁷

70. RPCCA Article 4, section III, grants the states and municipalities the authority to prevent and control air pollution in areas under their jurisdiction or generated on sites or by sources under their jurisdiction.

Article 4. States and municipalities have jurisdiction, within the purview of their respective territories and pursuant to the distribution of powers established by local laws, over the aspects identified in Article 6 of the Law [i.e., the LGEEPA], particularly:

[...]

III. The prevention and control of air pollution generated in areas, or by emissions sources, under state or municipal jurisdiction; and

[...]

71. The distribution of air pollution powers in LGEEPA is reproduced in the Semarnat-issued air pollution NOMs. Enforcement of NOM-040, NOM-121, NOM-042 and NOM-044 is a federal responsibility; however, enforcement of NOM-043, NOM-085, NOM-041 and NOM-050 is a concurrent responsibility; i.e., it falls to the federal authorities, the Federal District, the states and municipalities—within the purview of their respective jurisdictions—to enforce compliance with these standards. As for NOM-048, this is a local responsibility.¹⁶⁸ Similarly, Articles 7, section XIV, and 8, section X, recognize the authority of states and municipalities to enforce NOMs under their jurisdiction.¹⁶⁹

72. Enforcement of NOMs issued by Semarnat to establish measurement methods for determining concentrations of criteria pollutants—i.e., Official Mexican Standards NOM-034, NOM-035, NOM-036, NOM-037 and NOM-038—is a responsibility of the federal authorities, which is discharged by Profepa.

6.3 Establishment of mandatory vehicle inspection programs and the establishment and operation of vehicle inspection centers

73. The following paragraphs describe the provisions focusing on the launching of the mandatory vehicle inspection programs established in the environmental law cited in the Submission.

74. LEEPAS Article 111, sections V and VII reads as follows:

Article 111. Regarding the prevention and control of air pollution, the State and the Municipal governments shall, within the purview of their respective jurisdictions:

[...]

V. Establish and operate systems to inspect the emissions of motor vehicles in use;

[...]

VII. Establish requirements and procedures to regulate the following: pollutant emissions of motor vehicles, except for those intended for use in federal public transportation; transit management measures; and, as required, the suspension of motor vehicle traffic, in the event of serious air pollution episodes;

[...]

75. Provisions cited by the Submitters, and responded to by the Party as summarized above, and ultimately authorized for inclusion in this factual record by the Council, establish that the state of Sonora and the municipality of Hermosillo are responsible for: (i) the establishment and operation of vehicle emissions inspection systems; (ii) the establishment of requirements and procedures for regulating motor vehicle emissions; and (iii) the suspension of vehicle traffic in the event of serious air pollution episodes.

76. LEEPAS Article 119, section II, paragraph b) cited in the Submission provides as follows:

Article 119. Regarding pollutant emissions from motor vehicles, except for those intended for use in federal public transportation, it falls to:

[...]

II. The Municipal governments, within their respective territories:

[...]

b) to establish mandatory vehicle inspection programs;

[...]

77. The foregoing provision specifies then that the municipality of Hermosillo must establish the appropriate mandatory vehicle inspection program. In particular, factual information is presented on the actions directed towards the adoption of such programs in section 9 of this factual record. Likewise, with respect to distribution of authority in matters of air emissions, the reader may consult paragraphs 65, 68 and 70.

6.4 Plans for verification and control of the polluting emissions

78. Regarding provisions that serve as the basis for the NOMs issued by Semarnat in respect of air pollution prevention and control, RPCCA Article 16 cited in the submission reads as follows:

Article 16. Emissions into the atmosphere of odors, gases, and solid and liquid particulates generated by fixed sources must not exceed the maximum permissible emission and immision levels per pollutant and

per pollution sources stipulated in the relevant environmental technical standards issued by the Ministry, in coordination with the Ministry of Health. Said standards are based on the maximum permissible concentrations of pollutants in the environment for human beings, as determined by the latter.

Furthermore, in light of the variety of technologies employed in different emissions sources, an environmental technical standard may stipulate different limit values when determining the maximum permissible emission or immission levels for a given pollutant or for a specific source, depending on whether it is a matter of:

- I. Existing sources,
- II. New sources, or
- III. Sources located in critical areas.

Following the appropriate studies and in coordination with the Ministry of Health, the Ministry shall determine, in the relevant environmental technical standard, which areas shall be considered critical.

79. As explained in section 6.1 NOMs are technical control standards within the administrative enforcement field. Environmental technical standards referred to in RPCCA Article 16 had such characteristic until the entry into force of LFMN (i.e. the standards law).¹⁷⁰ Despite this change in the standards legislation, RPCCA did not alter the reference to environmental technical standards, and this reference remains to date. This factual record does not address enforcement of the standards referred to in the first paragraph of RPCCA Article 16. On the other hand, “maximum permissible concentrations of pollutants in the environment for human beings,” established through Official Mexican Standards issued by the Ministry of Health, is a matter the Council determined should not be analyzed in this factual record since this is, according to the Council, not environmental law, as defined in Article 45(2) of the Agreement.

80. Concerning air quality information systems, RPCCA Article 41, section I reads as follows:

Article 41. The Ministry [i.e., Semarnat] shall establish and maintain an up-to-date national air quality information system.

This system shall be based on the data collected from:

- I. The atmospheric monitoring conducted by the competent authorities in the Federal District, the states and municipalities [...]

81. LEEPAS Article 111 sections VI and IX, establish that:

Article 111. Regarding the prevention and control of air pollution, the State and the Municipal governments shall, within the purview of their respective jurisdictions:

- VI. Establish and operate air quality monitoring systems, with any technical support they may request from the Ministry of the Environment and Natural Resources, and shall give said Ministry local air quality monitoring reports for incorporation into the National Environmental Information System in accordance with the corresponding coordination agreements;

[...]

IX Elaborate reports on the state of the environment in the state or municipality in question, in a manner to be agreed upon with Semarnat through the conclusion of coordination agreements;

82. Section 9 of this factual record presents information on the incorporation of data generated by pollutant monitoring in Hermosillo into the National Air Quality Information System. With respect to distribution of authority on air emissions, the reader may consult paragraphs 65, 68 and 70.

6.5 Specific actions to reduce and control air pollutant to the atmosphere in the city of Hermosillo

83. RPCCA Article 13 cited in the submission, establishes the following criteria for atmospheric protection:

Article 13. Concerning atmospheric protection the following criteria shall be considered:

- I. Air quality must be satisfactory in every human settlement and region of the country; and
- II. Emissions of pollutants into the atmosphere, whether from artificial or natural sources, or from fixed or mobile sources, must be reduced or controlled to ensure air quality that is satisfactory for the well-being of the population and ecological balance.

84. Section 10 of this factual record presents the measures implemented by Hermosillo to reduce and control air pollutants.

6.6 The issuance of the Municipal Environmental Protection Program

85. The requirement that municipalities adopt a municipal environmental protection program derives from LGEEPA Article 8 that provides for its formulation, execution and assessment:

Article 8. Under the provisions of this Law and of the pertinent local laws, the following powers fall to the municipalities:

[...]

XV. The formulation, execution and assessment of the municipal environmental protection program.

[...]

86. Section 11 of this factual record presents information on status of implementation of the municipal environmental protection program.

7. Description of the Area of Interest and Information on Air Pollutants

7.1 Introduction

87. Hermosillo is the municipal seat of the eponymous municipality and capital of the state of Sonora. As for its geographical coordinates, its latitude is between 29° 00' N and 29° 10' N, and its longitude is between 111° 05' W and 110° 55' W. Hermosillo covers an area of approximately 14,880.2 km² and has an estimated population of 784,342.¹⁷¹

88. Hermosillo is located in the center-west part of the state of Sonora, on the coastal plain, in northwestern Mexico. Its area represents 8.7 percent of the area of Sonora. On its northwest side, it is adjacent to the municipality of Pitiquito, on the northeast side with the municipalities of Carbó and San Miguel de Horcasitas, on the east with Ures and Mazatán, and on the southeast with La Colorada and Guaymas. Hermosillo's coastal strip is on the Gulf of California to the west.¹⁷² The main population centers—other than the city of Hermosillo—are other localities in the same municipality, notably La Victoria, el Tazajal, San Pedro, el Saucito, la Mesa del Seri and Las Placitas.¹⁷³

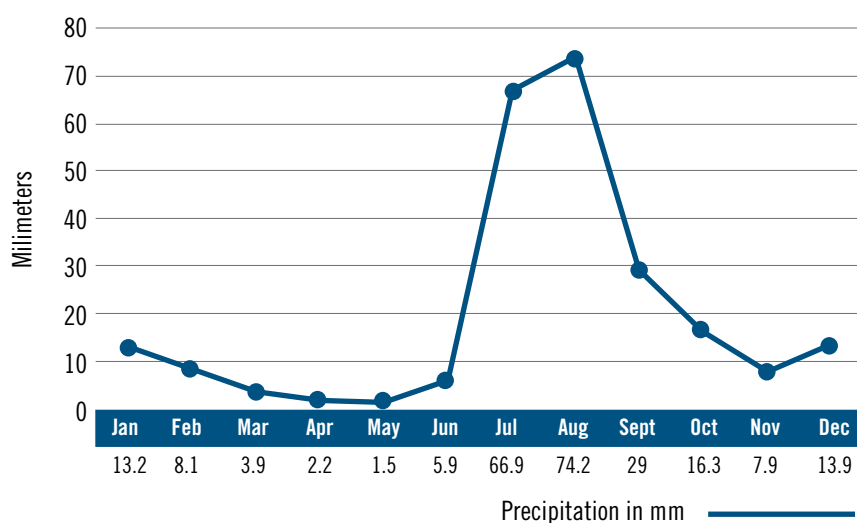
Figure 1. Location of the municipality of Hermosillo in the state of Sonora, Mexico¹⁷⁴



7.2 Climate, temperature, precipitation and wind patterns

89. Since air pollution levels vary depending on the weather, the Secretariat provides contextual information on Hermosillo's weather conditions in this section. Hermosillo is characterized by a very dry climate with little rainfall in the summer and winter.¹⁷⁵ Drought conditions are moderate to very high in the western part of the municipality and high everywhere else.¹⁷⁶ Frost occurs during the months of December to February one to eight days per month on average, i.e., its incidence may be characterized as from rare to moderately frequent.¹⁷⁷
90. River and rainwater flooding both occur¹⁷⁸ in Hermosillo and are ultimately due to precipitation. Precipitation levels are a function of the phenomena producing them: torrential rains and hurricanes,¹⁷⁹ which occur at different times of the year and vary in intensity. Flooding mainly occurs during the months of heavier precipitation (July to September), with the highest probability in July.¹⁸⁰

Figure 2. Average annual precipitation in Hermosillo¹⁸¹



91. The average annual temperature in Hermosillo is 25 °C. Record highs are approximately 16 °C higher and record lows 16 °C lower. The highest temperatures, which may reach daily highs of 40 °C to 47 °C, occur during April to September. The coldest months are from November to February when minimum temperatures may reach -1 °C to 4 °C.¹⁸²
92. The rainy season averages 40 days per year, and is mainly in the summer.¹⁸³ Recorded precipitation is highest in July, August and September—i.e., during the hurricane season—and varies from an average of 85 mm/month to 115 mm/month. However, in the driest years, monthly averages may drop to 65 mm. In the rainiest years, monthly averages may reach as high as 220 mm.¹⁸⁴ Average annual relative humidity is 53 percent. From March to June—and in October as well—rainfall is minimal and relative humidity is 30 percent.¹⁸⁵ Occasionally, precipitation falls from November to February, due to the so-called “*equipatas*” (winter rains).¹⁸⁶
93. On an annual basis, prevailing winds in the area come from southeast 11% of the time, showing a wind speed from 1 to 2 m/s. However, stronger winds blow from the northwest at 3 to 4 m/s, albeit less frequently, i.e., 1% of the time. In this zone, “calm winds” predominate, with an annual average frequency of 78%. The monthly average percentage of calm days are 91, 81, 48 and 75 percent for January, April, July and October, respectively. The prevailing winds blow from the southwest to the northeast in the mornings and in the opposite direction in the evenings. The strongest winds occur in July, August and September, i.e., when they vary between 60 and 80 km/h, occasionally reaching hurricane-force with gusts of up to 120 km/h, mainly when there are hurricanes or tropical storms off the coast of the Gulf of California.¹⁸⁷

Table 1. Average monthly wind speeds in Hermosillo¹⁸⁸

Parameters	Speed or %	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Prevailing direction		NW	W	W	SW	SW	SW	E	SW	E	E	E	E	SW
Average speed	m/s	1.5	1.4	1.5	1.8	1.6	1.7	1.5	1.3	1.4	1.4	1.5	1.2	1.2
Maximum speed	m/s	1.8	1.8	2.6	2.3	2.3	2.3	3	2.1	2.1	1.8	2.5	2	1.8
Annual Calm (% of time)	%	74.1	76.8	74.6	80.8	77.6	78.5	84.2	90.8	85.1	89	89.7	84.6	82.8

94. The Hermosillo airshed is of the open type and covers an estimated area of 404,404 km² with a population of 752,556 inhabitants. To the north, it is adjacent with Santa Ana and Benjamin Hill, to the east, Ures and Bajadita, to the south, La Caballito and Guaymas, to the west, Pitiquito and the Gulf of California.¹⁸⁹

Figure 3. The Hermosillo airshed¹⁹⁰



7.3 Population and territory

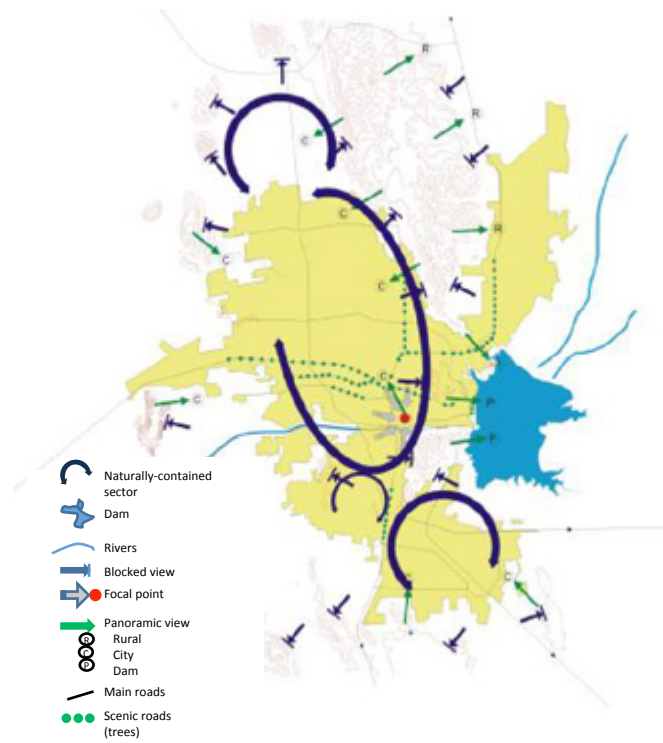
95. Hermosillo is located in the middle of the Guaymas-Nogales industrial corridor; it is 136 km from the Port of Guaymas and 271 km from Nogales, a city on the border with the United States. As the state capital, it's a center for business and services (government, banking and finance, universities, etc.), and therefore a focal point for the rest of the state.
96. Hermosillo is classified among the three top rankings of the National Urban System (*Sistema Urbano Nacional*).¹⁹¹ As its population does not exceed one million, it is classified as a city and not as a metropolitan area or megalopolis, and, therefore, is not included in any of the priority programs of the 2001-2006 National Urban Development and Land-use Planning Program (*Programa Nacional de Desarrollo Urbano y Ordenación de Territorio 2001-2006*).¹⁹² The Northern Border Program (*Frontera Norte*) is a regional program corresponding more closely to Hermosillo's geographical realities; however, as said program only includes localities within a 100 km strip along the U.S. border, Hermosillo is not eligible.¹⁹³ Table 2 presents population data for the city over the decades. Between 1900 and 2010, the city grew in size from 100 hectares to 16,500 hectares and its population increased from ten thousand to 792,000 inhabitants. Thus, although the city's area and population both increased, its population density decreased. According to estimates, in 2030 the city's area will have increased to 23 thousand hectares and its population to one million inhabitants.

Table 2. Population density in Hermosillo¹⁹⁴

Year	Area (ha)	Population (res.)	Density (res./ha)
1900	107.24	10,613	98.96
1930	198.88	19,959	100.36
1950	906.76	43,516	47.99
1960	2,544.67	95,978	37.72
1970	2,995.45	176,596	58.95
1980	4,383.71	297,175	67.79
1990	8,691.03	406,417	46.76
2000	13,991.61	545,928	39.02
2010	16,500.95	792,834	48.05
2020	19,460.33	916,825	47.11
2030	22,950.47	1,006,599	43.86

97. Hermosillo's dispersed growth pattern has resulted in low population densities and increased the number of brownfields within settled areas. Thus, according to the Hermosillo Urban Development Program, unless there is a change in this growth pattern towards more compact development, transportation and pollution problems will worsen. The latter, according to the PMDU, will entail the irreversible loss of lands with natural and economic value, as well as increase the city's operating costs.¹⁹⁵ Consequently, as this program points out, it will become more difficult to deliver infrastructure and public services to the entire city in a timely and efficient manner.¹⁹⁶
98. Hermosillo's current urban area is optimal for the city's development¹⁹⁷ due to three defining factors: (1) the topography and soil type allow for unhindered urbanization, except in the high mountainous areas, which constitute natural barriers to the city's growth; (2) the areas to the north of the Sonora River have yet to be developed as they are floodplains (planners thus take care not to zone them for residential use); and (3) the urban equipment and infrastructure coverage are adequate, as basic services extend to almost the entire city (except for the deficiencies in informal settlement areas, which require solutions to enable the incorporation of said areas into the urban development process).¹⁹⁸
99. Despite its flat configuration, the city of Hermosillo displays elevations from North to South, forming naturally-contained sectors inside the city, as well as a series of blocked views, creating an important landscape feature. Looking towards downtown, the most important focal point is the Cerro de la Campana. This mountain is also seen from different points in the city and along the main avenues; however it is often blocked by publicity displayed by billboards. Towards the west, panoramic views prevail as these are free from mountains. From elevated areas, one may appreciate scenic views of agricultural zones; the Abelardo L. Rodríguez dam, and the Sonora and San Miguel Rivers, which constitute the main water bodies in Hermosillo.¹⁹⁹

Figure 4. Landscape analysis²⁰⁰



7.4 Roads, urban development and transportation

100. Since Mexico informed in its response that road pavement is one of the determinants in air quality in Hermosillo²⁰¹ and that it has been implementing programs to encourage the use of public transportation²⁰² this section provides more information of related road, urban development and transportation infrastructure.
101. The city of Hermosillo's regional road system is structured around federal highway 15 which intersects the urban area and leads north to the city of Nogales, on the U.S. border, and south to the port of Guaymas.²⁰³ State highway SON-100 leads west to the agricultural areas of Costa de Hermosillo, the town of Miguel Alemán and Bahía de Kino. To the southeast, federal highway MEX-016 leads to La Colorada and the state of Chihuahua. To the northwest of the population center, federal highway MEX-015 connects with federal highway MEX-014, which leads to the municipalities of the Sonora River basin and the Sierra. To the south-east, state highway SON-114, which goes to Mazatán and other municipalities in the Sierra, connects with federal highways MEX-015 and MEX-016. State highway SON-110 connects the municipality's coastal zone with the city at the point where it crosses the Palo Verde neighborhood.²⁰⁴
102. The city of Hermosillo is endowed with a primary road network, largely consisting of boulevards and secondary roads. Current traffic flows are overloading this network's capacity, especially due to the increase in vehicles of foreign origin.²⁰⁵ The city is mainly expanding towards the west—although there is also growth towards the north and the south.²⁰⁶ The Abelardo L. Rodríguez reservoir and the Bachoco mountains constitute natural limits to growth towards the east. As a consequence, Solidaridad Boulevard has been transformed into the city's main north-south roadway. Boulevard Luis Encinas is the city's main east-west road.²⁰⁷ Figure 5 is a map of the city of Hermosillo in which the main roadways are indicated.

Figure 5. The Hermosillo road system²⁰⁸



103. According to Hermosillo's Urban Development Program, in 2002, 44% of the city's population used their own cars as transportation, 29% used buses and 24% walked. The rest of the population used other modes of transportation: bicycles (1.5%), motorcycles, taxis or trucks and vans (1.5%). According to the same study, 62 percent of the city's households own a car and 69 percent of those vehicles are over ten years old. Regarding the number of passengers per vehicle, in 56 percent of car trips there are 1.76 occupants, in 23.1 percent there are two occupants, in 12.2% there are three, and in 5.8% four and 2.9% five. According to the municipality of Hermosillo's information, the public transportation system is "deficient" and its schedules "limited." Consequently, people are dependent on their automobiles for transportation.²⁰⁹
104. Peak periods in terms of demand for transportation services (*i.e.*, rush hours) are from 6 am to 10 am and from noon to 2 pm. Between 6 am and 8 am most travel is to school zones and places of employment. In the afternoon, from noon to 2 pm, most travel is study and work related. After three pm, the number of trips falls slowly until it reaches a steady level before there is a sudden drop-off at 9 pm.²¹⁰
105. Hermosillo's system of main and secondary roads is congested during peak hours.²¹¹ According to the municipality of Hermosillo's information,²¹² if the number of vehicles in circulation continues to increase, serious traffic problems will affect intersections and corridors already characterized by low levels of service. Moreover, in addition to reducing the population's mobility, this would occasion an increase in air pollution as well.²¹³
106. Due to the large number of informal settlements in the northwestern part of the city, there is a deficit in amenities—including paved streets—in that area.²¹⁴ According to the municipality of Hermosillo's information, in these

areas, air quality problems persist due to the concentration of workshops and brickyards that produce gas and smoke emissions, which—along with dust storms—represent a factor affecting the health of local residents.²¹⁵ According to the municipality of Hermosillo's information, dust pollution problems exist in the northern part of the city, which may increase if no measures are taken to alleviate them. Such measures would include paving streets, forestation programs and avoiding the clearance of brownfields, which are sources of dust.²¹⁶

7.5 Atmospheric pollutants

107. Very diverse suspended substances are found in the atmosphere, such as dust, pollen, soot (from coal), metals (e.g., lead and cadmium), asbestos, salt, drops of sulfuric acid, dioxins, pesticides, etc.²¹⁷ The term “aerosol” is usually used to designate very small materials in a combined solid and liquid state.²¹⁸ Solids in aerosols are known as particulates. Solid materials larger than 20 µm are usually called dust.²¹⁹ Aerosols may be the product of incomplete combustion of diesel fuel or solid fuels like wood and coal.²²⁰ Aerosols may also result from the condensation of acid vapors and semi-volatile organic compounds, as well as through a series of NO₂ and SO₂ reactions that finally result in nitrates and sulfates, respectively.²²¹ Whereas dust is usually a local problem, aerosols may be transported long distances.²²² Depending on their size, 10 µm particulates can remain suspended in the atmosphere one or two days. However, the smallest particulates can remain in suspension several days or weeks.²²³
108. Air pollutants have been classified as criteria pollutants or non-criteria pollutants. According to INECC, criteria pollutants are directly damaging to human health.²²⁴ Criteria pollutants group are the principal agents affecting air quality and, consequently, they have severe impacts on the environment, health and the quality of life.²²⁵ Criteria pollutants include the following:²²⁶
 - Sulfur dioxide (SO₂)
 - Nitrogen dioxide (NO₂)
 - Particulate matter (PM)
 - Lead (Pb)
 - Ozone (O₃).
109. **Sulfur dioxide (SO₂)** is produced by the combustion of fossil fuels containing sulfur, such as coal and oil, and by various industrial processes, such as metals smelting, the production of sulfuric acid and the transformation of pulp into paper.²²⁷ According to US EPA, 85% of the SO₂ released into the atmosphere comes from fuel combustion, while in Canada industrial activities are the source of 65% of sulfur dioxide.²²⁸ The other source of SO₂ is the oxidation of hydrogen sulfide (H₂S), a naturally occurring substance produced through volcanic activity.²²⁹ In recent years, SO₂ emissions have fallen thanks to measures to eliminate the sulfur content in fuels.²³⁰ SO₂ emissions from electricity power plants that burn low quality fuels impact neighboring communities.²³¹ Despite efforts to reduce them, SO₂ emissions continue to be significant in a global scale and constitute an important primary pollutant, along with carbon monoxide.²³² Sulfur dioxide is associated with health effects on conjunctive and respiratory tract mucus, and produces irritation and acute or chronic inflammation; moreover, it usually combines with particulate matter, thus occasioning greater risks, due to the synergistic effect of such combinations.²³³
110. **Nitric oxide (NO)** and **nitrogen dioxide (NO₂)** are types of nitrogen oxides NO_x.²³⁴ NO₂ is a light brown colored gas that is produced directly or indirectly by burning fuels at high temperatures, such as in automobiles and thermoelectric plants.²³⁵ During the combustion process, the nitrogen in the fuel and air oxidize to form mainly nitric oxide and, to a lesser extent, nitrogen dioxide.²³⁶ NO emissions convert into NO₂ through sunlight conditioned photochemical reactions, and the latter is predominant in the atmosphere.²³⁷ NO₂ combines with volatile organic compounds in the presence of sunlight to form ozone.²³⁸ It also combines with water to form nitric acid and nitrates.²³⁹ This contributes to the formation of acid rain and increases PM₁₀ and PM_{2.5} levels (i.e., particulate matter from 10 µm to 2.5 µm).²⁴⁰ NO_x has a short life and oxidizes rapidly

into NO_3 in aerosol form or into HNO_3 (nitric acid).²⁴¹ NO_x plays a major role in the formation of photochemical smog, peroxyacyl nitrates (PAN) and influences the formation of both tropospheric and stratospheric ozone.²⁴² The accumulation of NO_2 in the human body represents a risk for the respiratory tracts as it's been demonstrated that NO_2 initiates and reactivates inflammation and may alter the response capacity of cells in the inflammatory process; moreover, such accumulation is associated with cases of chronic bronchitis.²⁴³ In addition to the harmful effects such environmental pollution has on human health, acid rain also severely affects flora, fauna, soils, lakes and water courses.²⁴⁴

111. **Particulate Matter (PM)** “comprise[s] a complex mix of solid and liquid materials suspended in the air, which can vary significantly in size, form and composition.”²⁴⁵ Particulate matter varies in size from an aerodynamic diameter of 0.005 micrometers to 100 micrometers—in other words, from a few atoms to the thickness of a human hair.²⁴⁶ The size of suspended particulates is crucial in determining whether such materials can penetrate the interior of lungs, with potentially harmful effects on human health.²⁴⁷ According to INECC, the criteria for evaluating air quality in terms of SP concentrations are specified in NOM-025-Ssa1-1993.²⁴⁸ NOM-035-SEMARNAT-1993 specifies the measurement methods for determining TSP concentrations in ambient air and the procedures for calibrating measuring devices.
112. Gasoline is the principal source of **lead** emissions from automobiles. As gasoline is not completely consumed during the combustion process, the result is lead emissions taking the form of particulate matter.²⁴⁹ In Mexico, leaded gas phaseout and substitution with unleaded gasoline in the last twenty years made possible its elimination as a source. Lead is a toxic contaminant for humans. Moreover, due to its characteristics, it can accumulate in various organs and damage the central nervous system. Children with high lead blood levels demonstrate behavioral disorders and restricted mental development.²⁵⁰ According to INECC, the criteria for evaluating air quality with respect to lead concentrations are established in NOM-026-Ssa1-1993, which sets the limit values in terms of protecting public health.²⁵¹ No Semarnat issued NOM on the proper measurement method for determining lead concentrations in ambient air and the calibration procedures for measuring devices was identified. Leaded gas phaseout in Mexico explains why there is not a standard to measure lead concentration in automobile air emissions. Today, lead measuring and regulation is conducted according to sources and specific activities.²⁵²
113. **Ozone** is a secondary pollutant formed through the chemical reaction of nitrogen dioxide (NO_2) and volatile organic compounds (VOCs) in the presence of sunlight. It can cause lung inflammation, a depressed immune system in terms of lung infections, acute changes in lung function, structure and metabolism, and systemic effects on soft organs such as the liver.²⁵³ According to INECC, the criteria for evaluating air quality with respect to ozone are established in NOM-020-Ssa1-1993, which defines limit values in terms of protecting public health.²⁵⁴ NOM-036-SEMARNAT-1993 specifies the measurement method for determining ozone concentrations in ambient air and the procedures for calibrating measuring devices.
114. The table below summarizes information on some of the health effects from exposure to criteria pollutants:

Table 3. Health effects of exposure to criteria pollutants²⁵⁵

Pollutant	Health effects
Ozone	Irritation to eyes and respiratory tracts
Carbon monoxide	Carboxyhemoglobin formation, which causes apnea
Lead	Chronic accumulation in the hematopoietic system and changes to central nervous system development
Suspended particulates	Irritation of respiratory tissues, fibrosis, asthma
Sulfur dioxide	Irritant (to throat and bronchi), bronchoconstriction, effects on lung function
Nitrogen dioxide	Reduction of diffusing capacity of the lungs

8. Actions undertaken by Mexico to effectively enforce LGEEPA Articles 7, section III, and 8, section III; RPCCA Article 4, section III; and LEEPAS Articles 111, sections V and VII, and 119, section II, paragraph b) in relation to establishing mandatory vehicle inspection programs, and the establishment and operation of vehicle inspection centers

115. The Submitters assert that the SIUE, the Ministry of Health of the state of Sonora and Hermosillo municipal government are failing to effectively enforce LGEEPA Articles 7, section III, and 8, section III; RPCCA Article 4, section III; and LEEPAS Articles 111, sections V and VII, and 119, section II, paragraph b). The Submitters assert that Sonora and Hermosillo are failing to establish and operate inspection centers for private motor vehicles and vehicles used in public transportation services.
116. In its response, Mexico indicates the problems Hermosillo confronts in terms of obtaining valid data on air quality—problems related to local topography, extreme climatic variations and the transit of vehicles on unpaved roads.²⁵⁶ The Response highlights actions related to road paving and the implementation of the Suba Program, in which Sonora invested resources to counter environmental pollution as a measure taking precedence over elaborating a Vehicle Inspection Program.²⁵⁷ Mexico indicates that priority is being given to addressing the sources generating the highest dust particulates indices, as this represents a measure for “obtaining adequate data on the emissions generated by motor vehicles and the impacts they produce in the atmosphere.”²⁵⁸
117. LGEEPA Articles 7, section III, and 8, section III, establishes the jurisdictions of states and municipalities over air pollution prevention and control. Moreover, it stipulates that local legislation shall determine the respective jurisdictions of the state and municipality.²⁵⁹ LEEPAS Article 111, section V stipulates the obligation of the Government of Sonora and its municipalities, within the purview of their respective jurisdictions, to establish and operate emissions inspection systems for motor vehicles in circulation. Section VII of the same Article grants the state government and the municipal governments authority to establish requirements and procedures for regulating pollutant emissions from motor vehicles, administer transit management measures and, in the event of serious air pollution episodes, suspend motor vehicle traffic.²⁶⁰
118. Other provisions of LEEPAS stipulate that motor vehicle owners must have their vehicles verified for pollutant emissions in authorized vehicle inspection centers.²⁶¹ Different provisions of LEEPAS establish: the competent authority regarding supervision and control of pollutant emissions generated by public transportation; operating or authorizing vehicle inspection centers; setting inspection fees and issuing proof of inspection forms; inspecting and enforcing compliance with LEEPAS, assessing fines for non-compliance, and compiling and updating reports on the results obtained.²⁶² Specifically, LEEPAS Article 119, section II, paragraph b), stipulates that municipal governments must establish vehicle inspection programs, which, however, shall exempt vehicles used for federal public transportation.
119. The Secretariat cites LEEPAS Article 117 in the context of enforcement of the environmental law in question, since this provision establishes maximum permissible limits that owners of motor vehicles in circulation in the state of Sonora must observe, as established in NOMs.²⁶³
120. Furthermore, regarding mobile emissions sources under local jurisdiction, the following NOMs stipulate emissions limits and the mechanisms for vehicle emissions inspection:
 - NOM-041 establishes the maximum permissible limits of emissions of hydrocarbon gases, carbon monoxide and oxygen, as well as minimum and maximum CO and CO₂ dilution. These pollutants all

come out of the exhaust pipes of gasoline-powered motor vehicles and they can be controlled through the implementation of vehicle inspection programs. This particular NOM applies to vehicle inspection centers.²⁶⁴ Compliance with this NOM is mandatory for owners of motor vehicles that use gasoline and for the operators of inspection units;²⁶⁵

- NOM-045 establishes the maximum permissible opacity levels (measured using the light absorption coefficient) for vehicles in circulation that use diesel as fuel, as well as the testing procedure and the technical characteristics of the measuring apparatus. It applies to the implementation of vehicle inspection centers.²⁶⁶ Compliance with this NOM-045 is mandatory for owners of motor vehicles that use diesel fuel and for the operators of inspection units;²⁶⁷
- NOM-050 establishes the maximum permissible limits of emissions into the atmosphere of HC, CO, CO₂, and NO_x.²⁶⁸ by motor vehicles in circulation that use liquid petroleum gas, natural gas or other alternative fuels.²⁶⁹ Compliance with this standard is mandatory for owners of motor vehicles that function with LP gas, natural gas and other alternative fuels.

