FICEM

FEDERACIÓN INTERAMERICANA DEL CEMENTO

"Mercury inventories – experience from Latin America"
UNEP Global Mercury Partnership Program

María José García
FICEM General Director
June 18, 2012

Inter-American Cement Federation

The cement industry in Iberian-America and the Caribbean

- ✓ 29 countries with local cement production facilities (Latin America, the Caribbean, Spain and Portugal).
- ✓ 660 million inhabitants.
- ✓ 83 cement manufacturing companies.
- ✓ 328 production centers (including integrated manufacturing facilities and grinding centers).
- ✓ 11 technical institutes and eight trade associations in 14 countries.
- ✓ 200 million tons annual cement production.
- ✓ 5.6 % of global cement production.

Mercury inventories – experience from Latin America

✓Currently, the measuring of persistent organic pollutants (POPs), mercury and micropollutants generated from cement production processes is an issue under analyze by the United Nations Environment Programme –UNEP-.

✓FICEM has already started to collect the numbers on mercury emissions by the Latin American cement industry with the support of the climate change and co-processing task force and under the CSI's guidance. For this purpose, it has developed and implemented a digital tool safeguarded by highly strict confidentiality measures.

✓FICEM acknowledges the importance for the Latin American cement industry to become aware and commit to the measuring of mercury emissions.

> **The CSI has requested a cooperative work between FICEM, the Portland Cement Association (PCA) and the European Association of Cement Producers (Cembureau) to develop a standardized sector protocol for the monitoring and measuring of these pollutants.**

Mercury inventories objectives

- To participate in the global inventory of mercury emissions generated by the cement industry (Sector-partnership PNUMA-CSI by the cement industry).

- To raise awareness among the cement industry in Latin America about the importance of measuring mercury emissions and call them to join this voluntary initiative using the developed reporting format.

- To obtain real values on mercury emissions generated by the cement industry in Latin America, with the purpose of preparing the industry for future regulatory frameworks.

- To encourage cement companies not currently measuring their mercury emissions, to introduce measuring systems.

- To analyze the statistics obtained from the information gathered, allowing the identification of the influence of some variables in the results of mercury emissions.

Mercury inventories in Latin America

- With the purpose of working hand-in-hand with the Federation, in 2010 FICEM created the **"Climate Change Taskforce"** to address sustainability and environmental issues.

- Two of the projects on which FICEM has been working together with the CSI are **GNR and coprocessing.** Our next step will be to address **the control of mercury emissions** .

- The Latin American region behaves in a very different manner compared to Europe and the United States. In the region, there are regulations regarding the control of mercury emissions. However, in many cases, these are less developed than those existing in other countries.

- Most of the countries in Latin America have regulations addressing mercury emissions. However, **these are not as strict our even mandatory for the entire industry in a given** country. In countries like Chile and Brasil, the industry with activities of co-processing is required to report mercury emissions to the authorities; while other places such as Peru, Nicaragua, El Salvador and Dominican Republic do not even have any regulatory frameworks.

- Regarding coprocessing, just to cite an example, only six out of 29 Latin American countries have a specific-country regulation. With the purpose of helping the industry and the authorities to learn about the best experiences and the development of regulatory frameworks, FICEM has prepared an inventory of the existing regulations.

- As the only trade association representing the regional cement industry in LATAM, **it is our mission to support this initiative to ensure its success**.

Mercury regulatory frameworks in Latin America (1)

Country	Framework	Issuing Institution	Standard Value	Unit	Conditions	Reference method	Notes
Argentina	DEC 831-93. Regulatory decree on the Law 24.051 addressing hazardous waste management.	Bureau of Environment and Sustainable Development (SAYDS)	0,10	mg/L	30 ng/Nm3 of dry gas at 10 % of CO^2	-	Appendix IV: hazardous waste risk traits: lixiviation
Brasil	RESOLUÇÃO No 264, August 26, 1999	Conselho Nacional de Meio Ambiente - Ministério de Meio Ambiente	0,05	mg/Nm^3	1 atm, 0 °C, 7% O2, dry	Not defined method	Article 1 This resolution applies to the licensing of rotary kiln clinker production activities for co-processing of waste
Colombia	Res. 909 from June 5, 2008	Ministry of Environment, Housing and Territorial Development - (Today's Ministry of Environment and Sustainable Development)	0,05	mg/m^3	To reference conditions - R (25°C, 760 mm Hg) Adjusted to 11% O^2.	Direct measuring	**Co-processing of hazardous waste.**
Costa Rica	Decree 31837 of 2004 - Regulation on requirements, conditions and controls for the utilization of alternative fuels in cement kilns.	President's Office and Ministry of Health	0,28	mg/m^3	25°C , 760 mm Hg , 7% O2 , dry base	Analysis of emissions at kiln, direct measuring	Parameters and limits to atmospheric emissions from cement kilns **using alternative fuels.** Standard reference **value corresponds to the sum of metals Cd + Hg.**
Chile	DS 45/2007 "Emission norm for incineration and co-incineration"	Ministry, General Secretary for the President's Office. National Commission for the Environment.	0,10	mg/Nm^3	101 kPa, 25 °C, 10% O^2, dry	US EPA 29	Emission norm for incineration and co-incineration
Ecuador	Agreement Nº03 (2013). Agreement Nº48 (2011)	Ministry of Environment	0,08		7% O2 , dry base	Atomic absorption spectroscopy or equivalent	**Co-processing of hazardous waste.**
El Salvador	**NONE**						

Mercury regulatory frameworks in Latin America (2)

Country	Framework	Issuing Institution	Standard Value	Unit	Conditions	Reference method	Notes
Honduras	Executive Agreement Nº 1566-2010	Secretary of Natural Resources and the Environment (SERNA). Published Diario Oficial LA GACETA. 21-feb-11	0,05	mg/Nm^3	1 atm, 0 °C, 7 % dilution O^2	US EPA 29	Atomic absorption spectroscopy
México	NOM - 040 - SEMARNAT - 2002	SEMARNAT - Secretariat for the Environment and Natural Resources	0,07	mg/m^3	25°C , 760 mm Hg , 7% O2 , dry base	Atomic absorption spectroscopy or equivalent	Environment Protection Norm - manufacturing of hydraulic cement - Upper limit for atmospheric emissions.
Nicaragua	NTON 05 032-10 - Mandatory Nicaraguan Technical Norm for the environmental management of waste lube oils	MARENA - Ministry of Environment and Natural Resources	0,28	mg/m^3	25°C , 760 mm Hg , 7% O2 , dry base	–	Upper limit for atmospheric emissions **from waste lube oils.** Standard reference value corresponds to the **sum of metals Cd + Hg.**
Panamá	Executive Decree No 293 of 2004	President's Office	<0.1	mg/m^3	25°C , 760 mm Hg , 7% O2 , dry base, daily average	–	Upper limit for emissions from the **incineration of hazardous waste.** The regulation makes reference to guidelines for the surveillance of incineration and co-processing systems.
Perú	**NONE**						
Puerto Rico	40 CFR Part 63	US EPA - Environmental Protection Agency	120	µg/dscm	20°C , 760 mm Hg , 7% O2	–	**Incineration of hazardous waste** in cement kilns.
República Dominicana	**NONE**						
Uruguay	Ministry resolution 1215/009 (C.A.S.A.)	DINAMA	< 0,05	mg/Nm^3	Average value 30 minutes	Not defined method	Emissions limit per kiln during the incineration of residues