121. Enforcement of NOM-041, NOM-045 and NOM-050 is implemented through installation and operation of vehicle inspection units under the jurisdiction of the federal, state or municipal authorities.²⁷⁰
122. The Secretariat requested relevant factual information on the measures adopted by Mexico to effectively enforce the provisions mentioned in this section and in particular on the state of progress in the preparation and implementation of the vehicle inspection program and vehicle inspection centers.²⁷¹
123. Information provided by the Party during preparation of the factual record underscored the following:

[...] the establishment of mandatory vehicle inspection programs, and the establishment and operation of inspection centers, as well as the adoption of plans for the verification, monitoring and control of pollution emissions, is a power of the states and municipalities under LGEEPA Articles 7, sections III and XIII, 8, sections III and XII, 112, sections V, VI, and VII.²⁷²

124. Likewise, in information delivered to the Secretariat, the Party indicated that:

Presently, the City of Hermosillo *does not have a vehicle inspection program*; however, it is presently in the phase of monitoring air quality in order to establish the measures necessary for the implementation and operation of programs to prevent and control pollution from mobile sources.²⁷³

125. In the information available to the Secretariat no detailed information was given on the state of progress of the launching of the vehicle inspection program. In light of this situation, the Secretariat requested, once again, pertinent factual information “on the state of progress of the preparation and implementation of the vehicle inspection program and the launching of vehicle inspection centers in the municipality of Hermosillo, Sonora.”²⁷⁴
126. Upon providing additional information, the Party confirmed that:

As you have been previously informed through a document released on the matter of vehicle inspection, the City of Hermosillo does not presently have vehicle inspection programs. Consequently, in response to your new request on the state of progress of the preparation and implementation of the vehicle inspection program and the launching of vehicle inspection centers in the municipality of Hermosillo, Sonora, I inform you that in accordance with Article 184 of the Law on Ecological Balance and Environmental Protection of the State of Sonora [the Article in question is cited].

To date, the state government has not proposed programs or actions or resources to the municipality of Hermosillo to enable it to undertake plans in this regard.²⁷⁵

9. Actions undertaken by Mexico to effectively enforce LGEEPA Article 7, section XIII; RPCCA Articles 16 and 41, section I; and LEEPAS Article 111, sections VI and IX, regarding plans for verification, monitoring and control of pollutant emissions

127. The Submitters assert that the executive branch of the Government of Sonora, the SIUE and the Ministry of Health, as well as the municipality of Hermosillo, Sonora, are failing to “enforce and promote compliance with Mexican official standards governing air pollution control in the state of Sonora and, in particular, in the municipality of Hermosillo.”²⁷⁶ They also allege the absence of—or failure to update—programs in the following areas: environmental contingency response, environmental quality and control, and air pollution monitoring and information.²⁷⁷ The Submitters declare that the absence of plans and programs to control atmospheric emissions constitutes non-compliance with specific obligations imposed by the environmental law in question.²⁷⁸
128. In its response, Mexico explains that since 1998 Semarnat has been monitoring environmental pollutants emitted by establishments under federal jurisdiction and that it is presently implementing the RETC.²⁷⁹ Mexico indicates that Semarnat has granted 92 operating licenses and uniform environmental licenses, and that the 2003 COA report provided data on 943,959 tons of air pollutant emissions in Sonora.²⁸⁰ Between 1998 and 2005 Profepa conducted 18 site inspections, which resulted in 16 administrative rulings, three agreements that brought administrative proceedings to a conclusion, two on-going administrative proceedings and fines in the amount of 325,050 pesos.²⁸¹ Mexico reports that Semarnat is coordinating with the municipality of Hermosillo to control atmospheric emissions from the brick-making industry, and in the operation of atmospheric monitoring equipment.²⁸²
129. Mexico maintains that since 1994 the SIUE has imposed conditions on activities that may contribute to increasing air pollution in the state through 451 environmental impact rulings and 91 state operating licenses and 228 COAs. Between 1999 and 2005, the state made 90 site inspections to facilities in the city of Hermosillo to verify compliance with state environmental law, which resulted in fines and corrective measures.²⁸³ Mexico indicates that on 5 September 2000 the Federal Register (*Diario Oficial de la Federación*—DOF) published the agreement between Semarnat and the state of Sonora concerning transfer of atmospheric monitoring equipment.²⁸⁴ At the municipal level, Mexico explains that Hermosillo has implemented PEMCA, which provides for the establishment and operation of monitoring stations.²⁸⁵ The Response asserts that there has been a reduction in TSP and PM₁₀ concentrations and affirms that the Municipality imposes conditions in relation to air pollution through its review process of environmental impact assessments.²⁸⁶
130. LGEEPA Article 7, section XIII establishes that states have authority to enforce compliance of NOMs issued by the federation related to with respect to the prevention and control of air pollution generated by fixed industrial sources and mobile sources not under federal jurisdiction. RPCCA Article 16 establishes that air pollutant emissions must not exceed maximum permissible limits established in NOMs on air emissions. RPCCA Article 16 indicates, moreover, that maximum permissible limits established in NOMs may vary in accordance with the type of source in question.
131. Regarding air quality monitoring, RPCCA Article 41, section I stipulates that Semarnat must elaborate and maintain an up-to-date National Air Quality Information System to be based on the data obtained from the atmospheric monitoring conducted by the municipalities. LEEPAS Article 111, section VI establishes that in respect of air pollution prevention and control the state and municipal governments have jurisdiction over establishing and operating air quality monitoring systems, with the technical support of Semarnat as required. Moreover, said federal entity shall forward local atmospheric monitoring reports to the National Information System on the Environment and Natural Resources (*Sistema Nacional de Información Ambiental y de Recursos*

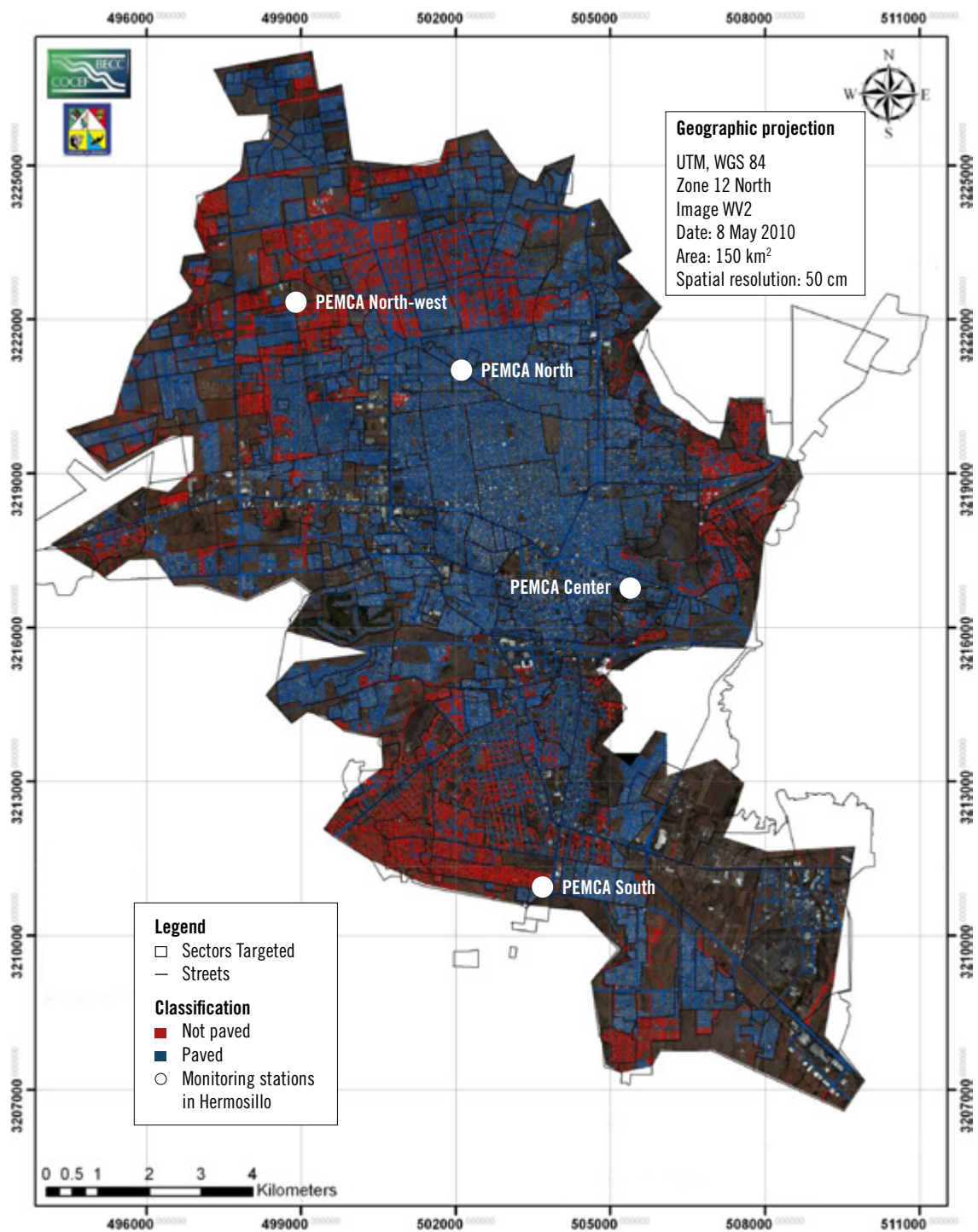
Naturales—SNIARN). LEEPAS Article 111, section IX establishes that the state and municipal governments may, within the purview of their respective jurisdictions, produce reports on the state of the environment.²⁸⁷

9.1 The air quality monitoring infrastructure in Hermosillo

132. Measurement of air quality in the city of Hermosillo began in 1989 with a network composed of three manual TSP sampling stations, which have been in regular operation up to the present day.²⁸⁸ According to INECC, in 2003 SO₂ and NO_x analyzers were delivered to the Hermosillo municipal government, along with a weather station, with the objective of setting up an automatic monitoring station. However, due to insufficient resources, such equipment was never installed during several municipal administrations.²⁸⁹
133. According to the Sub-directorate for the Evaluation of Emissions and Atmospheric Monitoring (*Subdirección de Evaluación de Emisiones y Monitoreo Atmosférico*—SEEMA) and the Semarnat delegation in Sonora, there have been three periods in the development of the air quality measurement network in Hermosillo.²⁹⁰ In the first period, during the 1990s, equipment was donated through the Mexican Environmental Program (*Programa Ambiental Mexicano*—PAM)²⁹¹ and the Border Environmental Program (*Programa Ambiental Fronterizo*—PAF)²⁹² to start with local monitoring program, implementend—in both cases— by INECC. The second period began in 2000 with INECC's Air Quality Management and Evaluation Program (*Programa de Gestión y Evaluación de la Calidad del Aire*), which enabled an assessment of whether the donated equipment was operational. To enable continuity in measurement activities some of this equipment was rehabilitated and some was relocated. The third period began in 2008 with the new Ecology and Sustainable Development Commission of the state of Sonora (*Comisión de Ecología y Desarrollo Sustentable del Estado de Sonora*—CEDES). This third period saw the creation of the State Air Quality Information and Infrastructure Network (*Red Estatal de Información e Infraestructura de la Calidad del Aire*—REIICA), to promote air quality measurement in the city of Hermosillo and the rest of Sonora.²⁹³ In addition, an Internet site was established where local monitoring systems may disseminate their air quality results; however, it was not possible to access.²⁹⁴ The Government of Sonora received budgetary support from the Federation's Expenditures Program, under section 16 in 2008 and 2010, which enabled it to acquire:
 - PM₁₀ samplers in 2008 to upgrade old and obsolete equipment, as well as broaden the Network's coverage to three other municipalities: Guaymas, Navojoa and Puerto Peñasco; and
 - four automatic stations in 2010, installed in Agua Prieta, Ciudad Obregón, Nogales and Hermosillo, and which went into operation in April 2011.²⁹⁵
134. For its part, the Semarnat delegation in Sonora has executed, facilitated, supervised and promoted air quality measurement activities in the state and collaborated with the municipalities and mining companies through various cooperation agreements, which have fostered measurement activities.²⁹⁶
135. Since the beginning of 2012, the REIICA has not had updated information due to problems with the operation of the automatic stations arising from the lack of trained personnel and resources. The manual particulates monitoring network, which is operated by the municipality of Hermosillo, is still functioning.²⁹⁷

136. The manual monitoring network consists of four TSP and PM₁₀ monitoring stations. The automatic network, operated by the state, has a station in Hermosillo, which measures the parameters in Table 4. According to the information obtained by the Secretariat, the monitoring program is experiencing technical and financial difficulties, which are in addition to the administrative changes affecting the technical personnel responsible for operating the manual network.²⁹⁸
137. According to the World Meteorological Organization and the World Health Organization, atmospheric monitoring networks should have two automatic monitoring stations in urban areas with a population of less than one million inhabitants, located in industrial zones.²⁹⁹ The city of Hermosillo's manual network stations are distributed in different parts of the city: Station 1 (north) is at the *Centro de Estudios Superiores del Estado de Sonora* (Cesues);³⁰⁰ station 2 (center) is located at the *Centro de Investigaciones Biológicas del Noroeste* (Cibnor);³⁰¹ station 3 (south) is at the *Colegio de Bachilleres* (Cobach),³⁰² and station 4 (northwest), is in the Inspection and Enforcement Department (*Dirección de Inspección y Vigilancia*) building of the municipal government of Hermosillo.³⁰³
138. In addition, a mobile unit is operated by the state of Sonora and an automatic unit located in the Sonora University, operated by REIICA personnel, while CEDES personnel processes the data.³⁰⁴ Quality control activities of the automatic station are limited to maintenance and calibration programs.³⁰⁵ The automatic monitoring station measures parameters for the following air pollutants in Hermosillo: ozone, NO₂, SO₂, CO, PM₁₀ and PM_{2.5}.³⁰⁶
139. The mobile atmospheric monitoring unit, owned by the state of Sonora, monitors ozone, CO, SO₂, NO₂, CO₂, HC, PM₁₀, and PM_{2.5}.³⁰⁷
140. The figure below shows the location of the manual atmospheric monitoring network in the city of Hermosillo. It is accompanied by a table indicating the types of measurement equipment used, their locations and the parameters measured.

Figure 6. Location of stations in the manual atmospheric monitoring network operated by the Municipality of Hermosillo and areas with unpaved roads ³⁰⁸



Prepared by: Luis E. Cervera and Hugo Luis Rojas Villalobos. Pavement algorithm and spectral classification at ENVI 4.4. Ciudad Juárez, Chihuahua. July 2010.
Responsible: Luis E. Cervera Gómez (cervera1022@hotmail.com).

Table 4. Manual monitoring network in Hermosillo³⁰⁹

No.	Location	Address	Coordinates	Parameters
1	North	On a Cesues building, located on Ley Federal del Trabajo Avenue (no #), Col. Apolo	N29° 07' 23.3" W110° 57' 40.3"	TSP and PM ₁₀
2	Northwest	On a CBTIS building, on República de Colombia, between Cocorit and Bacobampo, Col. Misión	N29° 07' 12.3" W111° 00' 24.4"	TSP and PM ₁₀
3	Center	On a municipal government building, Morelia complex, 220 Morelia Ave., between Carbó and Palma, Col. Centro	N29° 04' 49.7" W110° 56' 31.7"	TSP
4	South	On a Cobach building, "Villa de Seris" school, located at the corner of Blvd. Vildosola Sur (no #) and Bachilleres Ave., Col. Villa de Seris	N29° 02' 45.9" W110° 57' 30.4"	TSP and PM ₁₀

141. According to the information available to the Secretariat, there are areas of the city mostly composed of brownfields, which do not have a suspended particulates monitoring station.³¹⁰ The following figures indicate the location of the brownfields and unpaved areas of the city of Hermosillo, as well as the location of the manual monitoring network operated by the municipality.

9.2 Data collection from the Hermosillo atmospheric monitoring network

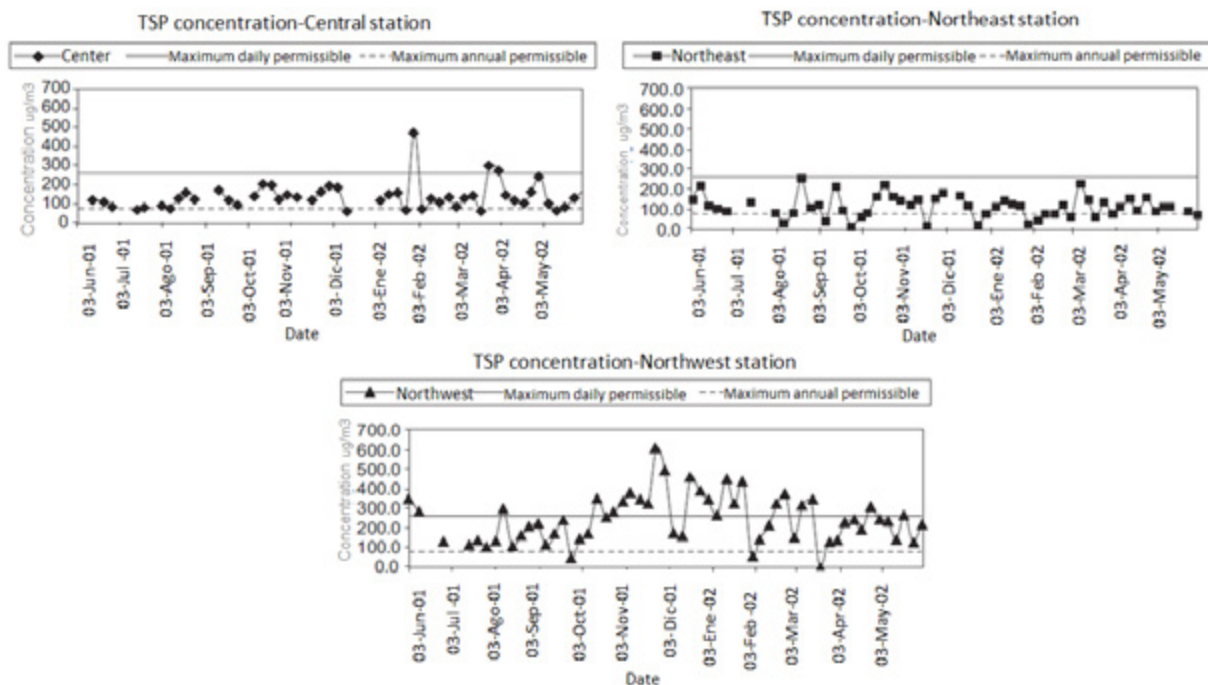
142. Routine operation of the automatic station located in the University of Sonora is the responsibility of REIICA technical personnel, as is maintenance, both preventive and corrective, and instrument calibration. Quality control activities are limited to the performance of maintenance and calibrations programs. According to information provided by Mexico, "[REIICA] has no quality control program."³¹¹
143. Ongoing raw monitoring data is transmitted, via GSM, to the city of Hermosillo's control center, where it is collected and stored on a central server. At CEDES, the raw data is processed in order to purge unreliable data.³¹² RPCCA, article 41 section I and LEEPAS Article 111: section VI, establishes that air quality information generated by States shall be integrated to the National System of Environmental Information. According to consulted information, the data generated is not integrated into the Sinaica system and the city of Hermosillo does not figure in Sinaica's website.³¹³
144. The manual network is operated by the municipal government through personnel from the Hermosillo Ecology Institute (*Instituto de Ecología de Hermosillo*). In this network, ambient air samples are obtained via filters that are periodically installed and collected. These filters are taken to a laboratory, where they are analyzed to determine the quantities of specific parameters.³¹⁴
145. Regarding data reporting, the Secretariat notes that the municipality of Hermosillo uses an air quality index (AQI) that accompanies information released to the public.³¹⁵ This index was forwarded to the Secretariat.³¹⁶ According to the information obtained by the Secretariat from the AirNow program at EPA, the AQI is used in air quality data reporting for ozone, PM_{2.5}, PM₁₀, CO and SO₂; and is based on the health effects arising from exposure to these pollutants.³¹⁷ The AQI levels used in Hermosillo's data reporting are as follows:³¹⁸
- "Good" - AQI of 0-50. Air quality is considered satisfactory and air pollution represents no risk;
 - "Moderate" - AQI of 51-100. Air quality is acceptable; however, some pollutants may represent a risk for some persons;
 - "Unhealthy for Sensitive Groups" - AQI of 101-150. Persons who belong to sensitive groups may experience health effects. Such persons are affected at lower levels than the general public. For example, persons afflicted with lung diseases run a higher risk when exposed to ozone and persons afflicted with lung or coronary heart diseases are at greater risk when exposed to particulate air pollution;

- “Unhealthy” - AQI of 151-200. All persons begin to experience adverse health effects. Those belonging to sensitive groups experience more serious health effects;
- “Very unhealthy” - AQI of 201-300. A health alert is triggered, as all persons may experience serious health effects;
- “Hazardous” - AQI above 300. A health alert is triggered and such conditions are considered emergency conditions. The entire population may be affected.

9.2.1 Atmospheric monitoring data

146. A study showed monitoring results for TSP concentrations³¹⁹ available from the Central, North and Northwest stations, observed in the city of Hermosillo during a one-year period (from June 2001 to May 2002).³²⁰ Using reference values available at the time of the study,³²¹ results indicated that TSP concentrations were above the reference level of $260 \mu\text{g}/\text{m}^3$ at two out of the three monitoring stations with data.³²² Annual average criteria value of $75 \mu\text{g}/\text{m}^3$ was exceeded at the three reference stations.³²³ The highest TSP levels were detected during the months of December and January. These levels fell gradually during February and March.

Figure 7. Distribution and comparison of TSP concentrations from the city of Hermosillo's Central, Northeast (i.e., North) and Northwest stations³²⁴



147. Monitoring results for PM₁₀ concentrations in the city of Hermosillo during summer and winter of 2005 indicate that the concentrations observed during the summer were below reference criteria listed in NOM-025-SSA1-1993.³²⁵ These results coincide with the 2005 PEMCA annual report.³²⁶ In the second monitoring period (winter), the average concentration only exceeded reference criteria at the north station on two days; these studies also conclude that the dust observed in the city of Hermosillo is from the presence of TSP and not PM₁₀.³²⁷

Figure 8. Daily PM₁₀ concentrations during July 2005 at the city of Hermosillo's monitoring stations³²⁸

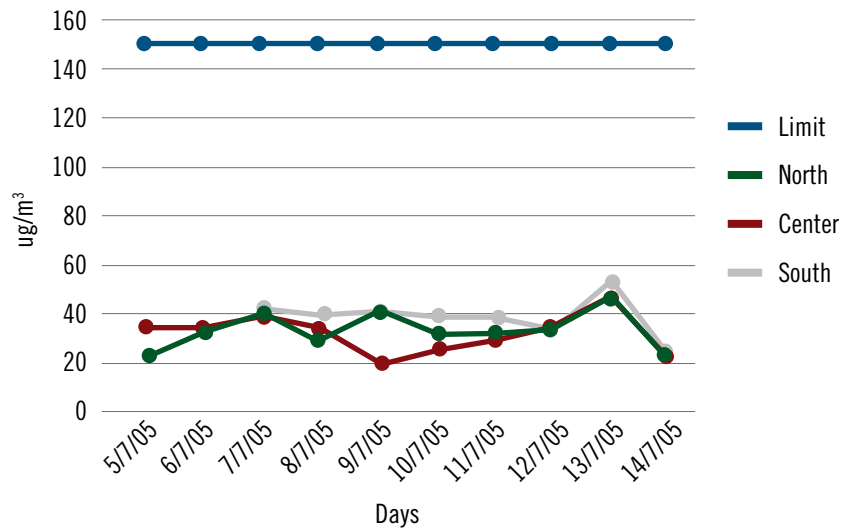


Figure 8 above may also be consulted with Table 5 below.

Table 5. PM₁₀ readings and AQI PM₁₀ concentrations in July 2005 in Hermosillo³²⁹

Date	North		Center		South	
	Reading	AQI	Reading	AQI	Reading	AQI
05/Jul/05	21.88	19	33.62	31		
06/Jul/05	31.71	29	33.78	31		
07/Jul/05	38.70	35	39.32	36	42.36	39
08/Jul/05	28.45	26	33.37	31	38.76	35
09/Jul/05	41.53	38	18.55	17	41.39	38
10/Jul/05	30.07	28	24.07	22	37.83	34
11/Jul/05	10.10	9	27.28	25	36.47	33
12/Jul/05	33.01	31	31.94	29	33.57	31
13/Jul/05	49.84	45	44.20	41	51.87	47
14/Jul/05	18.61	17	20.03	19	21.37	19

Readings correspond to PM₁₀ concentrations may also be compared with NOM-025-SSA1-1993.

Figure 9. Daily PM₁₀ concentrations during December 2005 at the city of Hermosillo's monitoring stations³³⁰

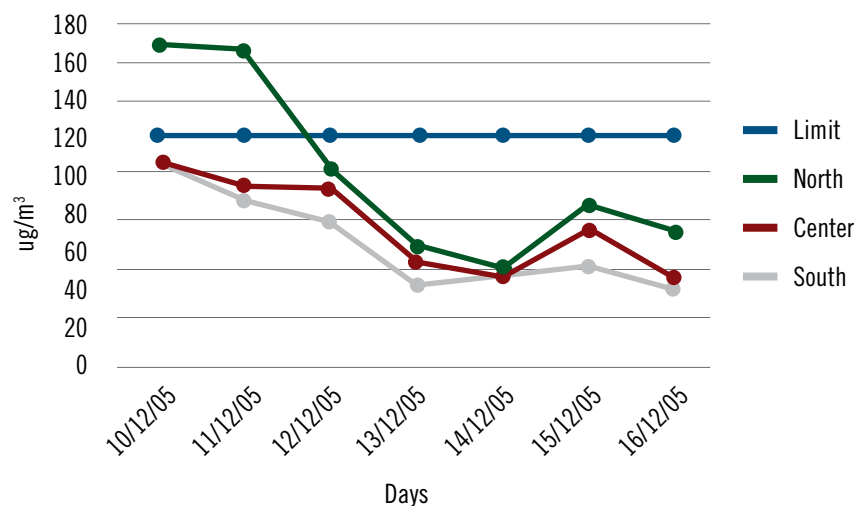


Figure 9 above may also be consulted with Table 6 below.

Table 6. Daily PM₁₀ concentrations during the month of December 2005 at the city of Hermosillo's monitoring stations³³¹

Date	North		Center		South	
	Value	AQI	Value	AQI	Value	AQI
10/Dec/05	168.45	107	106.17	76	104.86	75
11/Dec/05	165.68	106	85.77	66	93.87	70
12/Dec/05	99.56	73	74.75	60	93.24	70
13/Dec/05	60.52	53	39.14	36	54.36	50
14/Dec/05	47.97	44	44.14	41	44.50	41
15/Dec/05	80.84	63	49.39	45	70.44	58
16/Dec/05	67.41	57	36.53	33	44.02	41

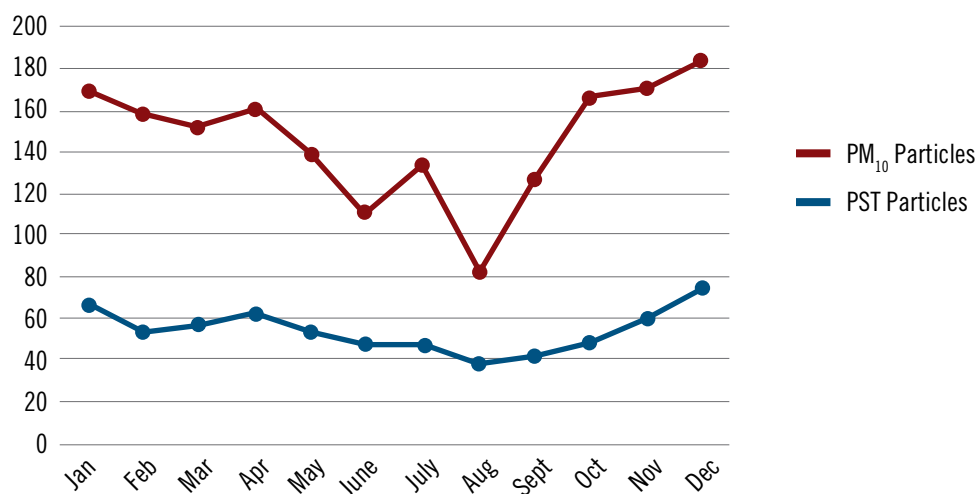
148. The Secretariat obtained data from the Hermosillo automatic monitoring station, located on the premises of Sonora University. Available data covered April to September 2011 for the following parameters: PM₁₀, PM_{2.5}, ozone, SO₂ and CO (see Appendix 9). Based on the information provided by the Government of Mexico (for the six-month period in which it had data), the following summary of values —according to the AQI index used in data reporting— are obtained:

Table 7. Summary of AQI index values obtained from April to September 2011 at the Hermosillo automatic station³³²

	PM ₁₀	PM _{2.5}	Ozone	SO ₂	CO	Total
Days with data	128	123	146	129	0	526
Days without data	55	60	37	54	183	389
AQI days 0-50	98	93	136	121	No data	448
AQI days 51-100	32	25	12	0	No data	69
AQI days 101-150	3	4	0	0	No data	7
AQI days 151-200	0	1	0	0	No data	1
AQI days 201-300	0	0	0	0	No data	0
AQI days above 300	0	0	0	0	No data	0

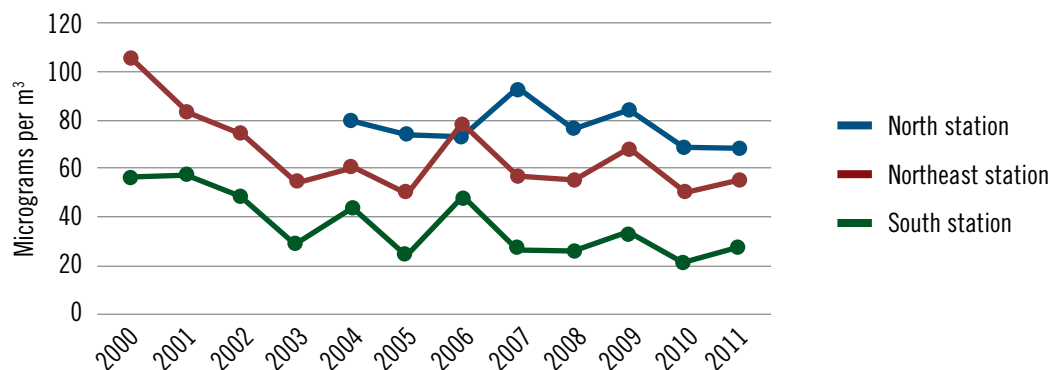
149. Of all the parameters for sampling during April to September 2011, and without apparent reason, CO was the only one not monitored over this period. Regarding sampled pollutants, the parameter with the most number of days without results was PM_{2.5} (60 days), followed by PM₁₀ (55) and SO₂ (54). No data was reported nearly half the time the reporting of particulates data was supposed to occur. Another relevant datum: there were 389 events (out of a total of 915) in which insufficient data was obtained for inclusion in the CEDES report.
150. According to the data provided, which was collected by the automatic station operated by CEDES, on one day the AQI index for PM_{2.5} was between 151 and 200, i.e., at the level where all persons begin to experience adverse health effects and persons belonging to sensitive groups experience more serious health effects. On four occasions an AQI index of 101-150 was detected for PM_{2.5}. At that latter level, persons belonging to sensitive groups may experience health effects.
151. Although this type of data is normally reported on a 24 hour basis, the Party provided graphs indicating monthly average PM₁₀ and TSP concentrations.³³³ In the one of them, one observes that whereas from January to August the average concentrations in three different years tended to decrease, in the months from August to December they gradually increased.

Figure 10. Average concentrations per month in 2009, 2010 and 2011³³⁴



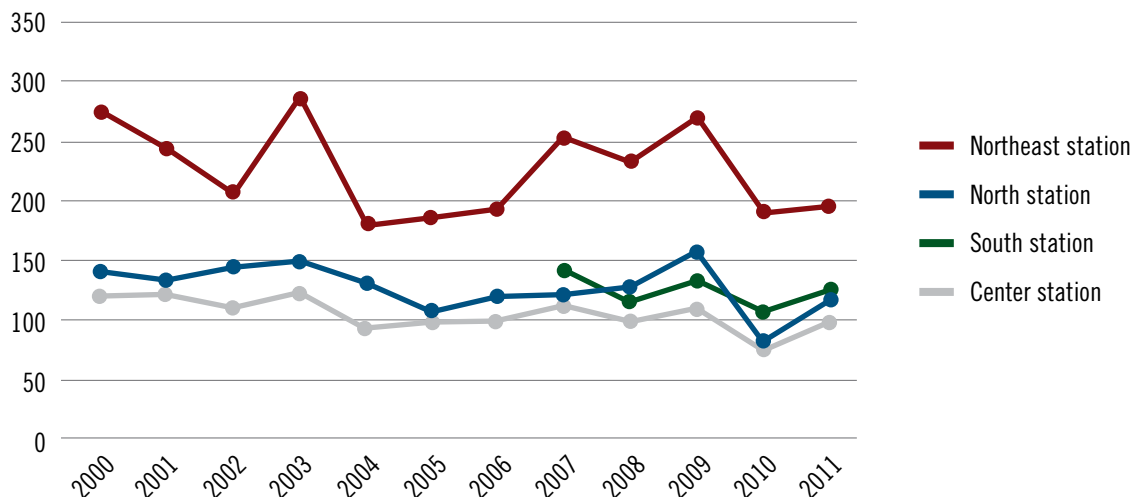
152. According to information provided by the municipality of Hermosillo, the monitoring results for particulate matter showed “a downward trend in 2009” compared to the preceding year. However, the data indicate that, in 2011, the average levels increased, which, the city of Hermosillo states, was due to the public works projects then under way in the city.³³⁵ Likewise, data —presented in annual average— shows a reduction in PM₁₀ and PST between 2000 and 2011.

Figure 11. Annual concentration of PM₁₀ per station from 2000 to 2011³³⁶



It should be noted that there is no information related to the center station as it does not monitor PM₁₀.

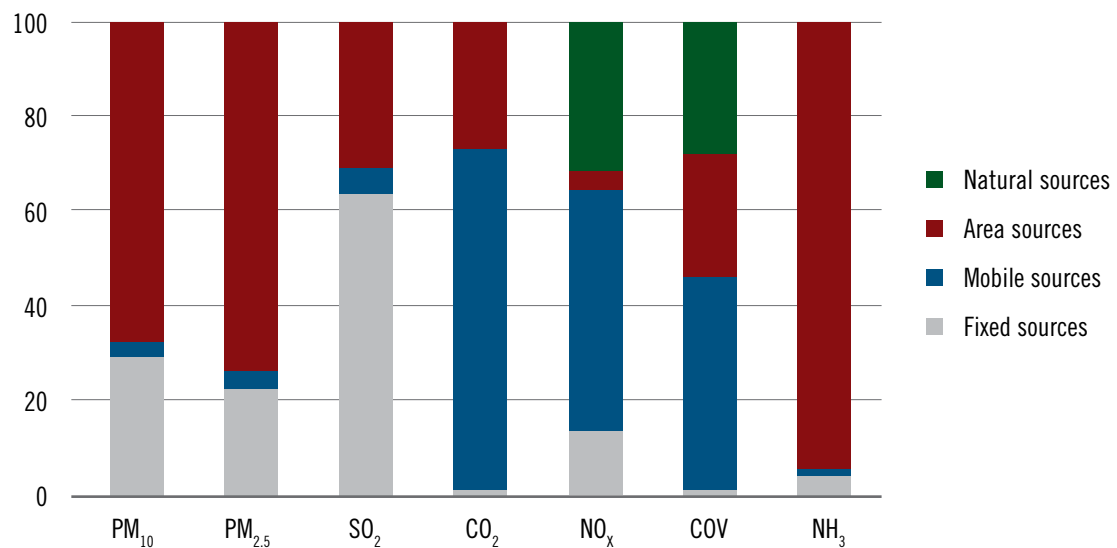
Figure 12. Annual concentration of TSP per station from 2000 to 2011³³⁷



9.3 The Hermosillo emissions inventory

153. An emissions inventory is a tool that facilitates an air quality assessment of a given region.³³⁸ An emissions inventory is an accounting of the emissions generated by different activities, designated as “sources.”³³⁹ Emissions sources are categorized as: a) fixed sources, i.e., heavy industries and establishments emitting over ten tons of pollutants per month; b) mobile sources, consisting of vehicles, whether used for transportation or in fixed locations (e.g., construction and farming machinery); c) area sources, which are comprised of business and services establishments, as well as light industries emitting less than ten tons of pollutants per month; and d) natural sources, which include pollutant sources not caused by human activities, such as forest fires, volcanic activity or dust from erosion.³⁴⁰
154. Criteria air emissions and particulate matter inventory for Hermosillo was carried out by REIICA for the year 2005.³⁴¹ According to the National Emissions Inventory of Mexico (1999) (*Inventario Nacional de Emisiones de México—INEM*), high levels of suspended particulates emissions were detected due to business activity and services in Hermosillo. INECC notes that it will be necessary to monitor such activities in the immediate future due to their growing importance for the city in the medium and long term.³⁴²
155. The DGGCARETC, a Semarnat department, was responsible for elaborating the National Emissions Inventory.³⁴³ This inventory, concluded in December 2011, includes information on criteria air contaminants and precursors (secondary pollutants) from 2005, the baseline year. The inventory allows pollutant emissions estimation released into the atmosphere from human activities and natural sources. This inventory also examines fixed, mobile and area sources from the state of Sonora and the municipality of Hermosillo.
156. Figure 13 indicates the contribution (%) per each category of emissions source. Area sources contribute the highest proportion of suspended particulates PM_{10} and $PM_{2.5}$, which —according to Mexico— is explained by the lack of paved roads in Hermosillo.³⁴⁴ CO and NO_x emissions are mainly generated by mobile sources. VOCs are emitted by area sources and mobile sources. Suspended particulates are generated by the combustion of heavy fossil fuels, such as fuel oil and diesel. Dust, another type of particulate, is caused by soil erosion. Also, as may be observed, emissions of particulate matter come mainly from area sources. Vehicles account for the largest proportion of CO, NO_x and VOC emissions.³⁴⁵

Figure 13. Contribution (%) of each category of emissions source to the generation of different types of pollutants³⁴⁶



157. Table 8 reproduces the results of the 2005—the most recent year available for this factual record—Hermosillo inventory of criteria air emissions and particulate matter conducted by REIICA. Table 9 provides a general summary of the data.

Table 8. 2005 Inventory of emissions in Hermosillo³⁴⁷

Sector	Emissions, t/year						
	PM ₁₀	PM _{2.5}	SO ₂	CO	NO _x	VOCs	NH ₃
Petroleum and petrochemicals	0.0	0.0	0.0	0.0	0.0	463.3	0.0
Chemicals	4.8	4.2	85.0	0.9	7.7	0.1	85.6
Metals (including steel-making)	6.9	0.1	0.0	1.1	1.4	12.8	0.1
Automobiles	24.4	23.6	0.1	9.2	11.2	218.9	0.4
Cement and lime	1,086.7	633.8	2,813.7	151.0	1,100.2	31.3	130.7
Electricity generation	233.0	233.0	3.5	611.6	2,446.4	66.7	36.1
Food industry	473.0	167.5	335.0	197.6	46.4	14.9	5.9
Others	1.9	1.3	0.0	0.3	1.8	48.4	0.0
Fixed sources	1,830.7	1,063.5	3,237.3	971.9	3,615.0	856.4	258.8
Buses for public transit	4.6	4.0	6.2	673.6	633.2	154.5	0.4
Private cars (sedan type)	17.4	10.6	57.6	23,931.0	3,053.4	8,440.7	41.3
Vans, pickups used for public transit ("combis")	0.2	0.1	0.7	232.8	23.1	145.5	0.4
Pickup trucks	15.6	10.4	52.2	17,363.3	1,742.3	9,127.0	29.2
Motorcycles	0.9	0.5	1.2	1,033.9	46.9	122.4	0.2

Sector	Emissions, t/year						
	PM ₁₀	PM _{2.5}	SO ₂	CO	NO _x	VOCs	NH ₃
Taxis	0.2	0.1	0.6	244.3	13.4	20.3	0.4
Tractor trucks	10.1	8.7	11.7	1,414.1	1,356.4	130.8	0.8
Heavy vehicles, private and commercial < 3 t (including SUVs)	12.0	7.7	56.0	13,990.0	1,505.7	5,601.0	24.0
Heavy vehicles, private and commercial > 3 t	31.8	26.6	49.9	7,013.5	4,025.1	3,341.2	4.6
Heavy vehicles, private and commercial > 3 t (minibuses)	0.6	0.5	1.1	161.3	82.4	91.0	0.2
Mobile sources (road vehicles)	93.3	69.2	237.1	66,058.0	12,482.0	27,174.4	101.6
Aviation	6.3	6.3	33.0	412.5	247.9	83.7	0.0
Basic airport equipment	2.1	2.1	4.3	386.6	47.3	13.8	0.0
Ships, boats	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Train locomotives	2.6	2.4	1.0	10.5	106.1	3.9	0.0
Yard locomotives	0.2	0.2	0.1	1.0	9.8	0.6	0.0
Agricultural machinery	83.2	80.7	5.9	323.2	460.8	78.9	0.1
Construction machinery	19.5	18.9	2.3	85.2	172.9	17.5	0.0
Mobile sources (off-road)	113.9	110.5	46.5	1,219.0	1,044.8	198.4	0.1
Agricultural production	739.9	155.3	0.0	0.0	0.0	90.9	4,327.2
Storage and transport of petroleum derivatives	NA	NA	NA	NA	NA	2,896.1	NA
Light industrial and commercial sources	56.1	44.8	0.0	111.7	2.1	250.7	NE
Miscellaneous sources	11.5	10.8	0.1	150.2	26.0	11.2	1,657.6
Waste management	NA	NA	NA	NA	NA	788.7	NA
Burning of fuels in stationary sources	3,384.0	3,222.2	1,578.8	24,920.3	899.3	5,700.8	NE
Use of solvents	NA	NA	NA	NA	NA	5,777.3	NA
Area sources	4,191.6	3,433.1	1,578.9	25,182.2	927.3	15,515.7	5,984.8
Biogenic sources	NA	NA	NA	NA	NA	17,238.4	NA
Natural sources					8,556.7	17,238.4	
Total	6,229.5	4,676.4	5,099.8	93,431.1	26,625.8	60,983.2	6,345.2

158. The category under “area sources” in the emissions inventory reproduced in Table 8 does not include an estimate of suspended particulates emissions from unpaved roads, which is the most significant source of PM₁₀ and PM_{2.5} according to information provided by Mexico.³⁴⁸ Area sources are important contributors of particulate emissions, mainly under the heading “Burning of fuels in stationary sources.” Mobile sources are the principal contributors of CO and VOCs. They are also a lesser source of NO_x emissions—from vehicles

that are poorly maintained old or travel at low speeds. The vehicles that generate the most emissions are private “sedan type” cars, commercial and private vehicles under 3 tons and pickup trucks.³⁴⁹

159. Table 9 indicates that area sources generate the most PM₁₀ and PM_{2.5} suspended particulates.

Table 9. Summary of the 2005 Hermosillo Emissions Inventory³⁵⁰

Sector/Emissions in t/year	PM ₁₀	PM _{2.5}	SO ₂	CO	NO _x	VOCs	NH ₃
Fixed sources	1,830.7	1,063.5	3,237.3	971.9	3,615.0	856.4	258.8
Mobile sources	207.3	179.7	283.7	67,277.0	13,526.8	27,372.8	101.6
Area sources	4,191.6	3,433.1	1,578.9	25,182.2	927.3	15,515.7	5,984.8
Natural sources	NA	NA	0.0	NA	8,556.7	17,238.4	NA
Total	6,229.5	4,676.4	5,099.8	93,431.1	26,625.8	60,983.2	6,345.2

160. Concentration of TSP and heavy metals—lead (Pb), cadmium (Cd), nickel (Ni), copper (Cu) and chromium (Cr)—in Hermosillo was studied by Cruz Campas et al. From June 2001 to May 2002, the authors noted that PST concentrations frequently exceeded the reference level of 260 µg/m³ in two monitoring stations and that at all three stations the annual average concentration exceeded 75 µg/m³.³⁵¹ The results indicated that air quality was between “Unsatisfactory” and “Poor” during the analyzed period.³⁵² With respect to concentrations of Pb, Cd, Ni, Cu and Cr, the researchers established that these were below the maximum permissible criteria used as benchmarks for air quality, which led the authors to conclude that said quality was “Satisfactory” for the period analyzed.³⁵³
161. Another scholar, Santos Romo conducted monitoring during two seven-day periods—one in the summer (8-15 July 2005) and the other in the winter (10-16 December 2005)—with the objective of observing the possible influence of seasonal changes on the concentrations of these pollutants.³⁵⁴ Regarding SO₂ concentrations, the author concluded that regardless of the station or the time of year these were well below the existing standards, although there was a slight increase during winter.³⁵⁵ It is evident that there are no fixed sources of SO₂ due to the (relatively) low presence of industrial activity. Also, mobile emissions sources use gasoline with low sulfur content.³⁵⁶ The author argues that one of the causes of SO₂ emissions are high temperatures reached in the motors of poorly maintained automobiles. He does not, however, discard the existence of other possible sources.³⁵⁷ Regarding nitrogen oxides, Santos concluded that, although their levels were below reference values, one could observe the existence of a trend towards increasing concentrations. He also indicated that one commonly accepted way to counter this trend would be to implement a vehicle inspection program.³⁵⁸

10. Effective Enforcement of RPCCA Article 13 regarding specific actions to reduce and control emissions of pollutants to the atmosphere in the city of Hermosillo

162. The Submitters assert that the municipal government of Hermosillo has failed to reduce or control pollutant emissions and ensure satisfactory air quality in the city.³⁵⁹ In its response to submission SEM-05-003, Mexico asserted that the annual technical monitoring reports published by the Hermosillo municipal government’s Ecology Department show that the average levels of TSP and PM₁₀ present in the environment have fallen and that air quality in the city of Hermosillo has visibly improved due to the activities carried out by the municipality.³⁶⁰

163. RPCCA Article 13 establishes environmental criteria regarding air pollution prevention and control that must be observed in the enforcement of environmental policy instruments. The provision in question establishes: (i) that atmospheric protection, air quality must be satisfactory in all human settlements and in every region of the country; and (ii) that air pollutant emissions—whether their sources are artificial or natural, or fixed or mobile—must be reduced or controlled to ensure satisfactory air quality. These principles are reiterated in LEEPAS Article 110.
164. The Party provided information on the atmospheric monitoring of PM₁₀, PM_{2.5}, ozone, SO₂ and carbon dioxide monitored by the Sonora University monitoring station. The results of this monitoring are detailed in section of this factual record. Information on air pollution mitigation measures is presented in the following section.

10.1 Mitigation measures re properties and areas under state or municipal jurisdiction

165. The following paragraphs present factual information on the activities undertaken by the state of Sonora and, where relevant, the municipality of Hermosillo.
166. In its response to submission SEM-05-003, the Party informed the Secretariat that enforcement of compliance with the requirement to file an LAU, Operating License and COA is one of the air pollution mitigation measures implemented by Hermosillo.³⁶¹
167. According to the information provided by Mexico regarding Hermosillo, 22 companies have an LAU and three have Operating Licenses.³⁶² Compliance with the requirement to file a COA in the municipality of Hermosillo is indicated in the table below:

Table 10. Companies complying with requirement to file an Annual Operating Report (COA)³⁶³

Year	Companies that filed a COA	COA filings (%)
2008	18	72
2009	17	68
2010	18	72
2011	18	72

168. In addition, Mexico provides information showing that it is training both its personnel and personnel from companies subject to the requirement to file a COA. In December 2010, Semarnat provided training to public servants from Sonora on the implementation of the RETC and the COA. Semarnat also provided training to industries under state jurisdiction on the proper completion and filing of said report.³⁶⁴
169. During the preparation of the factual record, the Party provided information on the implementation of the Environmental Contingencies Prevention Program and the Road Spraying Program (*Programa de Riego de Vialidades*), as well as on the control of open air burning through the granting of authorizations designed to limit this practise.³⁶⁵
170. Regarding measures for mitigating the emissions generated by unpaved streets in Hermosillo, the Party informed the Secretariat that in January 2011 a paving needs assessment was conducted using satellite images. This enabled a more precise estimation of road-paving activities.³⁶⁶ Based on the PMDU data from 2005 and this project's estimates, a total of 2.9 Mm² of streets had been paved over a five-year period.³⁶⁷ According to this information, a scenario in which 100% of the city of Hermosillo's roads are paved would



Photo 1. An unpaved street in Hermosillo.³⁶⁹

be difficult to achieve; however, mapping the city's streets makes it possible to prioritize the implementation of road-paving programs as a function of relative surface areas, costs and affected populations.³⁶⁸

171. In 2007, the Comprehensive Road Paving Program (*Programa Integral de Pavimentación*) was launched. It consists of using hydraulic or asphalt paving to increase coverage from 77% to 87% of surface area.³⁷⁰ This project is classified as an air quality improvement activity.³⁷¹ According to the information consulted by the Secretariat, activities proposed by the municipality of Hermosillo through its Public Works Department will enable an immediate reduction of the volume of suspended particulates caused by motor vehicle traffic on unpaved roads and by wind. This activity may contribute to reducing the respiratory illnesses and allergies common in the region.³⁷²
172. Since 2007, the municipality of Hermosillo has been operating the Environmental Contingencies Prevention Program through its Ecology Department. The principal purpose of the program is to reduce the quantity of fugitive dust released from unpaved streets in the zones with the highest concentrations of suspended particulates (as determined by reports obtained through PEMCA).³⁷³ In 2007-2008, the municipality of Hermosillo launched its road spraying program as a measure to counter the effects of dust and particulates emissions in the northwest part of the city. Specifically, it established road spraying routes covering a total of 9,215 linear meters per daily

shift.³⁷⁴ During the winter of 2006-2007, water spraying was conducted in the northwestern part of the city with raw water piped in.³⁷⁵ Between 15 October 2006 and 15 March 2007, nine km of roads were sprayed twice daily, from Monday to Friday, i.e., a total of 1,800 km of roads were dampened to prevent suspended dust emissions.³⁷⁶

173. The road spraying program promoted by the Municipal Ecology Institute, in conjunction with the Road Maintenance Department (*Dirección de Conservación de Vialidades*—DCV), was resumed on 16 November 2010. Both of these entities are dependencies of the General Directorate for Infrastructure, Urban Development and Ecology (*Coordinación General de Infraestructura, Desarrollo Urbano y Ecología*—CGIDUE). Non-potable water was sprayed from Monday to Friday for a total coverage of 21,270 linear meters per shift; moreover, two daily shifts per sector were established in five road spraying circuits, which benefited 22 neighborhoods in the northern and northwestern sectors of the city of Hermosillo.³⁷⁷
174. Concerning institutions responsible for implementing measures related to air pollution, the Party informs that on 13 October 2005 the agreement creating the CEDES was published in *BOES*.³⁷⁸ CEDES is empowered to enforce environmental policy instruments in order to preserve and restore ecological balance and to protect the environment on properties and areas under municipal jurisdiction.³⁷⁹ CEDES is comprised of different departments responsible for carrying out the actions required to ensure enforcement of said instruments.³⁸⁰
175. Issuing of comprehensive environmental licenses is among the measures for reducing and controlling pollutant emissions in the municipality. This measure is provided for under Article 82 of LEEPAS.³⁸¹ To date, 1,344 licenses have been issued since 2008. This has enabled regulating the functioning of commercial and service establishments that are potential sources of atmospheric emissions, through inspections and by ensuring that their permits are in good order.³⁸² The table below indicates the number of licenses issued per year.

Table 11. Number of licenses issued by CEDES per year³⁸³

Year	Number of licenses issued
2008	104
2009	89
2010	92
2011	635
2012 (as of 15 September)	424
Total	1,344

176. Another relevant action presented by the Party is the response to environmental complaints through a citizen services mechanism.³⁸⁴ Since 2008, this system has responded to 2,654 citizen petitions, including complaints concerning commercial establishments and workshops.³⁸⁵ The table below presents data on the complaints addressed per year, including those addressed by the CEDES legal department since 2009:

Table 12. Pollution complaints in Hermosillo³⁸⁶

Year	Businesses	Workshops	Residential	Total
2008	134	226	225	585
2009	159	239	252	650
2010	139	157	204	500
2011	126	111	342	579
2012 (data as of 15 September)	74	76	190	340
				2,654

177. The Party also provided information on other actions including the scheduling of authorizations for open-air burning³⁸⁷ and the maintaining of green areas in public plazas, parks and traffic islands.³⁸⁸

11. Effective Enforcement of LGEEPA Article 8, section XV regarding the issuance of the Municipal Environmental Protection Program

178. LEEPAS Article 8, section XV makes the development and launching of a municipal environmental protection program a statutory obligation of the municipalities. This responsibility is reiterated in LEEPAS Article 13, which also establishes social participation principles in the development of programs to preserve and restore ecological balance, and protect the environment. Under LEEPAS Article 15, section I, consideration must be given to including ecological codes in state and municipal environmental protection programs, as well as in land-use management and urban development programs.
179. The Party informed the Secretariat in its response pursuant to Article 14(3) of the NAAEC, that the municipal government of Hermosillo was in the evaluation stage of a draft municipal environmental protection regulation.³⁸⁹ The response is dated 16 February 2006.
180. In recent information submitted by Mexico for the preparation of the factual record, the municipality of Hermosillo affirmed the following:

In relation to this topic, the Municipality of Hermosillo is in the evaluation stage of a draft Municipality of Hermosillo environmental protection regulation. To date, the draft document has been elaborated and revised by specialists from various fields. The Legal Affairs Division of the Municipal Government has been mandated to review said document.³⁹⁰

181. No additional information was provided on the date to conclude the municipal environmental protection program.

12. Final Note

182. Factual records provide detailed information regarding assertions from the North American public that a NAAEC Party is failing to effectively enforce environmental law. This information may be helpful to Submitters, NAAEC Parties, academia, policy-makers and other persons interested in environmental law matters addressed in factual records. This factual record draws neither conclusions regarding the Submitter's asserted failures of Mexico to effectively enforce its environmental law, nor regarding the effectiveness of Mexico's enforcement efforts.
183. In accordance with Council Resolution 12-04, this Factual Record provides information on **i)** establishment of mandatory vehicle inspection programs;³⁹¹ **ii)** plans for verification and control of air emissions;³⁹² **iii)** actions to reduce and control air emissions;³⁹³ and, **iv)** publication of the Municipal Environmental Protection Program, in the city of Hermosillo, Sonora.³⁹⁴

184. With respect to establishing and operating a mandatory vehicle inspection program, Mexico's response noted that the municipality of Hermosillo did not have a vehicle inspection program. However, the response also stated that Hermosillo was conducting air quality monitoring in order to establish the necessary measures to prevent and control pollution from mobile sources.³⁹⁵
185. As regards the plans for verification and control of air emissions, the Party provided information that the current air quality monitoring network in Hermosillo consists of four TSP and PM₁₀ manual monitoring stations and one automatic station measuring ozone, NO₂, SO₂, CO, PM₁₀ and PM_{2.5}. Air quality monitoring equipment has been added in order to enable further activities in Hermosillo, but its operation has been occasionally interrupted due to lack of resources and training.³⁹⁶ Also, the monitoring program is experiencing technical and financial difficulties, which are in addition to the administrative changes affecting the technical personnel that operate the manual network.³⁹⁷ Mexico also provided information that since early 2012, REIICA does not have Hermosillo's monitoring data because of operational difficulties.³⁹⁸
186. Concerning air quality monitoring activities during the period from April to September 2011, CO was not covered.³⁹⁹ The parameters during this period with the most number of days without monitoring results were PM_{2.5} (60 days), followed by PM₁₀ (55) and SO₂ (54).⁴⁰⁰ No data was reported nearly half of this period concerning particulates.⁴⁰¹ In summary, there were 389 events (out of a total of 915) in which insufficient data was obtained for inclusion in the CEDES report.⁴⁰² Data collected by the automatic station, reported that on one day the AQI for PM_{2.5} was between 151 and 200, i.e., at the level where all persons begin to experience adverse health effects and persons belonging to sensitive groups experience more serious health effects; while in four cases an AQI index of 101-150 was detected for PM_{2.5} at which level persons belonging to sensitive groups may experience health effects.⁴⁰³
187. Regarding specific actions to reduce and control emissions of pollutants, Mexico provided information that the LAU, the Operating License and the COA are among the air pollution mitigation measures implemented by Hermosillo.⁴⁰⁴ Additionally, since 2007, the municipality of Hermosillo has launched the following programs with the aim of preventing and reducing dust emissions: i) the Comprehensive Road Paving Program, which consists of using hydraulic or asphalt paving to increase coverage from 77% to 87% of surface area;⁴⁰⁵ ii) the Environmental Contingencies Prevention Program, the principal purpose of which is to reduce the amount of fugitive dust released from unpaved streets in the zones with highest concentrations of suspended particulates; and, iii) the Road Spraying Program, which establishes road spraying routes covering a total of 9,215 linear meters per daily shift.⁴⁰⁶
188. Finally, concerning the assertions about the alleged omission in developing and launching a municipal environmental protection program, Mexico provided information that there have been no further developments. Since filing the response on 16 February 2006, Mexico has reiterated that the draft of the municipal environmental protection program for the Municipality of Hermosillo remains in the evaluation stage.⁴⁰⁷
189. In accordance with Article 15(3) of the NAAEC, this factual record is "without prejudice to any further steps that may be taken" with respect to submission SEM-05-003 (*Environmental Pollution in Hermosillo II*). The Secretariat notes however that the Parties have undertaken to voluntarily report to the Joint Public Advisory Committee (JPAC) on any actions taken with regard to factual records one year after a factual record's publication.⁴⁰⁸

Endnotes

N.b. Unless otherwise stated, official footnoted documents are on file with the Secretariat. Also, page numbers referred to in the Submission and the Response in this factual record are those in the original Spanish version.