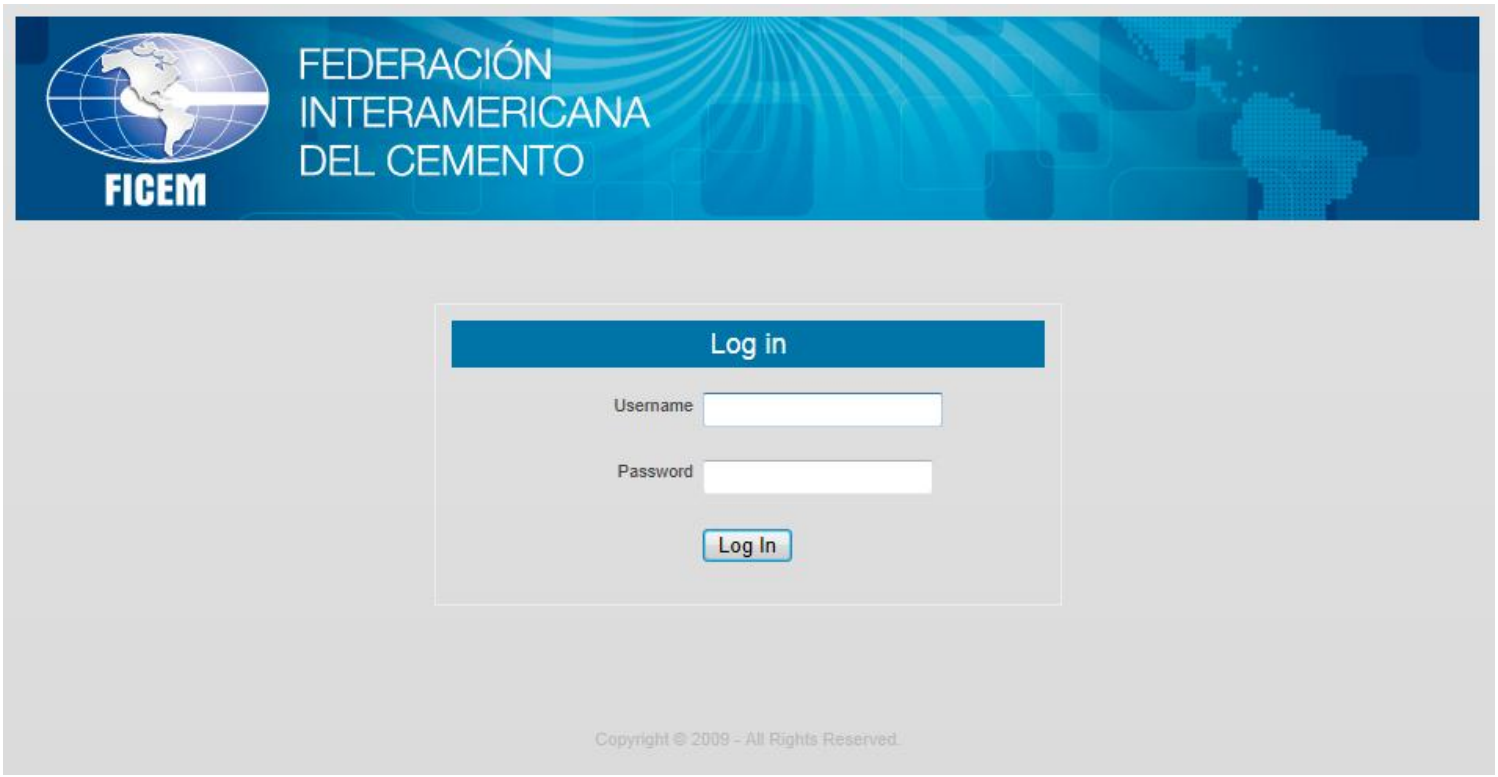
Coverage – Pilot plan with 9 countries

Country	
Argentina	
Chile	
Costa Rica	
Ecuador	
Guatemala	
Honduras	
Nicaragua	
Panamá	
Perú	