1. The Commission for Environmental Cooperation (CEC) was created in 1994 under the North American Agreement on Environmental Cooperation (NAAEC), which was signed by Canada, Mexico and the United States (the “Parties”) and published in the *Diario Oficial de la Federación (DOF)*, 21 December 1993 [NAAEC]. The CEC comprises a Council, a Secretariat and a Joint Public Advisory Committee (JPAC).
2. For detailed information on the various stages of the process, as well as on previous factual records and determinations of the Secretariat, please consult the CEC website: <www.cec.org/submissions>.
3. NAAEC, Article 15(2), *supra* note 1.
4. On 14 July 2004, the aforementioned Submitters filed submission SEM-04-002 (*Environmental Pollution in Hermosillo*), in which they asserted Mexico’s alleged failure to effectively enforce its environmental law in relation to environmental pollution control in Hermosillo, Sonora. The Secretariat terminated the submission on 30 August 2004, citing a failure to comply with all of the requirements stipulated in paragraphs (c) and (e) of Article 14(1) of the NAAEC. For more information, consult the registry of submissions, <www.cec.org/SEMregistry> (viewed 8 March 2013).
5. SEM-05-003 (*Environmental Pollution in Hermosillo II*), a submission pursuant to Article 14(1) (30 August 2005), <<http://goo.gl/WLeqH>> (viewed 21 August 2012) [Submission].
6. *Ibid.*, at 1-6.
7. *Ibid.*, at 5-6.
8. *Ibid.*, at 6.
9. *Idem.*
10. *Idem.*
11. *Ibid.*, at 7.
12. *Ibid.*, at 6.
13. SEM-05-003 (*Environmental Pollution in Hermosillo II*), Determination pursuant to Article 14(1) and (2) (9 November 2005), <<http://goo.gl/NzwOp>> (viewed 21 August 2012) [Determination Article 14(1) (2)].
14. SEM-05-003 (*Environmental Pollution in Hermosillo II*), Response pursuant to Article 14(3) (16 February 2006), <<http://goo.gl/ou7Uk>> (viewed 21 August 2012) [Response].
15. *Ibid.*, at 39-43.
16. *Ibid.*, at 40-41.
17. *Idem.*
18. *Ibid.*, at 41-42.
19. *Ibid.*, at 42.
20. *Ibid.*, at 43.
21. *Ibid.*, at 42-43.
22. *Ibid.*, at 44.
23. *Ibid.*, at 45.
24. *Idem.*
25. *Ibid.*, at 45-46.
26. *Ibid.*, at 47.
27. *Idem.*
28. *Idem.*
29. *Ibid.*, at 47-48.
30. *Ibid.*, at 48.
31. *Ibid.*, at 48-49.
32. *Ibid.*, at 49.
33. *Ibid.*, at 61-62.

34. SEM-05-003 (*Environmental Pollution in Hermosillo II*), Notification pursuant to Article 15(1) (4 April 2007), <<http://goo.gl/3pU7R>> (viewed 21 August 2012) [Notification].
35. Submission, *supra* note 5 at 11-13.
36. *Ibid.*, at 13-16.
37. *Ibid.*, at 16-17.
38. SEM-05-003 (*Environmental Pollution in Hermosillo II*), Council Resolution 12-04 (15 June 2012), <<http://goo.gl/QKxYv>> (viewed 21 August 2012) [Council Resolution].
39. Articles 73, sections V, VII and 85, section I, paragraph b), of the Ecological Balance and Environmental Protection Act of the State of Sonora (*Ley del Equilibrio Ecológico y la Protección al Ambiente para el Estado de Sonora*, LEES), originally cited in Submission SEM-05-003, were abrogated. LEEPAS Articles 111, sections V and VII, and 119, section II, paragraph b), were included in Council Resolution 12-04 as these are substantially equivalent to the original. For more information, please refer to section “6.1 Validity of the environmental law in question” on page 7 of this factual record.
40. Pursuant to the footnote above, Articles 73, sections VI and IX of the LEES, originally cited in the submission were abrogated and are equivalent to LEEPAS Articles 111, sections VI and IX. For more information, please refer to section “6.1 Validity of the environmental law in question” on page 7 of this factual record.
41. “The Secretariat shall submit a draft factual record to the Council. Any Party may provide comments on the accuracy of the draft within 45 days thereafter.”
42. “The Secretariat shall incorporate, as appropriate, any such comments in the final factual record and submit it to the Council.”
43. Paragraph 19.7 of the *Guidelines for Submissions on Enforcement Matters under Articles 14 and 15 of the North American Agreement on Environmental Cooperation*, which took effect on 11 July 2012 [Guidelines], states that:
The Secretariat, to the extent possible, should conclude revising the draft factual record and provide Council with the final factual record, including a version that makes apparent any changes made, normally within 45 working days of receiving Party comments.
44. “The Council may, by a two-thirds vote, make the final factual record publicly available, normally within 60 days following its submission.”
45. *Ibid.*, at 5-6.
46. *Ibid.*, at 5-6.
47. *Ibid.*, at 6.
48. *Idem.*
49. *Idem.*
50. *Idem.*
51. *Idem.*
52. *Idem.*
53. *Idem.*
54. *Idem.*
55. *Idem.*
56. *Idem.*
57. *Ibid.*, at 6-7.
58. *Ibid.*, at 7.
59. *Idem.*
60. *Idem.*
61. *Idem.*
62. *Idem.*
63. ‘*Ad cautelam*’ is a Latin phrase meaning “as a precaution”
64. *Ibid.*, at 1-2.

65. *Ibid.*, at 3-7. See NAAEC, *supra* note 1, Article 14(2)(c).
66. *Ibid.*, at 7-27. See NAAEC, *supra* note 1, Article 14(1)(c).
67. *Ibid.*, at 27-29. See NAAEC, *supra* note 1, Article 14(1)(b).
68. *Ibid.*, at 29-30. See NAAEC, *supra* note 1, Article 14(2)(d).
69. *Ibid.*, at 30, 33-34, 37-39.
70. *Ibid.*, at 31-37.
71. Response, *supra* note 14 at 31.
72. *Ibid.*, at 31-32 and 56-57.
73. *Ibid.*, at 32-33.
74. *Ibid.*, at 33.
75. *Ibid.*, at 34-37. See Appendix 8, which contains a listing of air pollution related NOMs.
76. The Response refers to Transitory Article 4 of LEES, published on 3 January 1991 and abrogated on 25 September 2008. See Response, *supra* note 14.
77. Response, *supra* note 14 at 37 and 56-57.
78. *Ibid.*, at 37 and 39.
79. *Ibid.*, at 37-38 and 58.
80. The Response does not include a citation for said study.
81. Response, *supra* note 14 at 38.
82. *Ibid.*, at 39.
83. Mexico indicates that the following pollutants are monitored: SO₂, NO_x, HC, CO, CO₂, COV, oils and fats, settled solids, suspended solids, biological oxygen demand, As, Cd, CN, Cu, Cr, Pb, Hg, Ni, N, Pb, hazardous wastes, nitric oxide, 2,4-toluene diisocyanate and volatile organic compounds. Response, *supra* note 14 at 40.
84. Out of this total, 24 percent were permits granted to businesses in Hermosillo, i.e., approximately 22 fixed source emitters under federal jurisdiction. Response, *supra* note 14 at 41.
85. Response, *supra* note 14 at 42.
86. *Ibid.*, at 42-43.
87. *Ibid.*, at 43-44.
88. *Ibid.*, at 44.
89. *Ibid.*, at 51.
90. *Ibid.*, at 51 and 53.
91. *Ibid.*, at 44.
92. *Ibid.*, at 45.
93. The agreement refers to the “Specific Coordination Agreement” (*Acuerdo de Coordinación Específico*), signed by Semarnat and the state of Sonora, with the object of executing the Air Quality Management and Evaluation Program (*Programa de Gestión y Evaluación de la Calidad del Aire*), with respect to the operation of atmospheric monitoring equipment in the municipalities of Agua Prieta, Cajeme, Cananea, Hermosillo, Naco, Nacozari de García, Navojoa, Nogales and San Luis Río Colorado, Sonora,” published in *DOF*, 5 September 2000. Response, *supra* note 14 at 45 and 52.
94. Response, *supra* note 14 at 45.
95. *Ibid.*, at 45 and 58.
96. *Ibid.*, at 55.
97. *Ibid.*, at 46, 59 and 63-64.
98. *Ibid.*, at 46.
99. *Ibid.*, at 63.
100. *Ibid.*, at 47 and 63.
101. *Ibid.*, at 47.
102. *Ibid.*, at 47-48, 59 and 61.
103. *Ibid.*, at 48.
104. *Idem.*

105. *Ibid.*, at 60.
106. *Idem.*
107. *Ibid.*, at 46-49, 58-64.
108. *Ibid.*, at 61-64.
109. *Ibid.*, at 61.
110. *Ibid.*, at 62-63.
111. *Ibid.*, at 64.
112. Council Resolution, *supra* note 38 at 2.
113. In Resolution 12-04, footnote 38 *supra*, the Council determined in the relevant paragraph:
TO DIRECT the Secretariat to provide the Council with its overall work plan for gathering the relevant facts, as well as to keep this Council informed of any future changes or adjustments to such plan [...]
114. Secretariat, doc. no. A14/SEM/05-003/60/STP (9 August 2012).
115. Secretariat, doc. no. A14/SEM/05-003/89/STP (27 February 2013) and doc. no. A14/SEM/05-003/93/FR-OP (10 June 2013).
116. See also paragraph 11.1 of the *Guidelines*.
117. Secretariat, doc. no. A14/SEM/05-003/67/REQ (21 August 2012).
118. Secretariat, doc. no. A14/SEM/05-003/73/STP (18 September 2012).
119. *Idem.*
120. Secretariat, memorandum from the legal affairs officer to JPAC (22 August 2012)
121. Secretariat, doc. no. A14/SEM/05-003/69/STP (21 August 2012).
122. Profepa delegation, doc. no. PFPA-32.7-8C.17.4-2C.28.2-0562/12 (7 September 2012)
123. UCAJ, communication no. 112.00005854 (28 September 2012)
124. UCAJ, electronic communication (25 February 2013).
125. Xóchitl Cruz is a chemist and professor in chemical sciences at the Faculty of Chemistry of the National Autonomous University of Mexico (*Universidad Nacional Autónoma de México*—UNAM); she has over ten years of experience teaching chemistry at the undergraduate and postgraduate levels at UNAM, and was a lead author of the *Fifth Assessment Report* of the Intergovernmental Panel on Climate Change (IPCC).
126. Graciela Jasa is a lawyer and law professor at the *Universidad de Sonora*. She has a master's degree in International Trade Law from the Faculty of Law of University of Arizona and obtained her PhD in Civil Laws at the McGill University, Faculty of Law. Professor Jasa has over ten years of experience working as a research professor in various areas of public and private international law.
127. See A. Santos Romo, *Evaluación de la calidad del aire por partículas suspendidas PM₁₀, NO_x y SO₂ en la ciudad de Hermosillo, Sonora*, dissertation, *Universidad de Sonora*, Tesis Digitales <<http://goo.gl/9iAa0m>> (5 November 2013), at 37 [Santos Romo]; M.E. Cruz Campas, A. Gómez Álvarez, M. Quintero Núñez, J. Varela Salazar. (2005), *Evaluación de la calidad del aire respecto de partículas suspendidas totales (PST) y metales pesados (Pb, Cd, Ni, Cu y Cr) de la ciudad de Hermosillo, Sonora, México, durante un periodo anual* Rev. Int. Contam. Ambie. 29(4) pp. 269-283, 2013 [Cruz Campas, et al.]; and D. Meza Figueroa (2007), "Heavy metal distribution in dust from elementary schools in Hermosillo, Sonora, Mexico," *Atmospheric Environment*, 41.2 at 276-288.
128. INE (2010), *Manual 1. Principios de Medición de la Calidad del Aire*, Instituto Nacional de Ecología, Mexico, <<http://goo.gl/wWo6N>> (23 April 2013) [INE Manual 1].
129. Article 73, sections V, VII and IX, and Article 85, paragraph b), section I, of LEES.
130. Council Resolution, *supra* note 38, footnote 1 at 2.
131. LEEPAS, published on the Sonora State Bulletin (BOES) on 25 September 2008.
132. Regarding criteria pollutants, see section "7.5 Atmospheric pollutants" on page 21 of this factual record.
133. In this regard, see Semarnat's webpage, which includes a complete list of NOMs organized by subject: Semarnat, *Normas Oficiales Mexicanas ordenadas por materia*, <<http://goo.gl/3Ab60>> (viewed 15 April 2013).
134. Article 51-A, section III, added to the LFMN via amendments published in *DOF*, 20 May 1997,

- stipulates that NOMs shall be up-dated every five years.
135. Modification to Official Mexican Standard NOM-040-Semarnat-2002, *Which establishes environmental protection re the manufacture of hydraulic cement - maximum permissible levels of emissions into the atmosphere, published on 18 December 2002*, published in DOF, 20 April 2004.
 136. *Ibid.*, Legal arguments.
 137. See, for example: INECC, *Contaminantes criterio*, <<http://goo.gl/Wh5h>> (viewed 24 April 2013); Semarnat, *Normas Oficiales Mexicanas ordenadas por materia*, <<http://goo.gl/3Ab60>> (viewed 15 April 2013), and INE Manual 1, *supra* note 128 at 13.
 138. *Idem.*
 139. *Idem.*
 140. Article 111, section I, of the LGEEPA indicates that one of Semarnat's powers in respect of air pollution prevention and control is the authority to issue Official Mexican Standards that establish environmental quality criteria for different areas, zones or regions of the national territory, based on the maximum permissible concentrations of pollutants in the environment in terms of public health, as determined by the Ministry of Health. The General Health Act (*Ley General de Salud*), in Title Seven, "Promoting Health" (Chapter IV), "Effects of the Environment on Health" (Articles 116 and ss.), establishes that, concerning the effects of the environment on public health, it is the responsibility of the health authorities to establish standards, take measures and carry out activities tending to protect human health in the face of risks and harms that may be occasioned by environmental conditions, as well as determine the maximum permissible concentrations of atmospheric pollutants for human beings.
 141. INE Manual 1, *supra* note 128 at 23.
 142. *Ibid.*, at 24.
 143. Semarnat, *107 Normas Oficiales Mexicanas vigentes y 9 canceladas*, <<http://goo.gl/SJF6v>> (viewed 22 April 2013).
 144. Official Mexican Standard NOM-020-SSA1-1993, *Environmental health. Criteria to evaluate the limit permissible value for ozone in ambient air. Criteria to evaluate air quality*, published in DOF, 23 December 1994. [Emphasis added]
 145. Official Mexican Standard NOM-021-SSA1-1993, *Environmental health. Criteria to evaluate air quality of ozone. Permissible limit value for concentrations of ozone (O₃) in ambient air for the protection of public health*, published in DOF, 23 December 1994. [Emphasis added]
 146. Official Mexican Standard NOM-022-SSA1-1993, *Environmental health. Criteria to evaluate air quality of sulfur dioxide. Permissible limit value for concentrations of sulfur dioxide (SO₂) in ambient air for the protection of public health*, published in DOF, 23 December 1994. [Emphasis added]
 147. Official Mexican Standard NOM-023-SSA1-1993, *Environmental health Criteria to evaluate air quality of nitrogen dioxide. Permissible limit value for concentrations of nitrogen dioxide in ambient air for the protection of public health*, published in DOF, 23 December 1994. [Emphasis added]
 148. Official Mexican Standard NOM-024-SSA1-1993, *Environmental health. Criteria to evaluate the limit permissible value for particulate matter. Which establishes the permissible value for concentrations of total suspended particulates PST, particulates less than 10 microns PM₁₀ and particulates less than 2.5 microns PM_{2.5} in ambient air. Criteria to evaluate air quality*, published in DOF, 23 December 1994. [Emphasis added]
 149. *Idem.*
 150. *Idem.*
 151. Official Mexican Standard NOM-026-SSA1-1993, *Salud Ambiental. Criterios para evaluar la calidad del aire ambiente con respecto al plomo (Pb). Valor normado para la concentración de plomo (Pb) en el aire ambiente como medida de protección a la salud de la población* publicada en el DOF el 23 de diciembre de 1994.
 152. See, for example, the preamble to NOM-025-SSA1-1993.
 153. INE Manual 1, *supra* note 128 at 15.

154. See for example, the preamble to NOM-025-Ssa1-1993, which states:
The air quality reference values establish limits on the concentrations of various pollutants, based on the protection of public health, starting with the most sensitive groups. They are parameters for monitoring the quality of ambient air and establish benchmarks for formulating pollutant control programs and the evaluation thereof.
155. Article 14(1)(2) Determination, *supra* note 13, pp. 9-10.
156. Secretariado, Doc. No. A14/SEM-06-003/SEM-06-004/111/STC (22 October 2012).
157. The reader is invited to consult Appendix 8, which reproduces the texts of these provisions.
158. Such provisions are included in Title One: General Provisions, Chapter II “Distribution of Powers and Coordination by the LGEEPA.” This chapter contains other provisions that are not directly relates with this factual record.
159. Regarding concurrent jurisdiction between the federation, states and municipalities, Article 1, section VIII, of the LGEEPA establishes that the provisions of the LGEEPA have as their object fostering sustainable development and establishing the bases for:
[...]
VIII. The exercise of the powers in respect of environmental matters that fall to the Federation, the states, the Federal District and the municipalities, in accordance with the principle of concurrency enshrined in Article 73, section XXIX-G of the Constitution;
[...]
160. LGEEPA, Article 5, section XII:
The Federation’s powers shall include:
[...]
XII.- The regulation of air pollution, originating from any type of emissions source, as well as the prevention and control of air pollution in the case of fixed and mobile sources under federal jurisdiction;
[...]
161. *Idem*.
162. See Appendix 8.
163. *Idem*.
164. LGEEPA, Article 111 *bis*:
For the purposes of this Law, the following industries are considered fixed sources under federal jurisdiction: chemicals, petroleum and petrochemicals, paints and dyes, automobiles, pulp and paper, metallurgy, glass, electricity generation, asbestos, cement works and quarries, and hazardous wastes treatment.
165. RPCCA, Article 17 *bis*:
For the purposes of these Regulations, the specific subsectors belonging to each of the industrial sectors identified in Article 111 *bis* of the Law are considered fixed sources under federal jurisdiction.
166. See Appendix 8.
167. *Ibid*.
168. The word “local” is used here to refer to the responsibilities that fall to the governments of the Federal District, the states and municipalities in respect of these standards. This derives from the provisions of Articles 7, section VII, 8, sections III and VI, and 112, section I, of the LGEEPA, which grant jurisdiction to the states and municipalities regarding control of mobile sources not under federal jurisdiction and establish their obligation to prevent and control air pollution in properties and areas under their jurisdiction. In this regard, consult also: M. Jiménez Dorantes, *Constitución y urbanismo*, UNAM-Instituto de Investigaciones Jurídicas, Mexico, 2006 at 90-106, <<http://goo.gl/2LnDE>> (viewed 8 March 2013), [Jiménez Dorantes, 2006].
169. See Appendix 8.
170. LFMN Third Transitory Article published on DOF on 16 July 1992 establishes:

Validity of norms or technical specifications, criteria, rules, manuals, memoranda, guidelines and other analogous mandatory provisions related to the matters referred to herein, issued by the Federal public administration before the entry into force of this Law, shall not exceed 15 months after its enactment. In other words, environmental technical standards are to have no force after October 1993.

171. Inegi, *Censo de Población y Vivienda 2010*, Instituto Nacional de Estadística y Geografía, Mexico, 2011, <<http://goo.gl/SMB0y>> (viewed 3 November 2012); and Implan, *Programa de Desarrollo Urbano de Centro de Población de Hermosillo, Sonora: Actualización 2006*, Instituto Municipal de Planeación Urbana del Gobierno Municipal de Hermosillo, <<http://goo.gl/j9lwb>> (viewed 3 November 2012) [PMDU, 2006].
172. *Idem*.
173. *Idem*.
174. Map included with the information provided by the Party (28 September 2012).
175. Climate type corresponding to a very dry climate type (BW), according to Köppen's climate classification system, as modified by García (1988), and as shown in the climate maps of I.W. Köppen, *Climatología. Con un estudio de los climas de la tierra*, P.R. Hendrischs Pérez (trad.), Fondo de Cultura Económica, Mexico, 1948; E. García, *Modificación al sistema de clasificación climática de Köppen*, Offset Larios, Mexico, 1988; INEGI, *Carta de Climas*, Instituto Nacional de Estadística, Geografía e Informática, Mexico, <<http://goo.gl/MWuJK>> (viewed 13 March 2013).
176. PMDU, 2006, *supra* note 171.
177. D.A. Barrera Symonds, *Revitalización del espacio público en un sector popular de la ciudad de Hermosillo: caso Las Granjas-San Antonio*, dissertation, *Universidad de Sonora*, Tesis Digitales <<http://goo.gl/3shWj>> (viewed 15 March 2013) [Barrera Symonds].
178. Rainwater floods refer to floods that are directly caused by precipitation; they occur when the ground is saturated and excess rainwater starts to accumulate there, where it may remain for hours or days. Its principal characteristic is that the accumulated water is from precipitation that fell in the area and did not originate elsewhere (for example, from the upper part of the basin). River floods occur when rivers overflow and the water remains on the surface near the site of the overflow. In contrast with rainwater floods, in this type of flooding the water overflowing onto adjacent land originated from precipitation that may have fallen on any part of the catchment area. M.A. Salas Salinas and M. Jiménez Espinosa, *Inundaciones*, Secretaría de Gobernación y Centro Nacional de Prevención de Desastres, Mexico, 2007 at 15 and 19, in: Secretaría de Gobernación, *Atlas Nacional de Riesgos*, <<http://goo.gl/djrH2>> (viewed 13 March 2013).
179. *Ciclones Tropicales (Huracanes)* in: Secretaría de Gobernación, *Atlas Nacional de Riesgos*, <<http://goo.gl/196nt>> (viewed 13 March 2013).
180. PMDU, 2006, *supra* note 171; and Conagua, "Reporte del clima en México: análisis climático noviembre 2010-marzo 2011, otoño-invierno," Mexico, <<http://goo.gl/MV0Tn>> (viewed 18 February 2013).
181. Figure derived from information provided by the Party (28 September 2012).
182. *Idem*.
183. *Idem*.
184. *Idem*.
185. *Idem*.
186. "Equipatas" means "heavy rains" from cyclones that can produce "severe flooding." The term comes from the Yaqui language, where "keepa" [keépa] signifies "rain" or "drizzle." J.M. Banister "Diluvios de grandeza: agua, territorio y poder en el río Mayo en el noroeste de México, 1880-1910," *Región y Sociedad*, No. 3, 2012 at 17, <<http://goo.gl/yP7yC>> (viewed 18 February 2013); Z. Estrada Fernández *Diccionario yaqui-español y textos: obra de preservación lingüística*, Universidad de Sonora and Plaza and Valdés, 2004 at 119.
187. PMDU, 2006, *supra* note 171.
188. Barrera Symonds, *supra* note 177.
189. Semarnat-DGGCARETC, electronic document enclosed with document DGGCARETC/0707/2012 (28

September 2012), in: UCAJ, doc. no. 112.00005854 (28 September 2012), provided in response to the information request from the Secretariat [DGGCARETC document].

190. *Ibid.*,
191. The National Urban System is comprised of all cities that function in a hierarchical, structured and dynamic manner, albeit on different scales. These 118 urban focal points are classified as belonging to five groups: in group 1 is the Mexico Valley Metropolitan Area (*Zona Metropolitana del Valle de México—ZMVM*); the second group includes the other three large metropolitan areas: Guadalajara, Monterrey and Puebla; the third group includes 16 cities; group number four includes another 29 urban centers; while the remaining 69 are in group number five. Sedesol, Colegio de Arquitectos de la Ciudad de México, A.C., Instituto de Investigaciones Económicas, UNAM México, 2020. *Un enfoque territorial del desarrollo, vertiente urbana*, Secretaría de Desarrollo Social, Mexico, 2002, <<http://goo.gl/9N0X0>> (viewed 8 March 2013).
192. Sedesol, *Programa Nacional de Desarrollo Urbano y Ordenación de Territorio 2001-2006*, Secretaría de Desarrollo Social, México, 2001, <<http://goo.gl/TDGLd>> (viewed 8 March 2013) [PNDUOT 2001-2006]. The reference is to PNDUOT 2001-2006 since, as of this date, no other analogous program superseding it has been launched.
193. If the Northern Border Program's 100 km strip were widened to 300 km, as has been planned, Hermosillo would be included. See: XXVII Conferencia de Gobernadores Fronterizos, *Plan Indicativo para el Desarrollo Competitivo y Sustentable de la Región Transfronteriza México-Estados Unidos*, El Colegio de la Frontera Norte-Woodrow Wilson International Center for Scholars, Monterrey, 2009, <<http://goo.gl/1yCID>> (viewed 24 April 2013) at 9, 21.
194. Inegi, *Censo Nacional de Población 2010*.
195. PMDU, 2006, *supra* note 171.
196. *Idem.*
197. *Idem.*
198. *Idem.*
199. *Idem.*
200. *Idem.*
201. Response, *supra* note 14 at 38.
202. *Ibid.*, at 45 and 58.
203. PMDU, 2006, *supra* note 171..
204. *Idem.*
205. *Idem.*
206. *Idem.*
207. *Idem.*
208. *Idem.*
209. *Idem.*
210. *Idem.* For more information on the distribution of vehicle travel in Hermosillo and other cities in northern Mexico consult: INE *Inventario Nacional de Emisiones de México*, 1999, Instituto Nacional de Ecología, Mexico, 2006, <<http://goo.gl/HNJ1q>> (viewed 30 May 2013).
211. PMDU, 2006, *supra* note 171..
212. *Idem.*
213. *Idem.*
214. *Idem.*
215. *Idem.*
216. *Idem.*
217. EPA, *National Ambient Air Quality Standards for Particulate Matter, Final Rule Part 2*. 40 CFR Part 50,

- Environmental Protection Agency, 2007 [EPA, 1997].
218. *Idem.*
 219. *Idem.*
 220. *Idem.*
 221. *Idem.*
 222. *Idem.*
 223. *Idem.*
 224. INECC, *Contaminantes criterio*, <goo.gl/Wh5h> (viewed 24 April 2013).
 225. Santos Romo, *supra* note 127.
 226. *Idem.*
 227. *Idem.*
 228. EPA, Sulfur Dioxide <http://goo.gl/MFi4tz> (viewed on 7 November, 2013) and Environment Canada, *Canada-United States Air Quality Agreement Progress Report 2012* <http://goo.gl/8z6IBx> (viewed on 7 November 2013).
 229. Santos Romo, *supra* note 127.
 230. *Idem.*
 231. *Idem.*
 232. According to the EPA, between 1980 and 1990 SO₂ emissions from power plants were reduced by 33 percent. EPA, *Review of National Ambient Air Quality Standards for Sulphur Oxides, Assessment of Scientific and Technical Information*, EPA-452/R-94-013, Environmental Protection Agency, 1994 [EPA, 1994].
 233. Santos Romo, *supra* note 127. The combination of sulfur dioxide and particulate matter, under conditions favorable to their accumulation and perseverance in the atmosphere, has been responsible for air pollution emergency episodes, as well as an increase in morbidity and mortality among patients with chronic heart and respiratory illnesses. See in this regard NOM-022-Ssa1-1993.
 234. EPA, *Review of National Ambient Air Quality Standards for Nitrogen Dioxide, Assessment of Scientific and Technical Information*, EPA-452/R-95-005, Environmental Protection Agency, 1995 [EPA, 1995].
 235. *Idem.*
 236. *Idem.*
 237. *Idem.*
 238. *Idem.*
 239. *Idem.*
 240. *Idem.*
 241. *Idem.*
 242. *Idem.*
 243. See NOM-023-Ssa1-1993.
 244. See NOM-023-Ssa1-1993.
 245. INECC, *Contaminantes criterio* <goo.gl/Wh5h> (viewed 24 April 2013).
 246. *Idem.*
 247. *Idem.*
 248. *Idem.*
 249. *Idem.*
 250. *Idem.*
 251. *Idem.*
 252. For example, Semarnat has issued Official Mexican Standards NOM-147-SEMARNAT/Ssa1-2004 and NOM-157-SEMARNAT-2009 that establish, respectively, criteria to determine concentration of lead in contaminated soil; and components and procedures to implement mining waste management plans. Lead policy regulation may be consulted at INECC's website at www.inecc.gob.mx; likewise, the Federal Commission for the Prevention of Health Risks has a lead NOM compilation at <http://goo.gl/VxOrLq> (viewed on 28 October 2013).
 253. INECC, *Contaminantes criterio* <goo.gl/Wh5h> (viewed 24 April 2013).

254. *Idem.*
255. INE Manual 1, *supra* note 128 at 14.
256. Response, *supra* note 14 at 37, 61 and 64.
257. *Ibid.*, at 45 and 58.
258. *Ibid.*, at 62.
259. See in this regard section “6.3 Establishment of mandatory vehicle inspection programs and the establishment and operation of vehicle inspection centers” on page 12 and the establishment and operation of vehicle inspection centers.”
260. Under the system of concurrent powers, the federation, the Federal District, the states and the municipalities have powers in the same area. This is distinct from the situation in which a specific organ has exclusive jurisdiction over certain powers, as is the case with the monitoring and regulation of the monetary system, which in Mexico is an exclusive power of the federal government. Concurrence may apply to the powers to legislate, regulate, execute or monitor. Practical concurrency occurs when different levels of government have the powers to regulate and execute policy. Jiménez Dorantes, 2006, *supra* note 168, at 93 and 103.
261. See LEEPAS, Article 118.
262. LEEPAS, Article 117, section II, paragraphs (a) through (m); Article 119, section I and section II, paragraph b).
263. See LEEPAS, Article 117.
264. NOM-041, paragraphs 4.3 and 6.4.1.
265. NOM-041, paragraphs 1, 8.1 and 8.2.
266. NOM-045, paragraphs 1 and 7.
267. NOM-045, paragraph 1.
268. This NOM also deals with the mixing of these pollutants with oxygen.
269. NOM-50 establishes the maximum permissible levels of hydrocarbon gas, carbon monoxide, carbon dioxide, nitrogen oxides and oxygen emissions from the tailpipes of motor vehicles in circulation that use liquid petroleum gas, natural gas or other alternative fuels.
270. See NOM-041, paragraph 8; NOM-045, paragraph 10; NOM-050, paragraph 7.1.
271. Secretariat, doc. no. A14/SEM/05-003/67/REQ (21 August 2012).
272. DGGCARETC document, *supra* note 189.
273. Municipio de Hermosillo, doc. no.. IME/JVM/908/12 (28 September 2012), in: UCAJ, doc. no. 112.00005854 (28 September 2012) in response to the information request from the Secretariat [Municipio de Hermosillo]. [Emphasis added]
274. Secretariat, doc. no. A14/SEM/05-003/80/REQ-2 (30 January 2013).
275. UCAJ, file attached to an electronic communication sent to the Secretariat (25 February 2013).
276. Submission, *supra* note 5 at 1-2, 6-7 and 9.
277. *Ibid.*, at 1-5.
278. *Ibid.*, at 5-7.
279. Response, *supra* note 14 at 40-41.
280. *Ibid.*, at 41-42 and 50-51.
281. *Ibid.*, at 43-44 and 50-51.
282. *Ibid.*, at 42-43.
283. *Ibid.*, at 44-45.
284. *Ibid.*, at 43-44.
285. *Ibid.*, at 46-47.
286. *Ibid.*, at 47.
287. LEEPAS, Article 111, section IX:
Regarding the prevention and control of air pollution, the State and the Municipal governments shall, within the purview of their respective jurisdictions:
IX. Elaborate reports on the state of the environment in the state or municipality in question, in a manner

- to be agreed upon with Semarnat through the conclusion of coordination agreements;
288. Subdirección de Evaluación de Emisiones y Monitoreo Atmosférico (SEEMA) and Semarnat delegation in the state of Sonora, *Situación del monitoreo de la calidad del aire en el municipio de Hermosillo, Son.* (1 October 2012) [SEEMA 2012].
 289. *Idem.*
 290. *Idem.*
 291. The Secretariat was unable to identify any further information on the existence of the “Mexican Environmental Program” in the information provided by the Party. However, information consulted online shows the existence of such a program <<http://goo.gl/L0BXa>> (viewed 8 March 2013).
 292. Semarnat-EPA, *Programa Ambiental Fronterizo: Informe de Instrumentación*, Semarnat, Mexico, 2007, <<http://goo.gl/29kPF>> (viewed 8 March 2013).
 293. CEDES, “Proyecto de equipamiento de la Red Estatal de Información e Infraestructura sobre Calidad del Aire,” a draft bill submitted to the Environment and Natural Resources Commission (*Comisión de Medio Ambiente y Recursos Naturales*) of the LXI Legislature, Mexico, 2010.
 294. CEDES, “CEDES monitorea calidad del aire en Sonora,” *CEDES Noticias* (31 July 2011), <<http://goo.gl/KBtsG>> (viewed 15 March 2013). Mexico provided the url of the web site where air quality results are publicly released: <http://189.210.122.34/reiica/>. However, the link for this website appears not to be functioning.
 295. Located at the *Universidad de Sonora*, geographical coordinates: 29.0830° N, 110.9620° W
 296. Information provided by SEEMA and the Semarnat delegation in Sonora, 1 October 2012 at 2 [SEEMA and Semarnat-Sonora Hermosillo delegation, Oct. 2012].
 297. *Ibid.*,
 298. *Ibid.*, at 2.
 299. UNEP, WHO, WMO, *Air Monitoring Programme Design for Urban and Industrial Areas*, United Nations Environment Programme, World Health Organization, World Meteorological Organization, Geneva, 1977.
 300. Santos Romo, *supra* note 127 at 37.
 301. *Idem.*
 302. *Idem.*
 303. C. García García, *Estandarización de la técnica de extracción de ADN para buscar la presencia de bacterias en partículas del aire de la ciudad de Hermosillo*, dissertation, *Universidad de Sonora Tesis Digitales* <http://goo.gl/YTZaHS> (viewed on 7 November 2013) at 16 [García García].
 304. SEEMA and Semarnat-Sonora Hermosillo delegation, *supra* note 296 at 3.
 305. *Idem.*
 306. *Idem.*
 307. *Ibid.*,
 308. Figure elaborated based on: PMDU, 2006, *supra* note 171 at 48, and Municipio de Hermosillo, Doc. No. IME/JVM/908/12 (28 September 2012), in: UCAJ, Doc. No. 112.00005854 (28 September 2012) in response to the Secretariat’s information request.
 309. Table elaborated based on: Municipio de Hermosillo, *supra* note 273.
 310. PMDU, 2006, *supra* note 171.
 311. SEEMA and Semarnat-Sonora Hermosillo delegation, *supra* note 296 at 3.
 312. *Ibid.*, at 4.
 313. *Idem.*
 314. *Idem.*
 315. For more information on how the Air Quality Index is calculated, please refer to: EPA, *Guidelines for the Reporting of Daily Air Quality—the Air Quality Index*, Environmental Protection Agency, at 8-11 <http://goo.gl/B0dKXE> (viewed on 19 November 2013). Also, the reader may refer to the *Indice Metropolitano de la Calidad del Aire* (Metropolitan Air Quality Index, IMECA) established by the Mexico City government for the Mexican Valley Metropolitan Zone, which uses similar AQI values, at: *Norma Ambiental para el Distrito*

Federal NADF-009-AIRE-2006 que establece los requisitos para elaborar el Índice Metropolitano de la Calidad del Aire, (Environmental Standard for the Federal District NADF-009-AIRE-2006 that establishes the requirements to develop the Metropolitan Air Quality Index) published in the Official Gazette of the Federal District on 29 November 2006.

316. Municipio de Hermosillo, *supra* note 273.
317. EPA, *Air Quality Index (AQI)-A Guide to Air Quality and Your Health*, EPA, AirNow, <<http://goo.gl/T5NhQ>> (viewed 20 May 2013).
318. List prepared based on: EPA, *Air Quality Index (AQI)-A Guide to Air Quality and Your Health*, EPA, AirNow, <<http://goo.gl/T5NhQ>> (viewed 20 May 2013); and Clean Air Make More, *Índice de calidad del aire*, Maricopa County, Arizona, <<http://goo.gl/ZmVtN>> (viewed 22 May 2013).
319. The reader should note that TSP concentrations are may not be shown through AQI index as this pollutant is not considered.
320. The one-year period was defined by the author of the report. See: Cruz Campas et al, *supra* note 127, at 271.
321. Reference levels at the time of the study were included in NOM-024-SSA1-1993. TSP reference values were modified on 26 September 2005 were modified through NOM-025-SSA1-1993 published in DOF on 26 September 2005. NOM-025-SSA1-1993 now includes includes TSP, PM₁₀ and PM_{2.5} values.
322. Cruz Campas, *supra* note 127 at 269.
323. Cruz Campas et al., *supra* note 127 at 269, and Santos Romo, *supra* note 127 at 77.
324. Cruz Campas et al., *supra* note 127 at 272.
325. Santos Romo, *supra* note 127 at 75. Reference criteria included in NOM-025-SSA1-1993 may be consulted in see appendix 8.
326. *Idem*.
327. *Ibid.*, at 76.
328. *Ibid.*, at 58.
329. *Ibid.*, at 59. AQI values based on: AirNow, EPA, *AQI Calculator*, <<http://goo.gl/nTHUO>> (viewed 29 May 2013) [AQI Values].
330. Santos Romo, *supra* note 127 at 73.
331. *Ibid.*, at 73.
332. Table elaborated based on: Municipio de Hermosillo, *supra* note 273, and AQI Values, *supra* note 329.
333. The reader may consult Table 6 in Appendix 8 of this factual record.
334. Municipio de Hermosillo, *supra* note 273.
335. *Idem*.
336. *Idem*.
337. *Idem*.
338. INE, *Diagnóstico Nacional sobre Inventarios de Emisiones de Fuentes Móviles*, Instituto Nacional de Ecología, Mexico, 2006 at 42, <<http://goo.gl/JPGkV>> (viewed 29 April 2013).
339. INE, *Inventario de emisiones de los estados de la frontera norte de México, 1999*, Instituto Nacional de Ecología-Semarnat, Mexico, 2006 at 33-43, <<http://goo.gl/oGuKl>> (viewed 29 April 2013) [INE-1999a].
340. INE Manual 1, *supra* note 128 p. 13.
341. INE, *Inventario Nacional de Emisiones de México 1999*, Instituto Nacional de Ecología-Semarnat, Mexico, 2006, <<http://goo.gl/HNJ1q>> (viewed 29 April 2013) [INE-1999b]; and INE-1999a, *supra* note 339.
342. *Idem*.
343. DGGCARETC document, *supra* note 189.
344. Response, *supra* note 14 at 37-39, 44 and 61-62.
345. INE, “*Inventario de emisiones de Sonora y Hermosillo, 2005*,” electronic file contained in: UCAJ, Doc. No. 112.00005854 (28 September 2012), sent in response to the information request from the Secretariat, on file with the Secretariat.
346. *Idem*.
347. The figure “0.0” represents quantities less than one hundredth of a ton. NA: does not apply, NE: not

- estimated. Semarnat, *Inventario Nacional de Emisiones, 2005*, <<http://goo.gl/yTqcr>> (viewed 15 March 2013).
348. Response, *supra* note 14 at 37-39, 44 and 61-62.
349. Regarding the denomination of vehicles as “pickups” or “sedans,” see: INECC, *Inventario de Emisiones, Vehículos Automotores*, <<http://goo.gl/z3VVV>> (viewed 30 May 2013); and Secretaría de Energía, *Clasificación de vehículos*, <www.energia.gob.mx> (viewed 30 May 2013).
350. “*Inventario de Emisiones de Hermosillo Sonora, 2005*,” included with the information provided by the Party (1 October 2012).
351. Cruz Campas et al., *supra* note 127.
352. It should be noted that TSP reference levels of 260 µg/m³ (24 hours) and 75 µg/m³ (annual) were established in former NOM-024-SSA1-1993 (abrogated by NOM-025-SSA1-1993).
353. *Idem*.
354. Santos Romo, *supra* note 127.
355. *Ibid.*, at 74.
356. *Ibid.*, at 74.
357. *Ibid.*, at 74-77.
358. *Ibid.*, at 74-75. The Secretariat includes this information in accordance with Article 15(4)(d), without opining on the merits or demerits of such a program.
359. Submission, *supra* note 5 at 7.
360. Response, *supra* note 14 at 63-64.
361. Response, *supra* note 14 at 44, 54, 47-48 and 62.
362. Municipio de Hermosillo, *supra* note 273.
363. *Idem*. *N.b.* The original information from the table above does not show the total number of companies with a COA filing requirement.
364. DGGCARETC document, *supra* note 189.
365. *Idem*.
366. COCEF-SIDUR, *Diagnóstico de Necesidades de Pavimentación por Imágenes Satelitales para Hermosillo, Sonora*, Comisión de Cooperación Ecológica Fronteriza and Secretaria de Infraestructura y Desarrollo Urbano, January 2011, <<http://goo.gl/5dgLF>> (viewed 15 March 2013) [Diagnóstico COCEF].
367. *Idem*.
368. *Idem*.
369. Photo: courtesy of the municipality of Hermosillo, in: Municipio de Hermosillo, *supra* note 273.
370. COCEF, *Diagnóstico...*, *supra* note 366.
371. *Ibid.*,
372. *Ibid.*,
373. Municipality of Hermosillo, *supra* note 273.
374. *Idem*.
375. *Idem*.
376. *Idem*.
377. *Idem*.
378. This is a decentralized entity of direct municipal public administration under the CGIDUE, which is an agency of the Hermosillo municipal government.
379. Article 3, Law 162: “Ley que crea un organismo público desconcentrado denominado Comisión de Ecología y Desarrollo Sustentable del Estado de Sonora,” *BOES*, 13 October 2005.
380. CEDES, *Transparencia*, <<http://www.cedes.gob.mx/>> (viewed 15 March 2013).
381. Municipio de Hermosillo, *supra* note 273.
382. *Idem*.

- 383. *Idem.*
- 384. Response, *supra* note 14 at 47-48, 59, 61.
- 385. Municipio de Hermosillo, *supra* note 273.
- 386. *Idem.*
- 387. *Ibid.*, at 24.
- 388. *Ibid.*, at 25.
- 389. Response, *supra* note 14 at 62.
- 390. Municipio de Hermosillo, *supra* note 273 at 21.
- 391. See *supra* section 8, “Actions undertaken by Mexico to effectively enforce LGEEPA Articles 7, section III, and 8, section III; RPCCA Article 4, section III; and LEEPAS Articles 111, sections V and VII, and 119, section II, paragraph b) in relation to establishing mandatory vehicle inspection programs, and the establishment and operation of vehicle inspection centers.”
- 392. See *supra* section 9, “Actions undertaken by Mexico to effectively enforce LGEEPA Article 7, section XIII; RPCCA Articles 16 and 41, section I; and LEEPAS Article 111, sections VI and IX, regarding the monitoring and control of pollutant emissions.”
- 393. See *supra* section 10, “Effective enforcement of RPCCA Article 13 regarding the implementation of criteria for reducing and controlling air pollutant emissions in the city of Hermosillo.”
- 394. See *supra* section 11, “Effective enforcement of LGEEPA Article 8, section XV regarding the launching of the Municipal Environmental Protection Program.”
- 395. See paragraphs 122-126 *supra*.
- 396. See paragraph 133 *supra*.
- 397. See paragraph 136 *supra*.
- 398. See paragraph 135 *supra*.
- 399. See paragraph 149 *supra*.
- 400. *Idem.*
- 401. *Idem.*
- 402. *Idem.*
- 403. See paragraph 150 *supra*.
- 404. See paragraph 167 *supra*.
- 405. See paragraph 171 *supra*.
- 406. See paragraph 172-173 *supra*.
- 407. See paragraphs 178-181 *supra*.
- 408. CEC Council, Draft Summary Record of the 20th Regular Council Session.

Appendices



APPENDIX 1

Council Resolution 12-04,
15 July 2012

COUNCIL RESOLUTION: 12:04

Instruction to the Secretariat of the Commission for Environmental Cooperation regarding the submission on enforcement matters SEM-05-003 asserting that Mexico is failing to effectively enforce Articles 7, sections III and XIII; and 8, sections III and XV, of the *Ley General del Equilibrio Ecológico y Protección al Ambiente* (LGEEPA); Article 4, section III, 13, 16 and 41, section I, of the *Reglamento de la Ley General del Equilibrio Ecológico y la Protección al Ambiente en Materia de Prevención y Control de la Contaminación de la Atmósfera* (RPCCA); and Articles 73, sections V, VI, VII and IX, and 85, section I, paragraph b), of the *Ley del Equilibrio Ecológico y la Protección al Ambiente para el Estado de Sonora* (LEES); and the *Normas Oficiales Mexicanas* (NOMs) NOM-020-SSA1-1993 through NOM-026-SSA1-1993

THE COUNCIL:

SUPPORTIVE of the process provided for in Articles 14 and 15 of the *North American Agreement on Environmental Cooperation* (NAAEC) regarding submissions on enforcement matters and the preparation of factual records;

CONSIDERING the submission filed by the *Academia Sonorense de Derechos Humanos, A.C.*, and Mr. Domingo Gutiérrez Mendivil on 26 August 2005; and the response provided by the Government of Mexico on 16 February 2006;

HAVING REVIEWED the 4 April 2007 notification submitted to Council by the Secretariat recommending the development of a factual record with respect to certain of the assertions made by the submitters;

MINDFUL that the purpose of the final factual record is to present facts pertinent to assertions that a Party is failing to effectively enforce its environmental law; and

FURTHER MINDFUL that Mexico has indicated that the *Normas Oficiales Mexicanas* issued by the Ministry of Health (NOM-020-SSA1-1993 through NOM-026-SSA1-1993), included in the submission and which establish maximum atmospheric pollution levels, do not meet the NAAEC Article 45(2)(a) definition of environmental law, as their primary purpose is not to protect the environment or prevent a danger to human life or health through the prevention, abatement or control of the release, discharge or emission of pollutants or environmental contaminants; and

HAVING BEEN INFORMED that equivalent *Normas Oficiales Mexicanas* issued by the Ministry of the Environment and Natural Resources that meet the definition of environmental law are relevant to the assertions made by the submitters;

HEREBY UNANIMOUSLY DECIDES:

TO INSTRUCT the Secretariat to prepare a factual record in accordance with Article 15(4) of the NAAEC and with the *Guidelines for Submissions on Enforcement Matters under Articles 14 and 15 of the North American Agreement on Environmental Cooperation*, regarding the assertions that Mexico is failing to effectively enforce its environmental legislation in connection with the following:

- a) the establishment of mandatory vehicle inspection programs and the establishment and operation of vehicle inspection centers, pursuant to Articles 7, section III, 8, section III, of the LGEEPA; 4, section III of the RPCCA; 73, sections V and VII, and 85, section I, paragraph B of the LEES¹; in the terms recommended by the Secretariat²;
- b) plans for verification, monitoring and control of the polluting emissions referred to in the applicable *Normas Oficiales Mexicanas* issued by the Ministry of the Environment and Natural Resources, pursuant to Articles 7, section XIII, of the LGEEPA; 16 and 41, section I, of the RPCCA; 73, sections VI and IX of the LEES³;
- c) specific actions to reduce and control emissions of pollutants to the atmosphere in the city of Hermosillo pursuant to Article 13 of the RPCCA in the terms recommended by the Secretariat⁴;
- d) the issuance of the Municipal Environmental Protection Program, pursuant to Article 8, section XV, of the LGEEPA, in the terms recommended by the Secretariat.⁵

TO DIRECT the Secretariat to provide the Council with its overall work plan for gathering the relevant facts, as well as to keep this Council informed of any future changes or adjustments to such plan; to provide the Council with the draft factual record and to provide the Parties with the opportunity to provide comments on the accuracy of the factual record in accordance with Article 15 (5) of the NAAEC.

APPROVED BY THE COUNCIL:

Dan Mc Dougall
Government of Canada

Enrique Lendo Fuentes
Government of the United Mexican States

Michelle DePass
Government of the United States

1 It is here clarified that the LEES was abrogated by the new *Ley del Equilibrio Ecológico y Protección al Ambiente del Estado de Sonora* (LEEPAS), published in the State Official Bulletin (BOES) on September 25, 2008. Notwithstanding, the substance of the Articles under which it is proposed that the Factual Record is prepared, remained untouched except for their numbering: Article 73, sections V and VII, of the LEES is now Article 111, sections V and VII, of the LEEPAS; and Article 85, section I, paragraph b), of the LEES is now Article 119, section II, paragraph b) of the LEEPAS.

2 Page 11-12 of the Recommendation to the Council.

3 Pursuant to Footnote 1, Article 73, sections VI and IX of the LEES is now Article 111, sections VI and IX, of the LEEPAS.

4 Page 15 of the Recommendation to the Council.

5 Page 15-16 of the Recommendation to the Council.

APPENDIX 2

Submission SEM-05-003 (*Environmental Pollution in Hermosillo II*)

In accordance with Articles 13, 14, and 15 of the North American Agreement on Environmental Cooperation (NAAEC), the Submitters solemnly assert that the information presented herein is true and correct:

Name and domicile of submitters:

ACADEMIA SONORENSE DE DERECHOS HUMANOS, A.C. and LIC. DOMINGO GUTIÉRREZ MENDÍVIL, domiciled for purposes of receiving notice at: Dr. Hoeffler No. 42-A, Colonia Centenario, 83260 Hermosillo, Sonora, Mexico, telephone: (662) 2171124; fax: (662) 2171034.

Purpose of the submission:

TO REQUEST THAT THE CEC CONDUCT A FORMAL INVESTIGATION TO VERIFY FAILURES BY MEXICO TO EFFECTIVELY ENFORCE ARTICLE 4 OF THE CONSTITUTION OF THE UNITED MEXICAN STATES; ARTICLES 5 PARAGRAPHS II, V, XVIII AND XIX, 7 PARAGRAPHS III, XII AND XIII, 8 PARAGRAPHS III, XI, XII AND XV, 10, 112 PARAGRAPHS II AND IV, AND 159 BIS 3 OF THE GENERAL ECOLOGICAL BALANCE AND ENVIRONMENTAL PROTECTION ACT (*LEY GENERAL DEL EQUILIBRIO ECOLÓGICO Y LA PROTECCIÓN AL AMBIENTE*—LGEEPA); ARTICLES 3 PARAGRAPH VII, 4 PARAGRAPH III, 13, 16, AND 41 OF THE REGULATION TO THE LGEEPA RESPECTING AIR POLLUTION PREVENTION AND CONTROL; ARTICLES 13(A) PARAGRAPH I AND (B) PARAGRAPH VI, AND ARTICLE 20 PARAGRAPH VII OF THE GENERAL HEALTH ACT (*LEY GENERAL DE SALUD*); ARTICLES 73, 75, 85 (B) PARAGRAPH I, 138, AND 139 OF THE STATE OF SONORA ECOLOGICAL BALANCE AND ENVIRONMENTAL PROTECTION ACT; ARTICLES 15 PARAGRAPH VI AND 18 PARAGRAPH VI OF THE STATE OF SONORA HEALTH ACT; ARTICLE 9 PARAGRAPH II OF THE STATE OF SONORA CIVIL PROTECTION ACT; MEXICAN OFFICIAL STANDARDS NOM-020-SSA1-1993, NOM-021-SSA1-1993, NOM-022-SSA1-1993, NOM-023-SSA1-1993, NOM-024-SSA1-1993, NOM-025-SSA1-1993, NOM-026-SSA1-1993, NOM-048-SSA1-1993, NOM-040-SEMARNAT-2002 (formerly NOM-040-ECOL-2002; NOM-CCAT-002-ECOL/1993), NOM-043-SEMARNAT-1993 (formerly NOM-043-ECOL-1993; NOM-CCAT-006-ECOL/1993), NOM-085-SEMARNAT-1994, NOM-121-SEMARNAT-1997 (formerly NOM-121-ECOL-1997), NOM-041-SEMARNAT-1999 (formerly NOM-041-ECOL-1999; NOM-CCAT-003-ECOL/1993), NOM-042-SEMARNAT-1999 (formerly NOM-042-ECOL-1999; NOM-CCAT-004-ECOL/1993), NOM-044-SEMARNAT-1993 (formerly NOM-044-ECOL-1993, NOM-CCAT-007-ECOL/1993), NOM-045-SEMARNAT-1996 (formerly NOM-045-ECOL-1996; NOM-CCAT-008-ECOL/1993), NOM-048-SEMARNAT-1993 (formerly NOM-048-ECOL-1993; NOM-CCAT-012-ECOL/1993), and NOM-050-SEMARNAT-1993 (formerly NOM-050-ECOL-1993; NOM-CCAT-014-ECOL/1993).

Case giving rise to the submission:

Environmental pollution in HERMOSILLO, SONORA.

Governmental bodies responsible for enforcement of the law:

Ministry of the Environment and Natural Resources (*Secretaría de Medio Ambiente y Recursos Naturales*—Semarnat); Federal Ministry of Health (*Secretaría de Salud*); Office of the Federal Attorney for Environmental Protection (*Procuraduría Federal de Protección al Ambiente*—Profepa); State of Sonora Executive Branch, Ministry of Urban Infrastructure and Environment, and Ministry of Health; Municipality of Hermosillo, Sonora.

I. PURPOSE

Academia Sonorense de Derechos Humanos, A.C. and Domingo Gutiérrez Mendivil (hereinafter, “the Submitters”) hereby request that the Secretariat of the Commission for Environmental Cooperation (hereinafter, “the Secretariat”), taking as a basis this citizen submission, obtain a response from the government of Mexico and obtain authorization from the CEC Council to prepare a factual record in accordance with Articles 14 and 15 of the North American Agreement on Environmental Cooperation (NAAEC). Simultaneously, the Submitters request that the Secretariat produce a report in accordance with NAAEC Article 13. The submission is made on two fundamental grounds: 1) Mexico is failing to effectively enforce its environmental law in relation to air pollution control in the city of Hermosillo, Sonora, as per NAAEC Articles 14 and 15, and 2) the matter in issue is related to the cooperative functions of the Commission for Environmental Cooperation (hereinafter, the “CEC”) under NAAEC Article 13.

II. FACTUAL BACKGROUND

1. **Semarnat is failing to:** a) enforce and promote compliance with Mexican official standards governing air pollution control in the state of Sonora and, in particular, in the municipality of Hermosillo; b) recommend to the government of the state of Sonora that it: 1. take measures to prevent and control air pollution on property and areas under state jurisdiction; 2. determine, in the state urban development plan, the zones in which polluting industrial facilities may be sited; 3. monitor and enforce, within the limits of its jurisdiction, the Mexican official standards governing air pollution control; 4. enact the relevant environmental technical standards; 5. establish and operate or, as applicable, authorize the establishment and operation of inspection centers for motor vehicles used in mass transit under concession from the state, in accordance with the environmental technical standards; 6. enact any regulations, circulars, and other generally applicable provisions that may be necessary to provide, within its administrative purview, for strict observance of the federal and state environmental law, and in particular those provisions governing air pollution prevention and control, and that it update the state environmental plan; c) recommend to the municipality of Hermosillo that it: 1. take air pollution prevention and control measures on property and in areas under municipal jurisdiction; 2. determine, in the municipal urban development plan, the zones in which polluting industrial facilities may be sited; 3. monitor and enforce, within the limits of its jurisdiction, the Mexican official standards governing air pollution control; 4. establish mandatory vehicle inspection programs, and establish and operate or, as applicable, authorize the establishment and operation of mandatory vehicle inspection centers, in accordance with the environmental technical standards; 5. create the municipal environment commission contemplated in Article 138 of the relevant local act; 6. enact any bylaws, circulars, and other generally applicable provisions that may be necessary to provide, within its administrative purview, for strict observance of federal and state environmental law, and in particular, the air pollution prevention and control bylaw, the municipal environment bylaw, the municipal environmental protection plan, the environmental contingency response plan, and an air quality management plan. **Profepa and the federal Ministry of Health are failing to:** enforce the Mexican official standards governing air pollution control in the state of Sonora and, in particular, in the municipality of Hermosillo; the Ministry of Health is failing to establish and keep up-to-date a national air quality information system containing data for the city of Hermosillo, and is failing to enforce Mexican Official Standard NOM-048-SSA1-1993, establishing the standardized method for assessment of health risks arising from environmental factors, since it has never conducted any assessment of the impact of the Cytrar hazardous waste facility on the population of Hermosillo. **The State of Sonora Executive Branch, Ministry of Urban Infrastructure and Environment, and Ministry of Health are failing to:** a) take measures to prevent and control air pollution on property and areas under state jurisdiction; b) determine, in the state urban development plan, the zones in which polluting industrial facilities may be sited; c) monitor and enforce, within the limits of their jurisdiction, the Mexican official standards governing air pollution control; d) enact the relevant environmental technical standards; e) establish and operate or, as applicable, authorize the establishment and operation of inspection centers for motor vehicles used in mass transit under concession from the state, in accordance with the environmental technical standards (which do not exist); f) enact any regulations, circulars, and other generally applicable provisions that may be necessary to provide, within their administrative purviews, for strict observance of state environmental law, and in particular those provisions governing air pollution prevention and control, and they have also ceased to update the state environmental plan; g) propose plans for the verification, monitoring, and control of the parameters set out in Mexican Official Standards NOM-020-SSA1-1993 to

NOM-026-SSA1-1993. **The municipality of Hermosillo, Sonora is failing to:** a) take measures to prevent and control air pollution on property and areas under municipal jurisdiction; b) determine, in the municipal urban development plan, the zones in which polluting industrial facilities may be sited; c) monitor and enforce, within the limits of its jurisdiction, the Mexican official standards governing air pollution control; d) establish mandatory vehicle inspection programs, and establish and operate or, as applicable, authorize the establishment and operation of mandatory motor vehicle inspection centers, in accordance with the environmental technical standards (which do not exist); e) create the municipal environment commission contemplated in Article 138 of the relevant local act; f) enact any regulations, circulars, and other generally applicable provisions that may be necessary to provide within its administrative purview for strict observance of state environmental law, and in particular the air pollution prevention and control bylaw, the municipal environment bylaw, the municipal environmental protection plan, the environmental contingency response plan, and an air quality management plan; g) reduce or control air pollutant emissions, whether from artificial or natural and from fixed or mobile sources, in order to guarantee satisfactory air quality for public well-being and environmental stability. **The State of Sonora Human Rights Commission, the National Human Rights Commission, the Second District Court of the State of Sonora, and the Third Collegiate Court of the Fifth Circuit are failing to:** properly apply the environment-related legal provisions in their decisions, as shall be explained below, although it is understood that such authorities may not be deemed to have responsibility for this matter, as the Secretariat may determine.