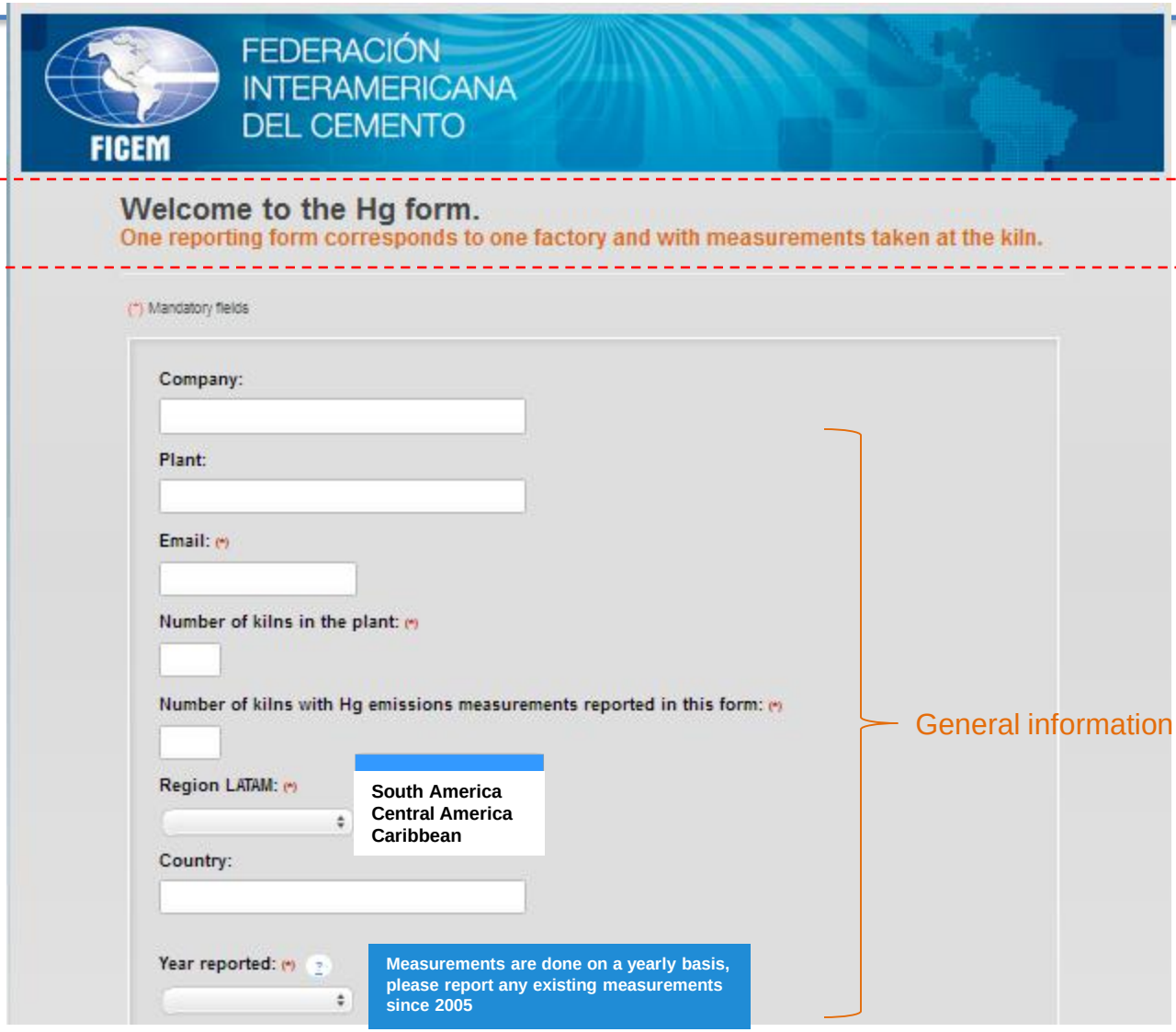
Procedure for the reporting of Hg emissions

Through the link: http://ficem.org/Procedimiento-emisiones-de-mercurio/formulario/wp/

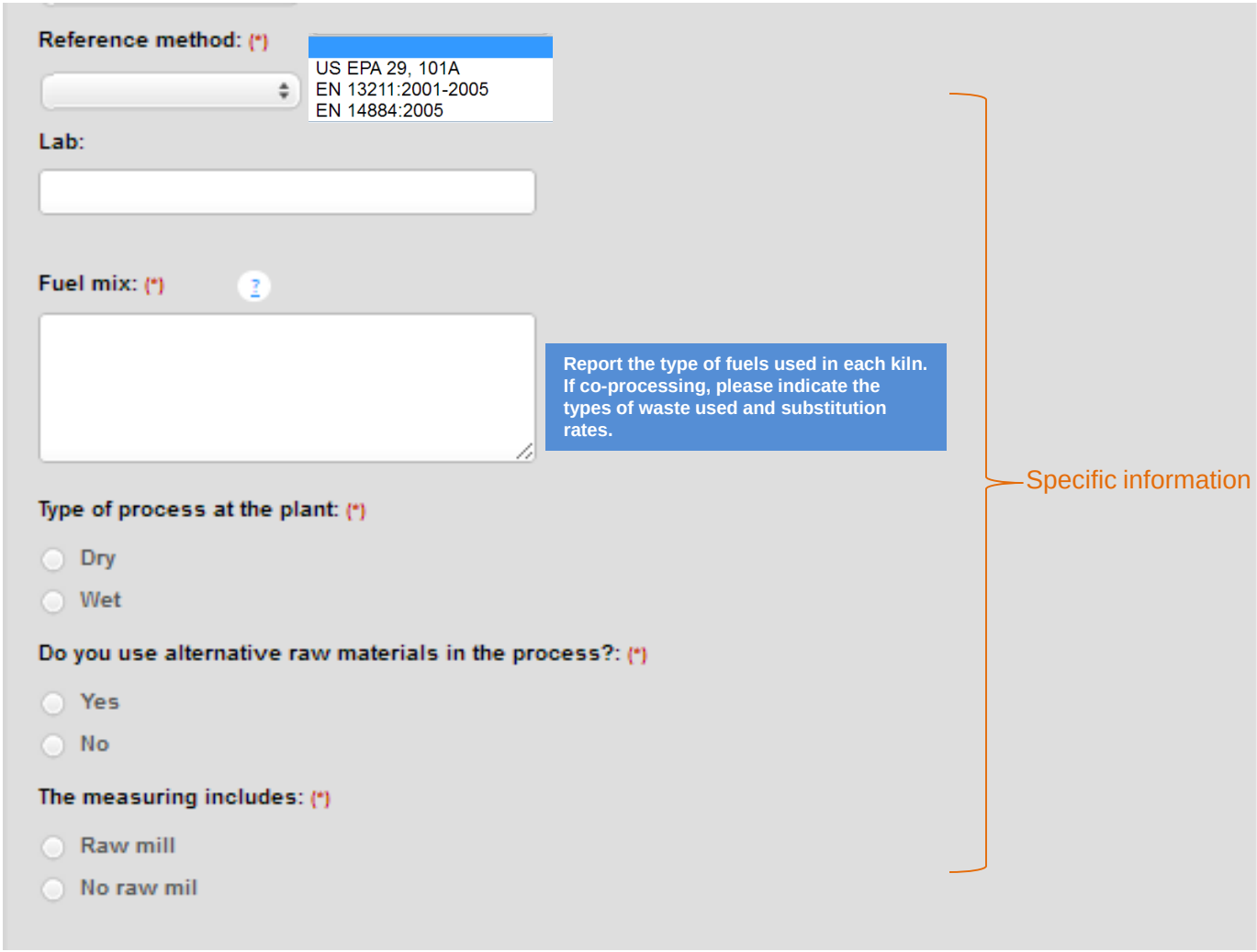
This link is originated by the FICEM server and is encrypted to be accessed exclusively using a direct link with a user name and access code.