2. Among the legal actions aimed at remediation (cleanup) of the Cytrar toxic waste dump, on 3 December 1998 we requested of the municipality and of the municipal president of Hermosillo that they inform us of whether or not air quality monitoring is being done in the capital of the state of Sonora for the purpose of determining the negative environmental impact of emissions from the above-mentioned containment facility.¹
3. In response to the foregoing, the City Council (*Cabildo*) of Hermosillo, meeting in ordinary session on 25 February 1999, resolved to provide the following information: that the last studies to determine the concentration of total suspended particles (TSP) and particles less than 10 μ (PM-10) in the ambient air of the city of Hermosillo were done by the federal Ministry of the Environment, Natural Resources, and Fisheries (*Secretaría de Medio Ambiente, Recursos Naturales y Pesca*—Semarnap) in 1995; that the air quality records possessed by the municipality are those deriving from sampling performed 1 December 1997 to 30 November 1998 in the environs of what is today the sanitary landfill, to determine the impact in that area of particles issuing from the operation thereof, and that since the beginning of that municipal administration, the federal government, acting by the National Institute of Ecology (*Instituto Nacional de Ecología*—INE), **has claimed to be decentralizing air quality monitoring in urban areas, involving the municipal governments in such a way that they take charge of the administration of such programs.**²
4. In a statement to the media, the director of urban development of the commune, Fernando Landgrave, acknowledged that no air pollution records whatsoever were being kept because they did not have the necessary equipment. He also said that “an attempt will be made to include in the expense budget for the next year an allocation of 100,000 pesos for making this equipment operational.” (*Cambio*, 5 December 1998). However, Municipal President Jorge Valencia stated that it was not so important to repair the monitoring equipment; rather, “what is important is to obtain money to pave and improve the city.” He added that there is no need to measure air quality to realize that everybody is wheezing from bronchial disease and asthma caused by excessive dust pollution (*Cambio*, 8 December 1998). This latter statement reveals that Mr. Valencia could not even conceive that the atmosphere of the city of Hermosillo contained and still contains, in what he calls “dust,” compounds that are extremely hazardous to human health, including ozone, carbon monoxide, sulfur dioxide, nitrogen dioxide, and lead. These enter the respiratory tract in the form of total suspended particles (primarily particles less than 10 μ) generated by fixed and mobile sources such as dye shops, auto repair shops, assembly plants (*maquiladoras*), cement plants, and motor vehicles. Now, a power plant must be added to this list.³
5. It is powerfully eloquent that, according to the official version, air quality monitoring “just happened to” cease during the same period in which larger quantities of contaminated slag were coming in to Cytrar. Even stranger is the information published on the matter if one considers that in early 1998, then deputy official of Semarnap César Catalán Martínez stated that “the local municipality has now earmarked a special budget for air quality monitoring and improvement” (*El Imparcial*, 14 and 18 January 1998).

6. Investigations into the Cytrar toxic waste dump case have pointed up numerous failures to enforce as well as the existence of outdated legal instruments. Thus, as mentioned previously, there is no up-to-date state environmental plan, nor has the municipality of Hermosillo enacted an environment bylaw, in contrast with other municipalities of Sonora which do have such an instrument; much less does it have an air quality management plan, and it has not enacted an environmental contingency response plan to deal with episodes like the thermal inversion that took place on 9 December 1998, a phenomenon that has recurred several times since.
7. As a consequence of the lack of air quality monitoring in Hermosillo, the Sonora Ministry of Health has refrained from conducting epidemiological studies to determine the severity of the negative impact of air pollution on the health of Hermosillo residents.
8. Ultimately, there is no money for air quality monitoring in Hermosillo, with the conclusion that the people “are wheezing... from excessive dust pollution,” yet the municipality is required to conduct such monitoring under LGEEPA Article 8 paragraphs III and XII. Furthermore, it should be borne in mind that Mexican Official Standards NOM-020-SSA1-1993 to NOM-026-SSA1-1993, setting criteria for the assessment of ambient air quality with respect to ozone, carbon monoxide, sulfur dioxide, nitrogen dioxide, TSP, PM-10, and lead, published in the Official Gazette of the Federation (*Diario Oficial de la Federación*—DOF) on 23 December 1994, provide that: “Within 180 calendar days of publication... the governments of the federated entities shall put forward plans for verification, monitoring, and control of the parameters established.” This means that the government of the state of Sonora had to comply with this provision no later than mid-1995, but has not done so to date.
9. Similarly, the Mexican official standards originally known as NOM-CCAM-001-ECOL/1993 to NOM-CCAM-005-ECOL/1993, establishing measurement methods for determination of the concentration of these pollutants, as well as the Mexican official standards originally known as NOM-CCAT-001-ECOL/1993 to NOM-CCAT-014-ECOL/1993, setting limits on air emissions for various pollutants, published in the DOF on 18–22 October 1993, hold Profepa, the state government, and the municipality responsible for their enforcement, but these entities have done nothing to comply with these provisions.
10. In response to the written request we made to him on 14 January 1999 to inform us as to whether air quality monitoring equipment was operational in Hermosillo and as to the municipality’s compliance with the air pollution prevention and control measures it is obligated to implement, the Semarnap official in Sonora at that time, Juan Carlos Ruiz Rubio, in file no. DS-UAJ-095/99 of 26 February 1999, stated as follows, among other matters:

In regard to your request in point II, please note that **said air quality monitoring equipment is not operational since those funds are included within the decentralization process currently taking place from this ministry to the municipalities.**

In regard to the information you request in point III, consisting of a detailed report on compliance by the municipality with the air pollution prevention and control measures it is empowered to take, in this regard **it should be clarified that this authority is not competent to verify compliance with the legal provisions which, in accordance with its powers, it has transferred to the municipality,** and therefore that information must be requested from that order of government.

11. On 29 April 1999, a complaint was filed against the municipality of Hermosillo, Sonora with the State Human Rights Commission (*Comisión Estatal de Derechos Humanos*) for its failure to issue the municipal environmental protection plan and the municipal environment bylaw.
12. In its file no. 0309/99 of 6 May 1999 further to file no. CEDH/I/22/1/197/99, the First Inspector General (*Visitador General*) of the State Human Rights Commission notified us that the complaint had been dismissed.
13. On 13 May 1999, an administrative appeal (*recurso de impugnación*) was filed against the dismissal.⁴

14. In file no. 16614⁵ of 4 June 1999 further to file CNDH/121/99/SON/I00159.000, the Coordinator General of the Office of the President of the National Human Rights Commission, Adolfo Hernández Figueroa, gave notice that the appeal was dismissed, presenting the grounds for dismissal as transcribed below:

In effect, as may be discerned from Title Six, Chapter One of the State of Sonora Ecological Balance and Environmental Protection Act, the enactment of the instruments to which you refer is contemplated as a regulatory power of the municipalities, a power which, given its nature, **translates into a discretionary act in so enacting and does not give rise to an obligation to do so within a given period of time, something which is not specifically set out in said Act, for as is well known, provisions granting powers do not impose obligations.**

From the foregoing, it may be inferred that the authority's inaction as regards the enactment of a law cannot produce legal effects vis-à-vis anyone and, consequently, affect their human rights in any legal sense.

15. On 12 July 1999, indirect amparo no. 620/1999 was filed against this determination. The amparo was heard by the Second District Court of the State of Sonora. The Court dismissed the proceeding in a decision handed down on 13 December 1999.⁶ The fourth section of the decision by Rosa Eugenia Gómez Tello Fosado reads in substance as follows:

"Moreover, Transitory Article 2 of the General Ecological Balance and Environmental Protection Act provides:

"...Until such time as the local legislatures enact the laws, and the municipalities the ordinances, bylaws, and policing and good government provisions (*bandos de policía y buen gobierno*) governing the matters which, according to the provisions of this act, correspond to state and municipal jurisdiction, the Federation is responsible for enforcing this law in the local context, coordinating its actions for that purpose with the state authorities and, with their participation, with the relevant municipalities, as applicable."

"Transitory Article 4 of the State of Sonora Ecological Balance and Environmental Protection Act provides:

"Until such time as the incumbent of the Executive Branch and the municipalities of the entity enact the regulations, bylaws, and other generally applicable provisions contemplated in this Act, the regulations to the General Ecological Balance and Environmental Protection Act shall apply, as relevant"

From the foregoing provisions it may be inferred that if the municipalities do not enact the ordinances, bylaws, and policing and good government provisions to regulate environmental protection, the Federation is responsible for enforcing the General Ecological Balance and Environmental Protection Act in the local context.

"Therefore, it must be concluded that the failure by the municipality of Hermosillo to issue the municipal environmental protection plan and to enact the municipal environment bylaw does not affect the complainant's legal interest, for the General Ecological Balance and Environmental Protection Act contains necessary and sufficient environmental protection measures to guarantee his right to development and well-being, since this provision applies in the event where the states or municipalities have not enacted laws governing this matter..."

16. An appeal (*recurso de revisión*) was filed against the decision in indirect *amparo* no. 620/1999 on 18 January 2000.⁷
17. On 31 January 2001, the Third Collegiate Court of the Fifth Circuit, composed of judges Epicteto García Báez, Gustavo Aquiles Gasca, and Elsa del Carmen Navarrete Hinojosa, in decision 223/2000, upheld the lower court's decision.⁸
18. In another connection, on 6 May 1999, a complaint under file no. CEDH/II/22/1/210/99 was filed with the State Human Rights Commission against the municipality of Hermosillo, Sonora for failure to conduct air quality monitoring and control in that city and to issue an environmental contingency response plan as well as an air quality management plan for Hermosillo.⁹

19. In a document of 16 July 1999, we responded to and took issue with aspects of the response issued by the Municipal President of Hermosillo in the above cited file **and expanded our initial complaint to include the government of the state of Sonora as a responsible authority.**¹⁰
20. The fact is that in a decision of 11 August 2000, the Second Inspector General of the State Human Rights Commission of Sonora, Gabriel García Correa, definitively dismissed the matter in file no. CEDH/II/22/1/210/99. It should be pointed out that the expansion of the complaint to include the government of the state of Sonora was never processed, on the grounds that the requirement set out in decisions of 10 August 1999 and 18 January 2000 was never met, yet notice of those decisions was given to a person who was never authorized by us to receive notice. In addition, the arguments wielded in dismissing the complaint never contradicted or raised questions as to the factual correctness of the irregularities denounced in the initial complaint. Subsequently, in a document filed on 7 June 2001, the persistence of the violations mentioned in the complaint was reported, but despite this the file was never reopened.
21. From all of the foregoing it may be seen that, according to the Semarnap official in Sonora, in regard to air pollution prevention and control, Semarnap is **“not competent to verify compliance with the legal provisions which, in accordance with its powers, it has transferred to the municipality,”** when the exact opposite is established, among other things, by LGEEPA Article 5 paragraphs V and XIX; that according to the Coordinator General of the Office of the President of the National Human Rights Commission, the enactment of the municipal environmental protection plan and the municipal environment bylaw by the municipality of Hermosillo **“is contemplated as a regulatory power of the municipalities, a power which, given its nature, translates into a discretionary act in so enacting and does not give rise to an obligation to do so within a given period of time, something which is not specifically set out in said Act, for as is well known, provisions granting powers do not impose obligations,”** yet simple common sense tells us that the legal provisions necessary to prevent and control air pollution cannot be a matter left to the utter whim of the authority, besides the fact that, for example, Article 73 paragraph I of the State of Sonora Ecological Balance and Environmental Protection Act is unequivocal and leaves no doubt that both the municipality of Hermosillo and the state government are obligated to take “actions to prevent and control air pollution on property and areas under state or municipal jurisdiction”; that in the opinion of then judge of the Second District Court of the State of Sonora, **“the failure by the municipality of Hermosillo to issue the municipal environmental protection plan and to enact the municipal environment bylaw does not affect the complainant’s legal interest, for the General Ecological Balance and Environmental Protection Act contains necessary and sufficient environmental protection measures to guarantee his right to development and well-being, since this provision applies in the event where the states or municipalities have not enacted laws governing this matter...”** whereas it is the case that, as noted, the Semarnap officer in Sonora acknowledged that **“said air quality monitoring equipment is not operational since those funds are included within the decentralization process currently taking place from this ministry to the municipalities,”** not to mention that the aforementioned municipal plan and bylaw must be suited to the particular characteristics of the city of Hermosillo, which are obviously not contemplated in the General Act in question.
23. The authorities identified as responsible are not taking the measures necessary to prevent and control environmental pollution in Hermosillo, Sonora, and are thereby failing to enforce the legal provisions indicated in the submission.
24. In accordance with Article 14(1)(c) and (e) of the North American Agreement on Environmental Cooperation, be it noted that **the matter raised in the submission has been communicated in writing to the competent authorities of the United Mexican States,** as discussed below.
 - a) On 8 July 2004, through the Federal Access to Information Institute, copies of documents giving evidence of measures taken to enforce Mexican Official Standard NOM-048-SSA1-1993 in Hermosillo, Sonora were requested from the federal Ministry of Health.
 - b) On 6 September 2004 a response was received from the Ministry of Health to the effect that the matter was not within its purview, according to the Coordination Agreement for Decentralization of State of Sonora Health Services, published in the DOF on 29 July 1997.

- c) On 8 September 2004, the Governor of the State of Sonora, the state Minister of Urban Infrastructure and Environment, and the municipality of Hermosillo were notified that they were failing to effectively enforce the aspects of their environmental law set out in the submission. A similar letter was sent on 9 September 2004 to the state Secretary of Health and the Semarnat officer in the state of Sonora. The same notice was sent on 13 September 2004 to the Profepa officer in the State of Sonora.
- d) Of these authorities, the Governor of the State of Sonora responded with file no. 03.02-4067/04 of 14 September 2004, only to relay our letter to various state officials. As to the reply from the Minister of Urban Infrastructure and Environment in file 10-1978-04 of 11 November 2004, it partially contradicts the provisions indicated in this submission as being violated through lack of effective enforcement (in maintaining that he is not responsible for taking measures that the law requires him to take) and, as well, he refrains from providing documentary evidence that the environmental law asserted to be infringed is in fact being enforced, on the pretext that the letter did not specify which documentation was requested, yet it is clear from the text of the letter what evidence we wanted to obtain, all of which gives rise to a violation of the right to environmental information contemplated in LGEEPA Article 159 Bis 3. Similarly, the correspondence from the Director of the Health Regulatory Branch (*Dirección de Regulación y Fomento Sanitario*) of the State of Sonora Ministry of Health, contained in files SSS-DGRFS-2004-1920 and SSS-DGRFS-2004-1945 of 28 September and 8 October 2004, respectively, contradicts the provisions presented in the submission as being violated through lack of effective enforcement (in asserting that she is not responsible for taking the measures that the law expressly obligates her to take), as regards the acknowledged environment-related powers of the State of Sonora Ministry of Health. Finally, the municipality of Hermosillo gave no reply to our request.
25. The failures to enforce the provisions of Article 4 of the Mexican Constitution, the General Health Act, the State of Sonora Health Act, and the State of Sonora Civil Protection Act are eligible for NAAEC Article 14 review **since these provisions concern environmental matters**. However, if this argument should be found invalid, then the Submitters accept the exclusion of these legal provisions from further consideration in this matter.
 26. The failures to enforce discussed in this submission were also the subject of indirect amparo no. 894/2004 heard in the First District Court of the State of Sonora.
 27. On 1 February 2005, the First District Judge in the State of Sonora ruled on indirect amparo no. 894/2004, dismissing the appeal of the acts and omissions that form the basis of this citizen submission.
 28. On 23 June 2005 the Fifth Collegiate Court of the Fifth Circuit, in amparo appeal no. 10/2005, upheld the decision named in the preceding paragraph.
 29. And so the available domestic remedies were exhausted without the irregularities denounced in this submission being in any way addressed.
 30. In the end there can be no doubt as to the harm caused to all the residents of Hermosillo, Sonora by the virtual absence of air pollution prevention and control measures.

III. ARGUMENT

The authorities identified as responsible are failing to effectively enforce practically every legal provision governing air pollution prevention and control in the municipality of Hermosillo, Sonora, as well as those relating to the right to environmental information, and this includes all of those provisions recited separately herein.¹¹

B. IN ACCORDANCE WITH NAAEC ARTICLE 13:

1. THE CEC SECRETARIAT SHOULD PRODUCE A REPORT ON THE CASE OF **ENVIRONMENTAL POLLUTION IN HERMOSILLO** SINCE IT RELATES TO A MATTER LINKED TO THE COOPERATIVE FUNCTIONS OF THE NAAEC.

NAAEC Article 13 empowers the Secretariat to prepare an evaluation report on the case of **ENVIRONMENTAL POLLUTION IN HERMOSILLO** as a matter related to the cooperative functions of the Agreement. Article 13 allows the Secretariat to produce a report “on any matter within the scope of the annual program,” based on relevant scientific, technical, or other information presented by non-governmental organizations and persons. Under this article, the report is not required to be based on a claim of failures by a Party to effectively enforce its environmental laws and regulations.

The case of **ENVIRONMENTAL POLLUTION IN HERMOSILLO** merits the production of such a report by the Secretariat in that it falls within three of its main strategic programs: one concerning the furthering of our understanding of the relationships between environment, the economy, and trade; another concerning the Parties’ obligation to effectively enforce their environmental laws and regulations; and a third emphasizing the importance of cooperative initiatives aiming to prevent and correct the adverse human health and ecosystem impacts of pollution in North America.

In the first place, the Secretariat can prepare a report to determine levels of pollution caused by lack of air quality control, the associated environmental and health risks, the current impact on Hermosillo and, fundamentally, a report considering the alternatives that can correct the irregularities committed. In the second place, a Secretariat report could make proposals as to how to support Mexico in a way that ensures that its enforcement of its environmental laws and regulations is effective.

IV. CONCLUSION

MEXICO IS FAILING TO EFFECTIVELY ENFORCE ARTICLE 4 OF THE CONSTITUTION OF THE UNITED MEXICAN STATES; ARTICLES 5 PARAGRAPHS II, V, XVIII AND XIX, 7 PARAGRAPHS III, XII AND XIII, 8 PARAGRAPHS III, XI, XII AND XV, 10, 112 PARAGRAPHS II AND IV, AND 159 BIS 3 OF THE LGEEPA; ARTICLES 3 PARAGRAPH VII, 4 PARAGRAPH III, 13, 16, AND 41 OF THE REGULATION TO THE LGEEPA RESPECTING AIR POLLUTION PREVENTION AND CONTROL; ARTICLES 13(A) PARAGRAPH I AND (B) PARAGRAPH VI, AND ARTICLE 20 PARAGRAPH VII OF THE GENERAL HEALTH ACT; ARTICLES 73, 75, 85 (B) PARAGRAPH I, 138, AND 139 OF THE STATE OF SONORA ECOLOGICAL BALANCE AND ENVIRONMENTAL PROTECTION ACT; ARTICLES 15 PARAGRAPH VI AND 18 PARAGRAPH VI OF THE STATE OF SONORA HEALTH ACT; ARTICLE 9 PARAGRAPH II OF THE STATE OF SONORA CIVIL PROTECTION ACT; AND MEXICAN OFFICIAL STANDARDS NOM-020-SSA1-1993, NOM-021-SSA1-1993, NOM-022-SSA1-1993, NOM-023-SSA1-1993, NOM-024-SSA1-1993, NOM-025-SSA1-1993, NOM-026-SSA1-1993, NOM-048-SSA1-1993, NOM-040-SEMARNAT-2002 (formerly NOM-040-ECOL-2002; NOM-CCAT-002-ECOL/1993), NOM-043-SEMARNAT-1993 (formerly NOM-043-ECOL-1993; NOM-CCAT-006-ECOL/1993), NOM 085-SEMARNAT-1994, NOM-121-SEMARNAT-1997 (formerly NOM-121-ECOL-1997), NOM-041-SEMARNAT-1999 (formerly NOM-041-ECOL-1999; NOM-CCAT-003-ECOL/1993), NOM-042-SEMARNAT-1999 (formerly NOM-042-ECOL-1999; NOM-CCAT-004-ECOL/1993), NOM-044-SEMARNAT-1993 (formerly NOM-044-ECOL-1993, NOM-CCAT-007-ECOL/1993), NOM-045-SEMARNAT-1996 (formerly NOM-045-ECOL-1996; NOM-CCAT-008-ECOL/1993), NOM-048-SEMARNAT-1993 (formerly NOM-048-ECOL-1993; NOM-CCAT-012-ECOL/1993), and NOM-050-SEMARNAT-1993 (formerly NOM-050-ECOL-1993; NOM-CCAT-014-ECOL/1993), AS EXPLAINED IN THE FACTUAL BACKGROUND SECTION.

The Secretariat also has the power to produce a report on the case of **ENVIRONMENTAL POLLUTION IN HERMOSILLO** under NAAEC Article 13 since it is a matter relating to the cooperative functions of the Agreement.

Date: 26 August 2005

In memory of Hildegardo Taddei, Rodolfo Acuña, and Panchito Padilla

Sincerely,

Domingo Gutiérrez Mendivil
President
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V. EVIDENCE DOCUMENTS

The original text of the *Documentos de prueba*, including the 11 endnotes, will be found in the original Spanish version of the submission. See note 5 of this factual record, *supra*.

APPENDIX 3

Updated Overall Work Plan for the Preparation of a Factual Record on Submission SEM-05-003

Secretariat of the Commission for Environmental Cooperation

Overall Plan to Develop a Factual Record

Submitters:	Academia Sonorense de Derechos Humanos; and, Domingo Gutiérrez Mendivil
Party:	United Mexican States
Date of the original plan:	9 August 2012
Date of the updated plan:	10 June 2013
Submission no.:	SEM-05-003 (<i>Environmental Pollution in Hermosillo II</i>)

Background

Articles 14 and 15 of the North American Agreement on Environmental Cooperation (the “NAAEC” or the “Agreement”) provide for a process allowing any person or nongovernmental organization to file a submission asserting that a Party to the NAAEC is failing to effectively enforce its environmental law. The Secretariat of the Commission for Environmental Cooperation (the “Secretariat” of the “CEC”) initially considers submissions to determine whether they meet the criteria contained in NAAEC Article 14(1). When the Secretariat finds that a submission meets these criteria, it then determines, pursuant to the provisions of NAAEC Article 14(2), whether the submission merits a response from the concerned Party. In light of any response from the concerned Party, and in accordance with NAAEC, the Secretariat may notify the Council that the matter warrants the development of a factual record, providing its reasons for such recommendation in accordance with NAAEC Article 15(1). Where the Secretariat decides to the contrary, or where certain circumstances obtain, it then proceeds no further with the submission.¹

On 30 August 2005, the Academia Sonorense de Derechos Humanos and Domingo Gutiérrez Mendivil (the “Submitters”) filed with the Secretariat a submission pursuant to NAAEC Article 14(1).

The Submitters assert that Mexico is failing to effectively enforce its environmental law with respect to air pollution control in the city of Hermosillo, Sonora.² The Submitters assert that the authorities identified in the submission are not taking the actions necessary to prevent and control environmental pollution in Hermosillo, in violation of the legal provisions cited in the submission. The Submitters assert that Mexican authorities “have failed to effectively enforce practically all legal provisions governing air pollution prevention and control” applicable to Hermosillo.³

Specifically, the Submitters state that the authorities of the three levels of government—federal, state and municipal—are failing to effectively enforce provisions of the Political Constitution of the United Mexican States (*Constitución Política de los Estados Unidos Mexicanos*), the General Ecological Balance and Environmental Protection Act (*Ley General del Equilibrio Ecológico y la Protección al Ambiente*—LGEEPA), the Regulation to the LGEEPA Respecting Air Pollution Prevention and Control (*Reglamento de la LGEEPA en Materia de Prevención y Control de la Contaminación de la*

1 Full details regarding the various stages of the process as well as previous Secretariat determinations and factual records can be found on the CEC website at <<http://www.cec.org/citizen/>>.

2 SEM-05-003 (*Environmental Pollution in Hermosillo II*) Submission pursuant to Article 14(1) (26 August 2005), p. 5. Note: page numbers of the submission referred to in this plan correspond to the original Spanish version of the submission.

3 *Ibid.*, p. 15.

Atmósfera—RPCCA), the Federal General Health Act (*Ley General de Salud*), the Sonora State Ecological Balance and Environmental Protection Act (*Ley del Equilibrio Ecológico y la Protección al Ambiente para el estado de Sonora*—LEES), the Sonora State Health Act (*Ley de Salud para el estado de Sonora*), the Sonora State Emergency Preparedness Act (*Ley de Protección Civil para el estado de Sonora*), and various Mexican Official Standards (*Normas Oficiales Mexicanas*—NOM) applicable to air pollution.⁴

On 9 November 2005, the Secretariat determined that the submission met the requirements of Article 14(1) and found that, pursuant to the criteria of Article 14(2), the submission warranted requesting a response from Mexico.⁵

On 16 February 2006, Mexico filed its response in accordance with NAAEC Article 14(3). Mexico described air pollution-related actions taken by the federal, state and municipal governments, including street paving;⁶ inspection of establishments under federal jurisdiction; recording and control of emissions from fixed sources under federal jurisdiction by means of the Annual Operating Report (*Cédula de Operación Anual*—COA); operating licenses and the Single Environmental License (*Licencia Ambiental Única*);⁷ inspection and enforcement actions;⁸ and institutional coordination programs.⁹

On 4 April 2007, the Secretariat recommended the development of a factual record with respect to submission SEM-05-003.¹⁰ The Secretariat considered that the submission and Mexico's response, taken together, left open central questions regarding some assertions with respect to air pollution in Hermosillo, Mexico including LGEEPA Articles 7, paragraphs III and XIII, and 8, paragraphs III and XV; RPCCA Articles 4, paragraph III, 16, 41, paragraph I, and 13; LEES Articles 73, paragraphs V, VI, VII, and IX, and 85, paragraph B, subparagraph I,¹¹ as well as some of the Mexican Official Standards cited in the submission.¹²

4 Official Mexican Standards cited in the Submission were: NOM-020-SSA1-1993, NOM-021-SSA1-1993, NOM-022-SSA1-1993, NOM-023-SSA1-1993, NOM-024-SSA1-1993, NOM-025-SSA1-1993, NOM-026-SSA1-1993, NOM-048-SSA1-1993, NOM-040-SEMARNAT-2002, NOM-043-SEMARNAT-1993, NOM-085-SEMARNAT-1994, NOM-121-SEMARNAT-1997, NOM-041-SEMARNAT-1999, NOM-042-SEMARNAT-1999, NOM-044-SEMARNAT-1993, NOM-045-SEMARNAT-1996, NOM-048-SEMARNAT-1993, and NOM-050-SEMARNAT-1993.

5 N.B. The Secretariat concluded the following provisions fall within the meaning of "environmental law" as defined in NAAEC Article 45(2)(a): LGEEPA Articles 5, paragraphs II, V, XVIII, and XIX; 7, paragraphs III, XII, and XIII; 8, paragraphs III, XI, XII, and XV; 10, and 112, paragraphs II and IV; RPCCA Articles 3, paragraph VII; 4, paragraph III; 13, 16, and 41; LEES Articles 73, 75, 85, paragraph B, subparagraph I, 138, and 139 and the Official Mexican Standards cited in the Submission. See SEM-05-003 (*Environmental Pollution in Hermosillo II*) Determination pursuant to Article 14(1)(2) (9 November 2005), pp. 7-10.

6 SEM-05-003 (*Environmental Pollution in Hermosillo II*) (Response pursuant to Article 14(1)(2) (9 November 2005), p. 45.

7 *Ibid.*, pp. 40-7.

8 *Ibid.*, pp. 43, 45, 47-8.

9 *Ibid.*, p. 45.

10 SEM-05-003 (*Environmental Pollution in Hermosillo*) Notification pursuant to Article 15(1) (4 April 2007).

11 Council Resolution 12-04 clarified that the LEES was abrogated by the new *Ley del Equilibrio Ecológico y Protección al Ambiente del Estado de Sonora* (Sonora State Ecological Balance and Environmental Protection Act—LEEPAS), published in the State Official Bulletin (BOES) on September 25, 2008. Therefore, Article 73, sections V and VII, of the LEES is now Article 111, sections V and VII, of the LEEPAS; Article 73, sections VI and IX of the LEES is now Article 111, sections VI and IX, of the LEEPAS, and Article 85, section I, paragraph b), of the LEES is now Article 119, section II, paragraph b) of the LEEPAS.

12 NOM-020-SSA1-1993: *Environmental health. Criterion for assessment of ambient air quality with respect to ozone (O₃). Legal limit for ozone (O₃) concentration in ambient air as a public health protection measure*; NOM-021-SSA1-1993: *Environmental health. Criterion for assessment of ambient air quality with respect to carbon monoxide (CO). Permissible value for carbon monoxide (CO) concentration in ambient air as a public health protection measure*; NOM-022-SSA1-1993: *Environmental health. Criterion for assessment of ambient air quality with respect to sulfur dioxide (SO₂). Legal limit for sulfur dioxide (SO₂) concentration in ambient air as a public health protection measure*; NOM-023-SSA1-1993: *Environmental health. Criterion for assessment of ambient air quality with respect to nitrogen dioxide (NO₂). Legal limit for nitrogen dioxide (NO₂) concentration in ambient air as a public health protection measure*; NOM-024-SSA1-1993: *Environmental health. Criterion for assessment of ambient air quality with respect to total suspended particles (TSP). Permissible value for total suspended particle (TSP) concentration in ambient air as a public health protection measure*; NOM-025-SSA1-1993: *Environmental health. Criterion for assessment of ambient air quality with respect to particles of diameter less than 10 microns (PM₁₀). Permissible value for particles of diameter less than 10 microns (PM₁₀) in ambient air as a public health protection measure*; NOM-026-SSA1-1993: *Environmental health. Criterion for assessment of ambient air quality with respect to lead (Pb). Legal limit for lead (Pb) concentration in ambient air as a public health protection measure*.

On 15 June 2012, in Council Resolution 12-04, the Council unanimously decided to instruct the Secretariat to prepare a factual record in accordance with Article 15(2) of the NAAEC with regard to alleged failures of Mexico to effectively enforce its environmental law. The Council directed the Secretariat to provide the Parties with an overall plan for gathering relevant facts, as well as to keep the Council informed of any future changes or adjustments to such plan. In following the Secretariat sets out the overall plan of work for developing the draft factual record.

Overall Scope of the Fact Finding

As per Council Resolution 12-04, the Secretariat plans to develop a factual record in connection with the following:

- a) Facts surrounding Mexico's alleged failures to establish a mandatory vehicle inspection program and the establishment and operation of vehicle inspection centers, pursuant to LGEEPA Articles 7, section III and, 8, section III; RPCCA Article 4, section III; and Articles 111, sections V and VII, and 119, section II, paragraph b) of the *Ley del Equilibrio Ecológico y Protección al Ambiente del Estado de Sonora*, Sonora State Ecological Balance and Environmental Protection Act—LEEPAS;¹³
- b) Facts surrounding Mexico's alleged failures to issue plans for verification, monitoring and control of the polluting emissions referred to in the applicable NOMs issued by the Ministry of the Environment and Natural Resources (*Secretaría de Medio Ambiente y Recursos Naturales*—Semarnat), pursuant to LGEEPA Articles 7, section XIII; RPCCA Article 16 and 41, section I; LEEPAS Article 111, sections VI and IX;¹⁴
- c) Facts surrounding Mexico's alleged failures regarding specific actions to reduce and control emissions of pollutants to the atmosphere in the city of Hermosillo pursuant to RPCCA Article 13; and,
- d) Facts surrounding Mexico's alleged failures regarding the Municipal Environmental Protection Program, pursuant to LGEEPA Article 8, section XV.