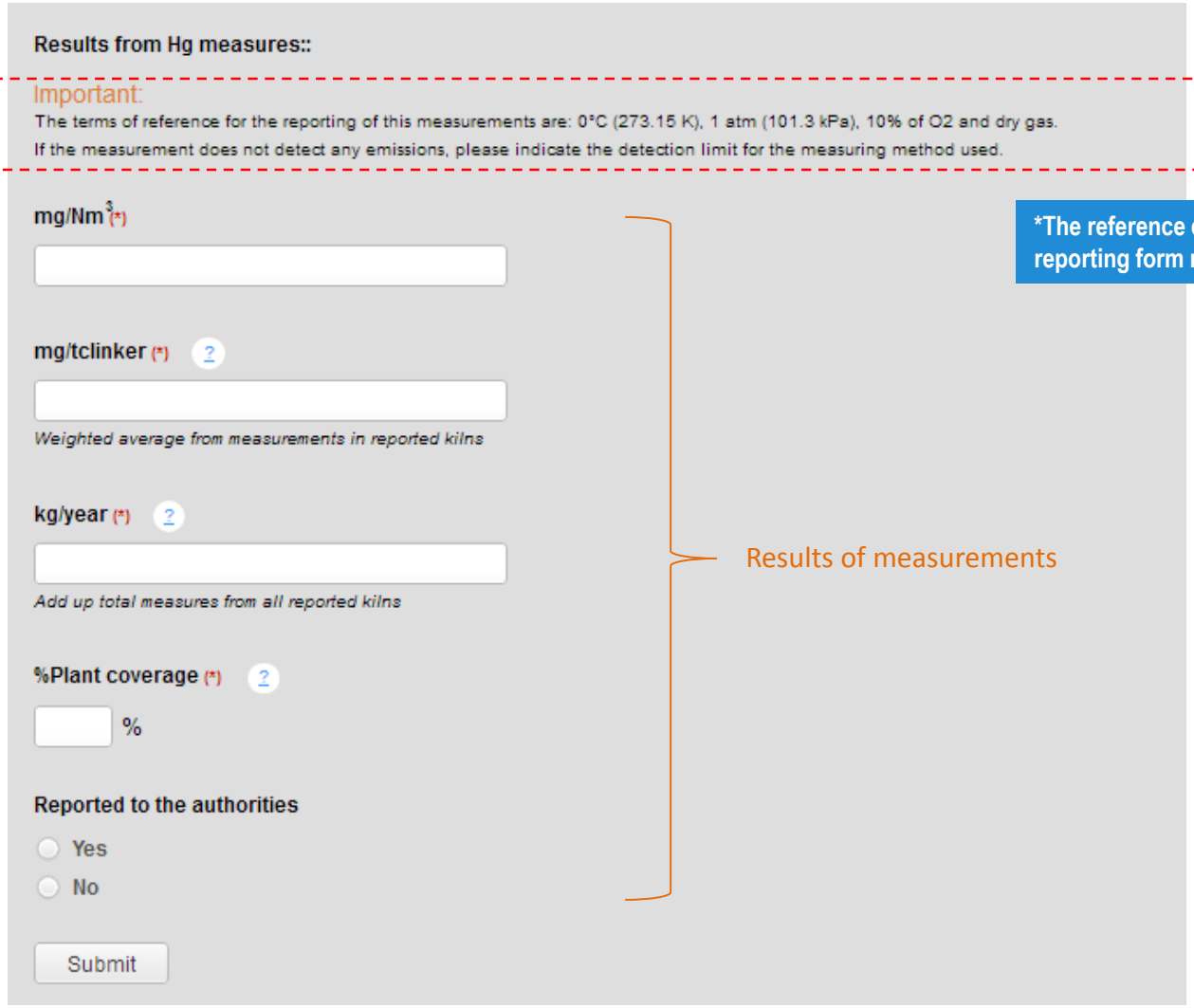
Procedure for the reporting of Hg emissions