Overall Plan

This time estimate for developing a draft factual record is consistent with timeframes established in the *Guidelines for Submissions on Enforcement Matters under Articles 14 and 15 of the North American Agreement on Environmental Cooperation* (the "Guidelines"), effective as of 11 July 2012.¹⁵

The overall plan is as follows:

- Through public notices or direct requests for information, the Secretariat will invite the Submitters; JPAC; community members; the general public; and local, state/provincial and federal government officials to submit information relevant to the scope of fact-finding outlined above. The Secretariat will explain the scope of the fact finding, providing sufficient information to enable interested nongovernmental organizations or persons or the JPAC to provide relevant information to the Secretariat in accordance with NAAEC Article 15(4) [**This will take place in August 2012**].
- The Secretariat will request information relevant to the factual record from Mexican federal, state and municipal government authorities, as appropriate, and shall consider any information furnished by a Party as per NAAEC Articles 15(4) and 21(1)(a) [**This will take place in August 2012 through February 2013**].
- The Secretariat will gather relevant technical, scientific or other information that is publicly available, including from existing databases, public files, information centers, libraries, research centers and academic institutions as per NAAEC Article 15(4)(a) [**This will take place August-September 2012**].

¹³ See *supra* note 11.

¹⁴ *Idem*.

¹⁵ The *Guidelines for Submissions on Enforcement Matters under Articles 14 and 15 of the North American Agreement on Environmental Cooperation* (the "Guidelines") were recently revised by the NAAEC Parties. Consistent with new Guideline 19.5, the Secretariat aims to conclude preparation of the draft factual record within 180 working days from the date Council Resolution 12-04 was issued.

- The Secretariat, as appropriate, will collect relevant technical, scientific or other information for the preparation of the factual record, from interested nongovernmental organizations or persons, the JPAC or independent experts as per NAAEC Article 15(4)(b) and (c) [**This will take place in September 2012**].
- The Secretariat, as appropriate, will develop through independent experts, technical, scientific or other information relevant to the factual record as per NAAEC Article 15(4)(d) [**This will take place September-December 2012**].
- In accordance with Article 15(4), the Secretariat will prepare the draft factual record based on the above detailed information gathered and developed [**This will take place October 2012-March 2013**].
- The Secretariat will translate and finalize editing of the draft factual record into the other official languages of the CEC [**This will take place in June and July 2013**].
- The Secretariat will submit a draft factual record to Council, in accordance with Article 15(5) [**This will take place in August 2013**]. Any Party may provide comments on the accuracy of the draft within 45 days thereafter, in accordance with Article 15(5) [**This will take place between September or October 2013**]. As provided by Article 15(6), the Secretariat will incorporate, as appropriate, any such comments in the final factual record and submit it to Council [**This will take place on December 2013**]. The Council may, by a two-thirds vote, make the final factual record publicly available, normally within 60 days following its submission, in accordance with NAAEC Article 15(7) [**This will take place in March 2014**].

Additional Information

The submission, the Party's response, the Secretariat's determinations, the Council Resolution, and a summary of the foregoing are available in the Registry of Submissions on the CEC home page <www.cec.org>, via email at <sem@cec.org> or upon written request to the Secretariat at the following address:

Secretariat of the CEC
 Submissions on Enforcement Matters Unit
 393 St-Jacques St. West, Suite 200
 Montreal, QC H2Y 1N9
 Canada

APPENDIX 4

**Information request in which the scope of the information to be included
in the factual record is explained and examples of relevant information are given**

**REQUEST FOR INFORMATION
for preparation of a factual record in regard to submission SEM-05-003
(*Environmental Pollution in Hermosillo II*)
August 2012**

I. Factual record development process

The Commission for Environmental Cooperation (CEC) is an international organization created by the North American Agreement on Environmental Cooperation (the “NAAEC” or the “Agreement”), signed by Canada, the United States, and Mexico in 1994. The CEC operates through three bodies: a Council composed of the highest environmental authorities of each member country, the Joint Public Advisory Committee (JPAC), made up five citizens from each of the three countries, and a Secretariat headquartered in Montreal, Canada.

Articles 14 and 15 of the NAAEC provide for a process allowing any person or nongovernmental organization to file a submission asserting that a Party to the NAAEC is failing to effectively enforce its environmental law. The Secretariat of the Commission for Environmental Cooperation (the “Secretariat”) initially considers submissions to determine whether they meet the criteria contained in NAAEC Article 14(1). When the Secretariat finds that a submission meets these criteria, it then determines, pursuant to the provisions of NAAEC Article 14(2), whether the submission merits a response from the concerned Party. In light of any response from the concerned Party, and in accordance with the NAAEC, the Secretariat may notify the Council that the matter warrants the development of a factual record, providing its reasons for such recommendation in accordance with Article 15(1). Where the Secretariat decides to the contrary, or where certain circumstances obtain, it then proceeds no further with the submission.¹

The introduction to the *Guidelines for Submissions on Enforcement Matters under Articles 14 and 15 of the North American Agreement on Environmental Cooperation* (the “Guidelines”), effective as of 11 July 2012, gives guidance as to the contents of a factual record:

The purpose of a factual record is to provide an objective presentation of the facts relevant to the assertion set forth in a submission and to allow the readers of the factual record to draw their own conclusions regarding a Party’s environmental law enforcement. If a final factual record is prepared, the Council may make it publicly available. If a submission reaches this stage of the process, it would be expected to do so normally within two and a half years of the submission being filed. Although a factual record is not to contain conclusions or recommendations, it is expected to generally outline the history of the environmental enforcement issue raised in the submission, the relevant legal obligations of the Party, and the actions of the Party in fulfilling these obligations; therefore, it can be another valuable outcome of this information-sharing process.²

1 Full details regarding the various stages of the process as well as previous Secretariat determinations and factual records can be found on the CEC website at <<http://www.cec.org/citizen/>> (viewed 7 May 2012).

2 *Guidelines for Submissions on Enforcement Matters under Articles 14 and 15 of the North American Agreement on Environmental Cooperation* (the “Guidelines”), at 1.

Pursuant to NAAEC Article 15(4) and section 11.1 of the Guidelines, in preparing factual records the Secretariat will consider any relevant technical, scientific or other information that is publicly available; submitted by the Joint Public Advisory Committee (JPAC) or by interested non-governmental organizations or persons, or developed by the Secretariat or independent experts.³

In addition, pursuant to NAAEC Article 21(1)(a), on request of the Secretariat, each Party to the NAAEC shall:

promptly [make] available any information in its possession required for the preparation of a report or factual record, including compliance and enforcement data;...

On 15 July 2012, in Council Resolution 12-04, the Council, pursuant to NAAEC Article 15(2), unanimously instructed the Secretariat to prepare a factual record in regard to submission SEM-05-003 (*Environmental Pollution in Hermosillo II*). The Secretariat is hereby requesting relevant information relating to the matters to be addressed in the factual record. The following sections provide background on the submission and describe the type of information requested.

II Submission SEM-05-003 (*Environmental Pollution in Hermosillo II*) and Council Resolution 12-04 of 15 June 2012

On 30 August 2005, Academia Sonorense de Derechos Humanos and Domingo Gutiérrez Mendiivil (the “Submitters”) filed a submission with the CEC Secretariat in accordance with NAAEC Article 14(1).

In the submission, the Submitters assert that Mexico is failing to effectively enforce its environmental law with respect to air pollution control in the city of Hermosillo, Sonora.⁴ The Submitters assert that the authorities identified in the submission are not taking the actions necessary to prevent and control environmental pollution in Hermosillo, in violation of the legal provisions cited in the submission. The Submitters assert that Mexican authorities “have failed to effectively enforce practically all legal provisions governing air pollution prevention and control” applicable to Hermosillo, Sonora.⁵ Specifically, the Submitters state that the authorities of the three levels of government—federal, state and municipal—are failing to effectively enforce provisions of the Political Constitution of the United Mexican States (*Constitución Política de los Estados Unidos Mexicanos*), the General Ecological Balance and Environmental Protection Act (*Ley General del Equilibrio Ecológico y la Protección al Ambiente*—LGEEPA), the Regulation to the LGEEPA Respecting Air Pollution Prevention and Control (*Reglamento de la LGEEPA en Materia de Prevención y Control de la Contaminación de la Atmósfera*—RPCCA), the Federal General Health Act (*Ley General de Salud*), the Sonora State Ecological Balance and Environmental Protection Act (*Ley del Equilibrio Ecológico y la Protección al Ambiente para el estado de Sonora*—LEES), the Sonora State Health Act (*Ley de Salud para el estado de Sonora*), the Sonora State Emergency Preparedness Act (*Ley de Protección Civil para el estado de Sonora*), and various Mexican Official Standards (*Normas Oficiales Mexicanas*—NOM) applicable to air pollution.⁶

On 9 November 2005, the Secretariat determined that the submission met the requirements of Article 14(1) and found that, pursuant to the criteria of Article 14(2), the submission warranted requesting a response from Mexico.⁷

³ Paragraph 11.1 of the Guidelines.

⁴ SEM-05-003 (*Environmental Pollution in Hermosillo II*) Article 14(1) Submission (26 August 2005), at 5. Note: page numbers of the submission referred to in this request for information correspond to the original Spanish version of the submission.

⁵ *Ibid.* at 15.

⁶ Mexican Official Standards cited in the Submission are: NOM-020-SSA1-1993, NOM-021-SSA1-1993, NOM-022-SSA1-1993, NOM-023-SSA1-1993, NOM-024-SSA1-1993, NOM-025-SSA1-1993, NOM-026-SSA1-1993, NOM-048-SSA1-1993, NOM-040-SEMARNAT-2002, NOM-043-SEMARNAT-1993, NOM-085-SEMARNAT-1994, NOM-121-SEMARNAT-1997, NOM-041-SEMARNAT-1999, NOM-042-SEMARNAT-1999, NOM-044-SEMARNAT-1993, NOM-045-SEMARNAT-1996, NOM-048-SEMARNAT-1993, and NOM-050-SEMARNAT-1993.

⁷ N.B. The Secretariat concluded the following provisions fall within the meaning of “environmental law” as defined in NAAEC Article 45(2)(a): LGEEPA Articles 5 paragraphs II, V, XVIII, and XIX, 7 paragraphs III, XII, and XIII, 8 paragraphs III, XI, XII, and XV, 10, and 112 paragraphs II and IV; RPCCA Articles 3 paragraph VII, 4 paragraph III, 13, 16, and 41; LEES Articles 73, 75, 85 paragraph B subparagraph I, 138, and 139, and the Mexican Official Standards cited in the Submission. See SEM-05-003 (*Environmental Pollution in Hermosillo II*) Article 14(1)(2) Determination (9 November 2005), at 7-10.

On 16 February 2006, Mexico filed its response in accordance with NAAEC Article 14(3). Mexico described air pollution-related actions taken by the federal, state and municipal governments, including street paving;⁸ environmental inspection of establishments under federal jurisdiction; recording and control of emissions from fixed sources under federal jurisdiction by means of the Annual Operating Report (*Cédula de Operación Anual*—COA); operating licenses and the Single Environmental License (*Licencia Ambiental Única*);⁹ inspection and surveillance actions;¹⁰ and institutional coordination programs.¹¹

On 4 April 2007, the Secretariat recommended the development of a factual record with respect to submission SEM-05-003.¹² The Secretariat found that the submission and Mexico's response, taken together, leave open central questions regarding the effective enforcement of environmental law with respect to air pollution in Hermosillo, Mexico, including LGEEPA Articles 7 paragraphs III and XIII and 8 paragraphs III and XV; RPCCA Articles 4 paragraph III, 16, 41 paragraph I, and 13, and LEES Articles 73 paragraphs V, VI, VII, and IX, and 85 paragraph B subparagraph I,¹³ as well as some of the Mexican Official Standards cited in the submission.¹⁴

On 15 June 2012, in Council Resolution 12-04, the Council unanimously decided to instruct the Secretariat to prepare a factual record in accordance with NAAEC Article 15(2) with regard to alleged failures of Mexico to effectively enforce its environmental law. The Council directed the Secretariat to provide the Parties with an overall plan for gathering relevant facts, as well as to keep the Council informed of any future changes or adjustments to such plan.

III. Request for information

In view of the instructions received via Council Resolution 12-04, the Secretariat takes note that the factual record is not to include information relating to the effective enforcement of Mexican Official Standards (NOM) issued by the Ministry of Health (specifically, NOM-020-SSA1-1993 to NOM-026-SSA1-1993).¹⁵ In this regard, Council Resolution 12-04 states that it authorizes the inclusion of information concerning:

- b) plans for verification, monitoring and control of the polluting emissions referred to in the applicable *Normas Oficiales Mexicanas* issued by the Ministry of the Environment and Natural Resources [Semarnat]...¹⁶

8 SEM-05-003 (*Environmental Pollution in Hermosillo II*) Article 14(1)(2) Determination (9 November 2005), at 45.

9 *Ibid.* at 40-47.

10 *Ibid.* at 43, 45, 47-8.

11 *Ibid.* at 45.

12 SEM-05-003 (*Environmental Pollution in Hermosillo II*) Article 15(1) Notification (4 April 2007).

13 Council Resolution 12-04 clarified that the LEES was repealed by the new Sonora State Ecological Balance and Environmental Protection Act (*Ley del Equilibrio Ecológico y Protección al Ambiente del Estado de Sonora*—LEEPAS), published in the State Official Bulletin (BOES) on 25 September 2008. Therefore, Article 73 paragraphs V and VII of the LEES is now Article 111 paragraphs V and VII of the LEEPAS; Article 73 paragraphs VI and IX of the LEES is now Article 111 paragraphs VI and IX of the LEEPAS, and Article 85 paragraph I subparagraph b) of the LEES is now Article 119 paragraph II subparagraph b) of the LEEPAS.

14 NOM-020-SSA1-1993: *Environmental health. Criterion for assessment of ambient air quality with respect to ozone (O₃). Legal limit for ozone (O₃) concentration in ambient air as a public health protection measure*; NOM-021-SSA1-1993: *Environmental health. Criterion for assessment of ambient air quality with respect to carbon monoxide (CO). Permissible value for carbon monoxide (CO) concentration in ambient air as a public health protection measure*; NOM-022-SSA1-1993: *Environmental health. Criterion for assessment of ambient air quality with respect to sulfur dioxide (SO₂). Legal limit for sulfur dioxide (SO₂) concentration in ambient air as a public health protection measure*; NOM-023-SSA1-1993: *Environmental health. Criterion for assessment of ambient air quality with respect to nitrogen dioxide (NO₂). Legal limit for nitrogen dioxide (NO₂) concentration in ambient air as a public health protection measure*; NOM-024-SSA1-1993: *Environmental health. Criterion for assessment of ambient air quality with respect to total suspended particles (TSP). Permissible value for total suspended particle (TSP) concentration in ambient air as a public health protection measure*; NOM-025-SSA1-1993: *Environmental health. Criterion for assessment of ambient air quality with respect to particles of diameter less than 10 microns (PM₁₀). Permissible value for particles of diameter less than 10 microns (PM₁₀) in ambient air as a public health protection measure*; NOM-026-SSA1-1993: *Environmental health. Criterion for assessment of ambient air quality with respect to lead (Pb). Legal limit for lead (Pb) concentration in ambient air as a public health protection measure*.

15 Council Resolution 12-04 (15 June 2002).

16 *Idem*.

In accordance with Council Resolution 12-04, on 9 August 2012, the Secretariat issued a work plan delimiting the scope of the factual record and envisioning the gathering of information pursuant to NAAEC Article 15(4).¹⁷ According to the Work Plan, the information gathering process is to focus on the following aspects:

- a) The establishment of mandatory vehicle inspection programs and the establishment and operation of vehicle inspection centers, pursuant to LGEEPA Articles 7 paragraph III and 8 paragraph III; RPCCA Article 4 paragraph III, and Articles 111 paragraphs V and VII and 119 paragraph II subparagraph b) of the Sonora State Ecological Balance and Environmental Protection Act (*Ley del Equilibrio Ecológico y Protección al Ambiente del Estado de Sonora*—LEEPAS).¹⁸
- b) The issuance of plans for verification, monitoring and control of the polluting emissions referred to in the applicable NOMs issued by the Ministry of the Environment and Natural Resources (*Secretaría de Medio Ambiente y Recursos Naturales*—Semarnat), pursuant to LGEEPA Article 7 paragraph XIII, RPCCA Articles 16 and 41 paragraph I, and LEEPAS Article 111 paragraphs VI and IX.¹⁹
- c) Specific actions to reduce and control air pollutant emissions in the city of Hermosillo pursuant to RPCCA Article 13.
- d) The implementation of the Municipal Environmental Protection Program pursuant to LGEEPA Article 8 paragraph XV.

IV. Examples of relevant factual information

The following are examples of technical, scientific, or other information that could be presented by members of the community and the public with respect to the case before the Secretariat of the CEC. To facilitate the management and compilation of this information, it is requested that this information be submitted in electronic form.

1. Information about the area in question, specifically:
 - a. Maps of the city of Hermosillo (high-quality electronic format with vectors compatible with GIS, Autocad, or Acrobat).
 - b. Information about airsheds in the city of Hermosillo, including diagrams in electronic format.
 - c. Weather information for the municipality, including compass rose.
 - d. Current urban development plan, urban growth plans, distribution of current population, and projections.
2. Up-to-date information about establishment — and enforcement, as applicable — of mandatory vehicle inspection programs, as well as the establishment and operation of inspection centers in the city of Hermosillo. Specifically:
 - a. Up-to-date information about measures taken by the governments of Sonora and Hermosillo for prevention and control of air pollution from mobile sources, such as: the establishment of requirements and procedures for regulation of motor vehicle pollutant emissions; the application of traffic control measures; the suspension of traffic flow in the event of serious cases of pollution, and the implementation of mandatory vehicle inspection programs.

¹⁷ When the LEES was repealed by the publication in the Official State Bulletin (BOES), on 25 September 2008, of the Ecological Balance and Environmental Protection Act of the State of Sonora (*Ley de Equilibrio Ecológico y la Protección al Ambiente del Estado de Sonora*—LEEPAS), there was a change in the numbering of the articles about which a factual record was proposed to be prepared, but not in the underlying issues. Therefore, the Council, in its resolution, gave instructions to prepare a factual record in regard to “the establishment of mandatory vehicle inspection programs and the establishment and operation of vehicle inspection centers” and “plans for verification, monitoring and control of the polluting emissions referred to in the applicable *Normas Oficiales Mexicanas* issued by the Ministry of the Environment and Natural Resources” with reference to the updated provisions, which are now LEEPAS Article 111 paragraphs V and VII instead of LEES Article 73 paragraphs V and VII. See Appendix 1.

¹⁸ See note 13, *supra*.

¹⁹ *Idem*.

- b. Information about the status of ambient gas monitoring in Hermosillo in preparation for the establishment of a vehicle inspection program; the history of data gathered for the purpose of implementing such a program; information about other measures taken by the state and municipal governments to effectively reduce or control mobile source emissions and to implement a vehicle inspection program in Hermosillo.
 - c. Information about the existence of any draft or proposed vehicle inspection program, or whether such a program is under development, and the resources assigned to the development of such a program.
 - d. Information as to whether the scope of this program has been defined and whether the resources planned — or estimated — for the implementation of this program have been determined.
 - e. In the event that any are operating, information about the technical requirements and costs related to the implementation, operation, and maintenance of vehicle inspection centers.
 - f. Information about any challenges or obstacles encountered in relation to the effective enforcement of the provisions relating to ambient gas monitoring in Hermosillo and the vehicle inspection program.
- 3. Up-to-date information about the adoption and results of the pollutant emissions inspection, monitoring, and control plans to which the applicable NOMs issued by Semarnat refer, and specifically:
 - a. Air-quality monitoring programs in effect in Hermosillo, the status of their implementation, and the technical requirements for the operation of air quality monitoring systems.
 - b. Information about the status and history of ambient gas monitoring in Hermosillo; information about other measures taken by the state and municipal governments to prepare, plan, implement, or improve an environmental pollutant monitoring system.
 - c. Environmental contingency program.
 - d. Criteria gas emissions inventory.
 - e. Information about modeling of air pollutant emissions and dispersion in the city of Hermosillo.
 - f. Information about specific measures to reduce and control pollutant emissions in the city of Hermosillo, particularly emissions of total suspended particles, PM_{10} , $PM_{2.5}$, ozone, carbon monoxide, sulfur dioxide and nitrogen dioxide, and lead.
 - g. Locator maps of air quality monitoring stations in Hermosillo.
 - h. Operating data and results for each of the monitoring stations in Hermosillo, indicating pollutants measured in a time series.
- 4. Information on industrial and commercial establishments in Hermosillo and their area of influence by industrial/commercial sector, including:
 - a. Map of establishments under federal and state jurisdiction located in the municipality and their area of influence.
 - b. Emissions generated by the establishments, principally of volatile organic compounds and of nitrogen and sulfur oxides.
- 5. Up-to-date information as to how the municipality of Hermosillo exercises and applies its power to formulate, implement, and evaluate the municipal environmental protection program.
- 6. Information about the application of specific measures to reduce and control air pollutant emissions in the municipality of Hermosillo, such as:
 - a. Maps of bus routes included in the “SUBA” transit system or any similar system for the city of Hermosillo, including maps or plans of future work or upgrades to “SUBA,” if any exist.
 - b. Information on the paving program and the “SUBA” program in relation to air pollution reduction and the vehicle inspection program. The information may include street paving maps.

- c. Information on the basis for the allocation of resources to the paving, SUBA, and vehicle inspection programs, and the correlation between this allocation of resources and air pollution control in Hermosillo.
- 7. Any other technical, scientific, or other information that could be relevant for the preparation of this factual record.

V. Additional background information

The submission, Mexico's response, the Secretariat determinations, the Council Resolution, and other information are available on the "Registry of Submissions" page in the "Submissions on Enforcement Matters" section of the CEC website at <http://www.cec.org/SEMregistry>, or may be requested from the Secretariat at sem@cec.org.

VI. Where to send information

Information relevant to the preparation of the factual record may be submitted to the Secretariat no later than **30 September 2012** by e-mailing sem@cec.org.

If the information is not available in electronic form, please send it to either of the following addresses:

CEC Secretariat
Submissions on Enforcement Matters
Unit
393, rue St-Jacques Ouest, bureau 200
Montreal QC H2Y 1N9
Canada
Tel.: (514) 350-4300

CEC/Mexico Liaison Office
Attn: Submissions on Enforcement
Matters Unit
Progreso núm. 3
Viveros de Coyoacán
México, D.F., 04110, México
Tel.: (55) 5659-5021

Please reference submission SEM-05-003 (*Environmental Pollution in Hermosillo II*) in any correspondence.

APPENDIX 5

Information Request addressed to the Mexican Authorities

Letter to the Party requesting information for development of the factual record for SEM-05-003

21 August 2012

Re: Development of the factual record for submission SEM-05-003 (*Environmental Pollution in Hermosillo II*)

The Secretariat hereby requests from Mexico relevant information to develop the factual record for the submission SEM-05-003 (*Environmental Pollution in Hermosillo II*), in accordance NAAEC Articles 15(4) and 21(1)(a).

As you are aware, on 15 June 2012, the Council of the Commission for Environmental Cooperation of North America unanimously resolved to instruct the Secretariat to develop a factual record, in accordance with Article 15 of the NAAEC and the *Guidelines for Submissions on Enforcement Matters under Articles 14 and 15 of the NAAEC (Guidelines)*, with respect to the assertions stated in the submission referred to above.

Under Article 21(1)(a) of the NAAEC, we hereby request the information described in the attached document. Also, pursuant to this provision, the Secretariat may request additional information, if it deems so necessary. Likewise, pursuant to NAAEC Article 15(4), the Secretariat shall consider information publicly available and provided by the Joint Public Advisory Committee (JPAC), submitters or other interested nongovernmental organizations or persons, as well as information developed by the Secretariat or independent experts.

Attached you will find the list of matters on which information is requested of Mexico for developing this factual record. Please respond to this request no later than 30 September 2012. If any clarification is needed, questions may be sent to the following electronic mail address, to the attention of Paolo Solano: psolano@cec.org.

Thank you in advance for your attention to this matter.

Sincerely,

Secretariat of the Commission for Environmental Protection

Executive Director

Attachment

cc: Canada Alternate Representative
US Interim Alternate Representative
Director, Submissions on Enforcement Matters Unit, CEC

APPENDIX 6

Information Request to Nongovernmental Organizations, JPAC and other NAAEC Parties

Form Letter to NGOs

22 August 2013

**Re: Request for information relevant to the factual record for Submission SEM-05-003
(*Environmental Pollution in Hermosillo II*)**

The Secretariat of the Commission for Environmental Cooperation of North America (CEC) recently began the process of preparing a “factual record” regarding the assertion that Mexico is failing to effectively enforce its environmental laws with respect to air pollution control in the city of Hermosillo, Sonora, consistent with Council Resolution 12-04.

I am writing to invite you to submit information relevant to the factual record. The attached Request for Information explains the citizen submissions and factual records process, gives background on the submission referred to as SEM-05-003 (*Environmental Pollution in Hermosillo II*), describes the scope of the information to be included in the factual record for this submission, and provides examples of information that might be relevant. We will accept information for possible consideration in connection with the factual record until 30 September 2012.

We appreciate your consideration of this request and look forward to any relevant information you are able to provide. Please feel free to contact the Secretariat if you have questions. Contact information is provided at the end of the Request for Information.

Sincerely,

Legal Officer
Submissions on Enforcement Matters Unit

Attachment

cc: Director, Submissions on Enforcement Matters Unit, CEC

Memorandum to the Joint Public Advisory Committee

Memorandum

DATE: 22 August 2012

A / PARA / TO: Chair, JPAC

CC: JPAC Members, CEC Executive Director, JPAC Liaison Officer

DE / FROM: Legal Officer, Submissions on Enforcement Matters Unit

OBJET / ASUNTO / RE: Request for information relevant to the factual record for submission SEM-05-003 (*Environmental Pollution in Hermosillo II*)

As you know, the CEC Secretariat recently began the process of preparing a factual record for the submission SEM-05-003 (*Environmental Pollution in Hermosillo II*). This submission was filed with the Secretariat in August 2005 by the Academia Sonorense de Derechos Humanos and Domingo Gutiérrez Mendivil. Consistent with Council Resolution 12-04, the factual record will focus on the assertion that Mexico is failing to effectively enforce its environmental laws with respect to air pollution control in the city of Hermosillo, Sonora.

I am writing to invite the JPAC to submit information relevant to the factual record, consistent with Article 15(4)(c) and Article 16(5) of the NAAEC. For example, in addition to providing information directly responsive to this request, JPAC members might be able to identify sources of information that the Secretariat could pursue in connection with the factual record. The Request for Information (an English translation will soon be available), which is posted on the CEC website, provides a background about the *Environmental Pollution in Hermosillo II* submission, describes the scope of the information to be included in the factual record, and provides examples of information that might be relevant. We will accept information for possible consideration in connection with the factual record until September 30, 2012.

We appreciate your consideration of this request and look forward to any relevant information you are able to provide. Please feel free to contact me at (514) 350-4321 or <psolano@cec.org> if you have questions regarding this request or the factual record process.

**Letter to the Other Parties of the NAAEC
(Canada and US)**

18 September 2012

**Re: Invitation to provide information relevant to the factual record for submission SEM-05-003
(*Environmental Pollution in Hermosillo II*)**

As you know, the CEC Secretariat recently began the process of preparing a factual record for submission SEM-05-003 (*Environmental Pollution in Hermosillo II*), consistent with Council Resolution 12-04. I am writing to invite the [Canadian] [the United States] Party to submit information relevant to the factual record, in accordance with Article 15(4) of the NAAEC.

The attached Request for Information provides background information of submission SEM-05-003, describes the scope of the information to be included in the factual record, and provides examples of information that might be relevant. In accordance with the overall work plan, we will accept information for consideration in connection with the factual record until October 15, 2012.

We appreciate your consideration of this request and look forward to any relevant information you are able to provide. For any questions, please send an email to the attention of Paolo Solano, at psolano@cec.org.

Sincerely,

Executive Director

Enclosure

c.c.: US Interim Alternate Representative
Canada Alternate Representative
Mexico Alternate Representative
Director, Submission on Enforcement Matters Unit, CEC

APPENDIX 7

Statement of Acceptance and Declaration of Impartiality and Independence by the Consultants in respect of SEM-05-003 (*Environmental Pollution in Hermosillo II*)

EXPERT'S DECLARATION OF ACCEPTANCE AND STATEMENT OF IMPARTIALITY AND INDEPENDENCE FOR SUBMISSION SEM-05-003 (*Environmental Pollution in Hermosillo II*)

I, the undersigned,

Last Name: CRUZ NUÑEZ

First Name: XÓCHITL

NON-ACCEPTANCE

- ☐ hereby declare that **I decline** to serve as expert in the subject file. (If you wish to state the reasons for checking this box, please use a separate sheet of paper, attaching that to this declaration.)

ACCEPTANCE

- ☒ hereby declare that **I accept** to serve as expert in the instant matter. In so declaring, I confirm that I have familiarized myself with the requirements of Articles 14 and 15 of the North American Agreement on Environmental Cooperation ("NAAEC") and the matters raised in the above submission, and that I am competent, reliable, and available to serve as an expert on questions of environmental pollution.

IMPARTIALITY AND INDEPENDENCE

(If you accept to serve as expert, please also check one of the two following boxes. The choice of which box to check will be determined after you have taken into account, inter alia, whether there exists any past or present relationship, direct or indirect, with any of the submitters or their counsel, or the Party concerned, whether financial, professional or of another kind and whether the nature of any such relationship is such that disclosure is called for pursuant to the criteria set out below. Any doubt should be resolved in favor of disclosure.)

- ☒ **I am impartial and independent** with respect to the Submitters of SEM-05-003 (*Environmental Pollution in Hermosillo II*), and with the NAAEC Party, *Government of Mexico*, and intend to remain so; to the best of my knowledge, there are no facts or circumstances, past or present that need be disclosed because they are likely to give rise to justifiable doubts as to my impartiality or independence.

OR

- ☐ **I am impartial and independent** with respect to the Submitters of SEM-05-003 (*Environmental Pollution in Hermosillo II*), and with the NAAEC Party, *Government of Mexico*, and intend to remain so; **however**, I wish to call your attention to the following facts or circumstances which I hereafter disclose because they might be of such a nature as to give rise to justifiable doubts as to my impartiality or independence. (Use separate sheet and attach.)

Date: 6 February 2013

Signature: (original signed)

**EXPERT'S DECLARATION OF ACCEPTANCE
AND STATEMENT OF IMPARTIALITY AND INDEPENDENCE
FOR SUBMISSION SEM-05-003 (*Environmental Pollution in Hermosillo II*)**

I, the undersigned,

Last Name: **JASA SILVEIRA**

First Name: **GRACIELA**

NON-ACCEPTANCE

- ☐ hereby declare that **I decline** to serve as expert in the subject file. (If you wish to state the reasons for checking this box, please use a separate sheet of paper, attaching that to this declaration.)

ACCEPTANCE

- ☒ hereby declare that **I accept** to serve as expert in the instant matter. In so declaring, I confirm that I have familiarized myself with the requirements of Articles 14 and 15 of the North American Agreement on Environmental Cooperation ("NAAEC") and the matters raised in the above submission, and that I am competent, reliable, and available to serve as an expert on questions of the Mexico's environmental laws.

IMPARTIALITY AND INDEPENDENCE

(If you accept to serve as expert, please also check one of the two following boxes. The choice of which box to check will be determined after you have taken into account, inter alia, whether there exists any past or present relationship, direct or indirect, with any of the submitters or their counsel, or the Party concerned, whether financial, professional or of another kind and whether the nature of any such relationship is such that disclosure is called for pursuant to the criteria set out below. Any doubt should be resolved in favor of disclosure.)

- ☒ **I am impartial and independent** with respect to the Submitters of SEM-05-003 (*Environmental Pollution in Hermosillo II*), and with the NAAEC Party, *Government of Mexico*, and intend to remain so; to the best of my knowledge, there are no facts or circumstances, past or present that need be disclosed because they are likely to give rise to justifiable doubts as to my impartiality or independence.

OR

- ☐ **I am impartial and independent** with respect to the of SEM-05-003 (*Environmental Pollution in Hermosillo II*), and with the NAAEC Party, *Government of Mexico*, and intend to remain so; **however**, I wish to call your attention to the following facts or circumstances which I hereafter disclose because they might be of such a nature as to give rise to justifiable doubts as to my impartiality or independence. (Use separate sheet and attach.)

Date: 14 May 2013

Signature: (original signed)

APPENDIX 8

Part I

Environmental Law in Question

General Ecological Balance and Environmental Protection Act

Article 7. In accordance with the provisions of this Law and the relevant local laws, the following powers and responsibilities fall to the states:

[...]

III. The prevention and control of air pollution generated by fixed sources that function as industrial establishments, as well as air pollution from mobile sources, which, in accordance with the provisions of this Law, are not under federal jurisdiction;

[...]

XIII. Enforcing compliance with Official Mexican standards issued by the Federation, regarding the matters and events referred to in sections III, VI, and VII of this Article;

[...]

Article 8. Under the provisions of this Law and of the relevant local laws, the following powers fall to the municipalities:

[...]

III. The enforcement of the legal provisions on the prevention and control of air pollution generated by fixed sources that function as *business* or services establishments, as well as air pollutant emissions from mobile sources not considered under federal jurisdiction, in conjunction with the role that falls to the states as provided for under state legislation;

[...]

XV. The formulation, execution and assessment of the municipal environmental protection program.

Regulation to the LGEEPA respecting Air Pollution Prevention and Control

Article 4. States and municipalities have jurisdiction, within the purview of their respective territories and pursuant to the distribution of powers established by local laws, over the aspects identified in Article 6 of the Law [i.e., the LGEEPA], particularly:

[...]

III. The prevention and control of air pollution generated in areas, or by emission sources, under state or municipal jurisdiction; and

[...]

Article 13. Concerning atmospheric protection the following criteria shall be considered:

- I.** Air quality must be satisfactory in every human settlement and region of the country, and
- II.** Emissions of pollutants into the atmosphere, whether from artificial or natural sources, or from fixed or mobile sources, must be reduced or controlled to ensure air quality that is satisfactory for the well-being of the population and ecological balance.

Article 16. Emissions into the atmosphere of odors, gases, and solid and liquid particulates generated by fixed sources must not exceed the maximum permissible emission and immission levels per pollutant and per pollution sources stipulated in the relevant environmental technical standards issued by the Ministry, in coordination with the Ministry of Health. Said standards are based on the maximum permissible concentrations of pollutants in the environment for human beings, as determined by the latter.

Furthermore, in light of the variety of technologies employed in different emissions sources, an environmental technical standard may stipulate different limit values when determining the maximum permissible emission or immission levels for a given pollutant or for a specific source, depending on whether it is a matter of:

- I. Existing sources;
- II. New sources, or
- III. Sources located in critical areas.

Following the appropriate studies and in coordination with the Ministry of Health, the Ministry shall determine, in the relevant environmental technical standard, which areas shall be considered critical.

Article 41. The Ministry [i.e., Semarnat] shall establish and maintain an up-to-date national air quality information system.

This system shall be based on the data collected from:

- I. The atmospheric monitoring conducted by the competent authorities in the Federal District, the states and municipalities [...]

Ecological Balance and Environmental Protection Act for the State of Sonora

Article 111. Regarding the prevention and control of air pollution, the State and the Municipal governments shall, within the purview of their respective jurisdictions:

[...]

- V. Establish and operate systems to inspect the emissions of motor vehicles in use;

[...]

- VI. Establish and operate air quality monitoring systems, with any technical support they may request from the Ministry of the Environment and Natural Resources, and shall give said Ministry local air quality monitoring reports for incorporation into the National Environmental Information System in accordance with the corresponding coordination agreements;
- VII. Establish requirements and procedures to regulate the following: of pollutant emissions of motor vehicles, except for those intended for use in federal public transportation; transit management measures; and, as required, in the event of serious air pollution episodes;
- IX. Elaborate reports on the state of the environment in the state or municipality in question, in a manner to be agreed upon with Semarnat through the conclusion of coordination agreements;

Article 119. Regarding pollutant emissions from motor vehicles, except for those intended for use in federal public transportation, it falls to:

[...]

- II. The Municipal governments, within their respective territories:
 - [...]
 - b) to establish mandatory vehicle inspection programs;

Part II

Comparative Tables and Applicable Mexican Official Standards

Table 1: Comparison of text of LEES Article 73 paragraphs VI and IX with LEEPAS Article 111 paragraphs VI and IX

Text of LEES Article 73 paragraphs VI and IX	Amendments to LEES Article 73 paragraphs VI and IX and their incorporation into LEEPAS Article 111
<p>Article 73. In air pollution matters, the State and the Municipal Councils, within their respective jurisdictions:...</p> <p>VI. Shall, with technical support as required from the Ministry of Urban Development and Environment, establish and operate air quality monitoring systems. Such systems shall be covered by a prior technical report issued by said Ministry, which shall, by means of coordination agreements, see to the incorporation of the local monitoring reports into national data;...</p> <p>IX. Shall produce any reports on the state of the environment in the State or Municipality in question that are agreed upon with the Ministry of Urban Development and Environment by means of any coordination agreements entered into, and...</p>	<p>Article 111. In air pollution prevention and control matters, the State and the Municipal Council, within their respective jurisdictions:...</p> <p>VI. Shall, with technical support as required from the Ministry of the Environment and Natural Resources, establish and operate air quality monitoring systems and shall give the Ministry local air quality monitoring reports for inclusion in the National Environmental Information System as stipulated in the corresponding coordination agreements;...</p> <p>IX. Shall produce any reports on the state of the environment in the State or Municipality in question that are agreed upon with the Ministry of the Environment and Natural Resources by means of any coordination agreements entered into, and...</p>

Table 2: Comparison of the texts of LEES Article 85 paragraph I subparagraph B with LEEPAS Article 119 paragraph II subparagraph B

Text of LEES Article 85 paragraph I subparagraph B	Amendments to LEES Article 85 paragraph I subparagraph B and its incorporation into LEEPAS Article 111
<p>Article 85. In relation to pollutant emissions from motor vehicles, except those used in federal public transportation:...</p> <p>B) The Municipal Councils, within their territorial bounds, shall have the power to:</p> <p>I. Establish mandatory vehicle inspection programs;...</p>	<p>Article 119. In relation to pollutant emissions from motor vehicles, except those used in federal public transportation:...</p> <p>II. The Municipal Councils, within their territorial bounds, shall have the power to:...</p> <p>b) Establish mandatory vehicle inspection programs;...</p>

Table 3: Update status of NOMs issued by Semarnat

Nomenclature	Updated nomenclature	Acronym used in the factual record	URL
NOM-040-SEMARNAT-2002	Unchanged	NOM-040	http://goo.gl/dMRvF
NOM-043-SEMARNAT-1993	Unchanged	NOM-043	http://goo.gl/YNpQj
NOM 085-SEMARNAT-1994	NOM-085-SEMARNAT-2011	NOM 085	http://goo.gl/IQre6
NOM-121-SEMARNAT-1997	Unchanged	NOM-121	http://goo.gl/PfVvc
NOM-041-SEMARNAT-1999	NOM-041-SEMARNAT-2006	NOM-041	http://goo.gl/S56tx
NOM-042-SEMARNAT-1999	NOM-042-SEMARNAT-2003	NOM-042	http://goo.gl/SFcnU
NOM-044-SEMARNAT-1993	NOM-044-SEMARNAT-2006	NOM-044	http://goo.gl/Nda7Q
NOM-045-SEMARNAT-2006	Unchanged	NOM-045	http://goo.gl/z0pwK
NOM-048-SEMARNAT-1993	Unchanged	NOM-048	http://goo.gl/PP1ly
NOM-050-SEMARNAT-1993	Unchanged	NOM-050	http://goo.gl/Yu7Wr

Table 4. Title, objective, scope of application, and enforcement responsibility for NOMs issued by Semarnat and included in this factual record as per Council Resolution 12-04¹

NOM	Objective	Scope of application	Enforcement
NOM-040	Establishes maximum allowable levels for air emissions of solid particles, as well as requirements for control of fugitive emissions from fixed sources engaged in cement production.	Compulsory for persons responsible for fixed sources depending on their location.	Semarnat acting by Profepa (see subparagraph 7 of the NOM).
NOM-043	Establishes maximum allowable levels for air emissions of solid particles from fixed sources.	Compulsory for persons responsible for fixed sources emitting solid particles into the atmosphere, excepting those governed by specific NOMs.	Semarnat acting by Profepa. The states and the municipalities within their respective jurisdictions.
NOM-085	Establishes maximum allowable levels for emissions from indirect combustion heating equipment and the measurement thereof.	Compulsory for persons responsible for indirect combustion heating equipment, electricity generation equipment using combined-cycle technology, and direct combustion heating equipment.	Semarnat acting by Profepa. The Federal District, the states, and the municipalities within their respective jurisdictions.
NOM-121	Establishes maximum allowable levels for air emissions of volatile organic compounds (VOCs) from new body coating operations in plants producing automobiles, multiple-use units, passenger and utility vehicles, freight and light trucks, as well as the method for calculating their emissions.	Compulsory for persons responsible for automotive industry assembly plants carrying out such activities.	Semarnat acting by Profepa.

¹ The complete text of the NOMs are not included in this factual record.

NOM	Objective	Scope of application	Enforcement
NOM-041	Establishes maximum allowable limits for emissions of polluting gases from the exhaust systems of on-road motor vehicles using gasoline as a fuel.	Compulsory for owners of on-road gasoline-powered motor vehicles in Mexico and persons responsible for Inspection Centers and Inspection Units, excepting those governed by specific NOMs (see subparagraph 1 of the NOM).	Semarnat acting by Profepa, the Ministry of Communications and Transportation, the governments of the Federal District, the states, and the municipalities within their respective jurisdictions.
NOM-042	Establishes maximum allowable limits for emissions of total or non-methane hydrocarbons, carbon monoxide, nitrogen oxides, and particles from the exhaust of new motor vehicles with gross vehicle weight rating not exceeding 3,857 kg, using gasoline, liquid petroleum gas, natural gas, or diesel as a fuel, as well as the evaporative hydrocarbon emissions from the fuel system of such vehicles.	Compulsory for manufacturers and importers of new vehicles manufactured in Mexico and abroad for final import into Mexico.	Semarnat acting by Profepa.
NOM-044	Establishes the maximum allowable limits for polluting emissions of hydrocarbons (HC), non-methane hydrocarbons (NMHC), carbon monoxide (CO), nitrogen oxides (NO _x), non-methane hydrocarbons plus nitrogen oxides (HCNM+NO _x), particles (Part), and opacity of exhaust smoke from new diesel-powered engines used to propel motor vehicles with gross vehicle weight greater than 3,857 kg, as well as from the exhaust system of new units equipped with this type of engine.	Compulsory for manufacturers, importers, and assemblers of new diesel-powered engines and units with this type of engine that will be used to propel motor vehicles with gross vehicle weight rating over 3,857 kg.	Semarnat acting by Profepa.
NOM-045	Establishes maximum allowable levels of opacity of exhaust smoke from on-road motor vehicles powered by diesel or mixtures including diesel.	Compulsory for vehicle owners and persons responsible for vehicle inspection centers, excepting those governed by specific NOMs (see subparagraph 1 of the NOM).	Semarnat acting by Profepa, the governments of the Federal District, the states, and the municipalities, within their respective jurisdictions.
NOM-048	Establishes maximum allowable levels for emissions of hydrocarbons, carbon monoxide, and smoke from the exhaust systems of on-road motorcycles powered by gasoline or gasoline-oil mixtures.	Compulsory for gasoline-powered motorcycles.	The governments of the Federal District, the states, and the municipalities within their respective jurisdictions.
NOM-050	Establishes maximum allowable levels for emissions of polluting gases from the exhaust systems of on-road motor vehicles powered by liquid petroleum gas, natural gas, or other alternative fuels.	Compulsory for on-road motor vehicles powered by liquid petroleum gas, natural gas, or other alternative fuels, excepting those governed by specific NOMs (see subparagraph 1 of the NOM).	The governments of the Federal District, the states, and the municipalities within their respective jurisdictions.

Table 5. Title, objective, scope of application, and enforcement responsibility for the NOMs issued by Semarnat for determination of criteria pollutant concentrations²

NOM	Objective	Scope of application	Enforcement
NOM-034	Establishes measurement methods for determining the concentration of carbon monoxide (CO) in ambient air and procedures for calibration of measurement equipment.	Compulsory for the operation of air quality monitoring equipment, stations, or systems for the purpose of public dissemination or information or where the results have official validity.	Semarnat acting by Profepa.
NOM-035	Establishes measurement methods for determining the concentration of total suspended particles in ambient air and the procedure for calibration of measurement equipment.	Compulsory for the operation of air quality monitoring equipment, stations, or systems for the purpose of public dissemination or information or where the results have official validity.	Semarnat acting by Profepa.
NOM-036	Establishes measurement methods for determining the concentration of ozone in ambient air and procedures for calibration of measurement equipment.	Compulsory for the operation of air quality monitoring equipment, stations, or systems for the purpose of public dissemination or information or where the results have official validity.	Semarnat acting by Profepa.
NOM-037	Establishes measurement methods for determining the concentration of nitrogen dioxide in ambient air and procedures for calibration of measurement equipment.	Compulsory for the operation of air quality monitoring equipment, stations, or systems for the purpose of public dissemination or information or where the results have official validity.	Semarnat acting by Profepa.
NOM-038	Establishes measurement methods for determining the concentration of sulfur dioxide in ambient air and procedures for calibration of measurement equipment.	Compulsory for the operation of air quality monitoring equipment, stations, or systems for the purpose of public dissemination or information or where the results have official validity.	Semarnat acting by Profepa.

² The complete text of the NOMs are not included in this factual record.

Part III

Other Provisions related to the Matter raised in Submission

SEM-05-003 (*Environmental Pollution in Hermosillo*)

General Ecological Balance and Environmental Protection Act

Article 8. Pursuant to the provisions of this Act and the applicable local laws, the Municipalities have jurisdiction over the following matters:...

- VI. The application of the legal provisions relating to prevention and control of pollution from noise, vibrations, thermal energy, electromagnetic and light radiation, and odors harmful to ecological stability and the environment from fixed sources functioning as commercial or service establishments, as well as the enforcement of any provisions that may be applicable to mobile sources except those which, pursuant to this Act, are considered to be under federal jurisdiction;...
- IX. The preservation and restoration of ecological stability and environmental protection in population centers, in relation to impacts arising from sewer and sanitation services, markets, wholesalers, cemeteries, street fairs, and local traffic and transportation, provided that these are not powers vested in the Federation or the States under this Act;...
- XIII. The formulation and deployment of municipal policy on environmental information and dissemination;

Article 111 bis. For the operation of fixed sources under federal jurisdiction emitting or potentially emitting odors, gases, or solid or liquid particles into the atmosphere, the approval of the Ministry shall be required.

For the purposes of this Act, the chemical, petroleum and petrochemical, paints and dyes, automotive, pulp and paper, metallurgical, glass, electrical power generation, asbestos, cement and lime, and hazardous waste treatment industries are considered sources under federal jurisdiction.

The regulation issued for such purpose shall determine the specific subsectors belonging to each of the aforementioned industrial sectors, whose establishments shall be subject to the provisions of federal law in respect of air pollutant emissions.

Regulation to the LGEEPA respecting Air Pollution Prevention and Control

Article 11. For the purposes of the regulation, the following shall apply:

- I. Those areas set out in the applicable provisions, and in particular the following, shall be considered to be under federal jurisdiction:
 - a) Sites occupied by all the facilities of federal, ground, air, and water transportation terminals;
 - b) Industrial parks located on property within the public domain of the Federation, as prescribed by the National Properties Act, and
 - c) The federal coastal zone.
- II. The following shall be considered sources under federal jurisdiction:
 - a) Industrial, commercial, and service facilities, works, or activities carried out by the agencies and entities of the federal public administration pursuant to the Federal Public Administration Act;

- b) The asbestos industry, as well as that which is contemplated in Article 29 paragraph III of the Act;
- c) Industrial facilities located in the continuous urban area of the Federal District;
- d) Works or activities located in a State whose air emissions contaminate or affect the ecological stability of one or more other States, where the Ministry so determines or where the State affected by the air pollutant emissions makes such a request to the Federation;
- e) Works or activities located on national territory that may affect the ecological stability of other countries;
- f) Motor vehicles until such time as they leave the production plant;
- g) Federal public transportation, and
- h) Those which, due to their nature and complexity, require federal intervention.

17 bis For the purposes of this Regulation, the following are considered specific subsectors belonging to each of the industrial sectors set out in Article 111 *bis* of the Act as fixed sources under federal jurisdiction:

- A) PETROLEUM AND PETROCHEMICAL INDUSTRY
[...]
- B) CHEMICAL INDUSTRY
[...]
- C) PAINTS AND DYES INDUSTRY
[...]
- D) METALLURGICAL INDUSTRY
[...]
- E) AUTOMOTIVE INDUSTRY
[...]
- F) PULP AND PAPER INDUSTRY
[...]
- G) CEMENT AND LIME INDUSTRY
[...]
- H) ASBESTOS INDUSTRY
[...]
- I) GLASS INDUSTRY
[...]
- J) ELECTRICAL POWER GENERATION
[...]
- K) HAZARDOUS WASTE TREATMENT

Article 41. The Ministry shall establish and keep up to date a national air quality information system. This system shall be made up of data resulting from:...

- II. The inventories of pollution sources under federal and local jurisdiction as well as of their emissions.

Ecological Balance and Environmental Protection Act for the State of Sonora

Article 7. The State has jurisdiction over:...

- III. The prevention and control of air pollution generated by fixed sources functioning as industrial establishments as well as by mobile sources not under federal or municipal jurisdiction;...

- XIV. The enforcement of Mexican official standards issued by the Federation in respect of ecological stability and environmental protection, in matters under state jurisdiction;

Article 8. The municipalities, acting by the municipal councils, have jurisdiction over:...

- III. The enforcement of the legal provisions governing the prevention and control of air pollution generated by fixed sources functioning as commercial or service establishments as well as of air pollutant emissions from mobile sources not considered under federal or state jurisdiction, with the involvement of the State as prescribed by this Act;...
- X. The enforcement of those Mexican official standards issued by the Federation to which paragraphs III, IV, V, and VI of this article refer;

Article 117. Pollutant emissions from on-road motor vehicles in the State shall not exceed the allowable limits set out in the Mexican Official Standards.

Table 6. NOMs issued by the Ministry of Health cited by the submitters³

Pollutant and NOM	Concentration		Time
	(ppm)	(µg/m³)	
Ozone (O ₃) NOM-020-SSA1-1993	0.11 0.08	216	1 hour 8 hours
Carbon monoxide (CO) NOM-021-SSA1-1993	11	12.595	8 hours (mobile)
Sulfur dioxide (SO ₂) NOM-022-SSA1-1993	0.13 0.03	341 79	24 hours Annual
Nitrogen dioxide (NO ₂) NOM-023-SSA1-1993	0.21	395	1 hour
Total suspended particles (TSP) NOM-025-SSA1-1993	n/a	210	24 hours
PM ₁₀ NOM-025-SSA1-1993	n/a	120 50	24 hours Annual
PM _{2.5} NOM-025-SSA1-1993	n/a	65 15	24 hours Annual
Lead (Pb) NOM-026-SSA1-1993	n/a	1.5	Quarterly

³ The complete text of the NOMs are not included in this factual record.

APPENDIX 9

Atmospheric Monitoring Data from Hermosillo, Sonora

July 2011: Data from the Hermosillo automatic monitoring station

	PM ₁₀		PM _{2.5}		O ₃		SO ₂		CO	
	Value	AQI	Value	AQI	Value	AQI	Value	AQI	Value	AQI
7/1/11	72	59	39	97	0.04	31	0.001	1	ID	
7/2/11	203	125	45	110	0.04	31	ID		ID	
7/3/11	ID		12	39	0.049	38	ID		ID	
7/4/11	ID		ID		ID		ID		ID	
7/5/11	ID		ID		0.045	35	ID		ID	
7/6/11	ID		6	19	0.051	40	ID		ID	
7/7/11	ID		7	23	0.073	72	ID		ID	
7/8/11	ID		10	32	0.067	56	ID		ID	
7/9/11	ID		10	32	0.051	40	ID		ID	
7/10/11	ID		ID		0.039	30	ID		ID	
7/11/11	ID		8	26	0.044	34	ID		ID	
7/12/11	ID		10	32		35	ID		ID	
7/13/11	ID		9	29		24	0.001	1	ID	
7/14/11	ID		11	36		24	0.001	1	ID	
7/15/11	ID		12	39		44	0.001	1	ID	
7/16/11	ID		10	32		40	0.001	1	ID	
7/17/11	36	33	11	36		45	0.001	1	ID	
7/18/11	21	19	7	23		45	0.001	1	ID	
7/19/11	23	21	9	29		30	0.001	1	ID	
7/20/11	26	24	11	36		24	0.001	1	ID	
7/21/11	25	23	11	36		28	0.001	1	ID	
7/22/11	12	11	6	19		31	0.001	1	ID	
7/23/11	18	17	8	26		20	0.001	1	ID	
7/24/11	11	10	8	26		27	0.001	1	ID	
7/25/11	21	19	9	29		34	0.001	1	ID	
7/26/11	21	19	11	26		22	0.001	1	ID	
7/27/11	22	20	9	29		24	0.001	1	ID	
7/28/11	19		6	19		23	0.001	1	ID	
7/29/11	ID		ID		0.043	34	ID		ID	
7/30/11	16	15	ID		ID		0.001	1	ID	
7/31/11	29	27	13	42	0.036	28	0.001	1	ID	
										Total
Days with data	16		26		29		19		0	90
Days without data	15		5		2		12		31	65
Days AQI 0-50	13		24		27		19		0	83
Days AQI 51-100	1		1		2		0		0	4
Days AQI 101-150	1		1		0		0		0	2
Days AQI 151-200	0		0		0		0		0	0
Days AQI 201-300	0		0		0		0		0	0
Days AQI over 300	0		0		0		0		0	0

August 2011: Data from the Hermosillo automatic monitoring station

	PM ₁₀		PM _{2.5}		O ₃		SO ₂		CO	
	Value	AQI	Value	AQI	Value	AQI	Value	AQI	Value	AQI
8/1/11	ID		ID		ID		ID		ID	
8/2/11	ID		ID		ID		ID		ID	
8/3/11	34	31	10	32	0.063	49	0.001	1	ID	
8/4/11	30	28	10	32	0.054	42	0.001	1	ID	
8/5/11	24	22	11	36	0.067	56	0.001	1	ID	
8/6/11	ID		ID		ID		1		ID	
8/7/11	ID		ID		ID		ID		ID	
8/8/11	ID		ID		ID		ID		ID	
8/9/11	19	18	8	26	0.028	22	0.001	1	ID	
8/10/11	17	16	7	23	0.019	15	0.001	1	ID	
8/11/11	19	18	10	32	0.018	14	0.001	1	ID	
8/12/11	19	18	9	29	0.028	22	0.001	1	ID	
8/13/11	23	21	9	29	0.034	27	0.001	1	ID	
8/14/11	ID		ID		ID		ID		ID	
8/15/11	ID		ID		ID		ID		ID	
8/16/11	20	19	10	32	0.029	23	0.001	1	ID	
8/17/11	19	18	ID		0.046	36	0.001	1	ID	
8/18/11	33	31	8	26	0.04	31	0.001	1	ID	
8/19/11	ID		ID		ID		ID		ID	
8/20/11	ID		ID		ID		ID		ID	
8/21/11	ID		ID		ID		ID		ID	
8/22/11	ID		ID		ID		ID		ID	
8/23/11	27	25	15	49	0.068	59	0.001	1	ID	
8/24/11	ID		ID		ID		ID		ID	
8/25/11	24	22	7	23	0.047	37	0.001	1	ID	
8/26/11	22	20	11	36	0.052	41	0.001	1	ID	
8/27/11	21	19	9	29	0.055	43	0.001	1	ID	
8/28/11	17	16	9	29	0.058	45	0.001	1	ID	
8/29/11	26	24	8	26	0.049	38	0.001	1	ID	
8/30/11	34	31	11	36	0.053	41	0.001	1	ID	
8/31/11	ID		12	39	0.047	37	0.001	1	ID	
										Total
Days with data	18		18		19		20		0	75
Days without data	13		13		12		11		31	80
Days AQI 0-50	18		18		17		19		0	72
Days AQI 51-100	0		0		2		0		0	2
Days AQI 101-150	0		0		0		0		0	0
Days AQI 151-200	0		0		0		0		0	0
Days AQI 201-300	0		0		0		0		0	0
Days AQI over 300	0		0		0		0		0	0

September 2011: Data from the Hermosillo automatic monitoring station

	PM ₁₀		PM _{2.5}		O ₃		SO ₂		CO	
	Value	AQI	Value	AQI	Value	AQI	Value	AQI	Value	AQI
9/1/11	39	36	15	49	0.038	30	0.001	1	ID	
9/2/11	15	14	ID		0.066	54	0.001	1	ID	
9/3/11	ID		ID		ID		ID		ID	
9/4/11	21	19	ID		0.041	32	0.001	1	ID	
9/5/11	20	19	ID		0.044	34	0.002	3	ID	
9/6/11	32	30	ID		0.061	48	0.002	3	ID	
9/7/11	60	53	18	56	0.056	44	0.002	3	ID	
9/8/11	42	39	20	60	0.045	35	0.002	3	ID	
9/9/11	28	26	ID		0.045	35	0.002	3	ID	
9/10/11	27	25	ID		0.032	25	0.002	3	ID	
9/11/11	ID		ID		ID		ID		ID	
9/12/11	ID		ID		ID		ID		ID	
9/13/11	33	31	ID		0.047	37	0.002	3	ID	
9/14/11	33	31	15	49	0.034	27	0.002	3	ID	
9/15/11	32	30	13	42	0.031	24	0.002	3	ID	
9/16/11	28	26	13	42	0.027	21	0.001	1	ID	
9/17/11	27	25	ID		0.026	20	0.002	3	ID	
9/18/11	ID		ID		ID		ID		ID	
9/19/11	32	30	14	45	0.049	38	0.002	3	ID	
9/20/11	33	31	ID		0.053	41	0.002	3	ID	
9/21/11	ID		ID		0.04	31	0.002	3	ID	
9/22/11	ID		ID		0.048	38	0.002	3	ID	
9/23/11	37	34	ID		0.037	29	0.002	3	ID	
9/24/11	41	38	ID		0.057	45	0.002	3	ID	
9/25/11	ID		ID		ID		ID		ID	
9/26/11	ID		ID		ID		0.001	1	ID	
9/27/11	39	36	ID		0.033	26	0.001	1	ID	
9/28/11	41	38	ID		0.032	25	0.001	1	ID	
9/29/11	41	38	11	36	0.041	32	0.001	1	ID	
9/30/11	31	29	ID		0.038	30	0.001	1	ID	
										Total
Days with data	22		8		24		25		0	79
Days without data	8		22		6		5		30	71
Days AQI 0-50	21		6		23		25		0	75
Days AQI 51-100	1		2		1		0		0	4
Days AQI 101-150	0		0		0		0		0	0
Days AQI 151-200	0		0		0		0		0	0
Days AQI 201-300	0		0		0		0		0	0
Days AQI over 300	0		0		0		0		0	0

April – September 2011: Data from the Hermosillo automatic monitoring station

	PM ₁₀	PM _{2.5}	O ₃	SO ₂	CO	Total
Days with data	128	123	146	129	0	526
Days without data	55	60	37	54	183	389
Days AQI 0-50	98	93	136	121	No data	448
Days AQI 51-100	32	25	12	0	No data	69
Days AQI 101-150	3	4	0	0	No data	7
Days AQI 151-200	0	1	0	0	No data	1
Days AQI 201-300	0	0	0	0	No data	0
Days AQI over 300	0	0	0	0	No data	0



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