Procedure for the reporting of Hg emissions

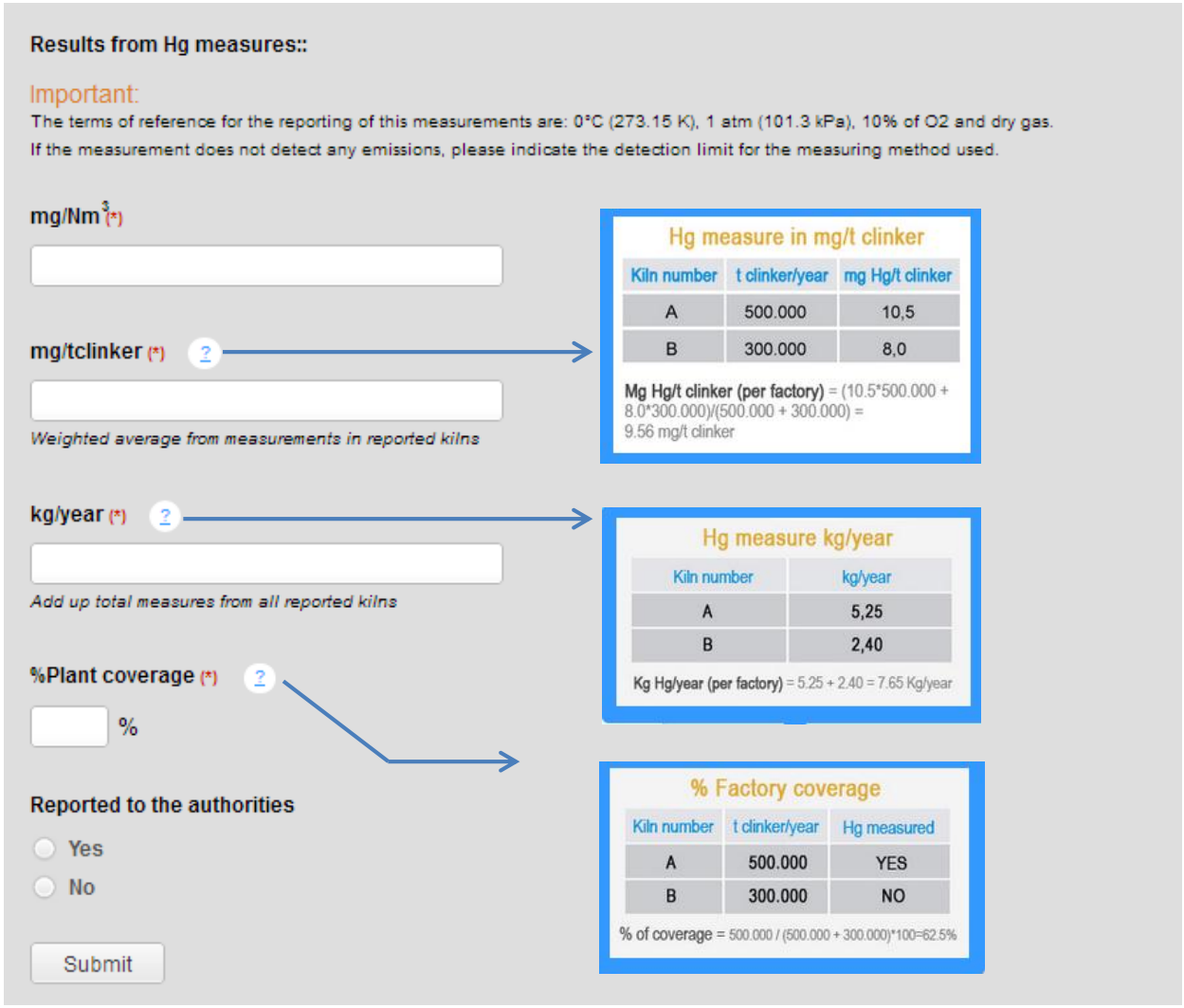


Procedure for the reporting of Hg emissions



*The reference conditions in the FICEM reporting form match the CSI guidelines.

Procedure for the reporting of Hg emissions



CSI reporting form

Table 5: KPI reporting form

Name of the company			
Reporting period			
KPI 1 Overall coverage rate		%	
KPI 2 Coverage rate continuous measurement		%	
KPI 3 Emission data & KPI 4 Coverage rate			
Pollutant	Specific emissions	Absolute emissions	Coverage
"dust"	g/ton clinker	ton/year	%
"NO_x"	g/ton clinker	ton/year	%
"SO_2"	g/ton clinker	ton/year	%
"VOC/THC"	g/ton clinker	ton/year	%
"PCDD/F"	ng/ton clinker	mg/year	%
"Hg"	mg/ton clinker	kg/year	%
"HM1"	mg/ton clinker	kg/year	%
"HM2"	mg/ton clinker	kg/year	%

Indicators requested by the CSI match those included in the FICEM Hg reporting form

Example: reporting form results

Reporting form result	
Company	xxx
Plant	xxx
# kilns at Plant*	1
# kilns with Hg measurements*	1
Region LATAM*	South America
Country	xxx
Year*	2010
Measuring method*	US EPA 29
Lab	xxx
Fuel mix*	Petcoke 98% Recycled oil 2%
Process type*	Dry
Use of alternative raw materials*	No
Raw mill included in the measurement *	Yes
mg/Nm3*	0,0057
mg/t clinker*	14,08
kg/year*	6,48
% of plant coverage*	100
Reported to the authorities	Yes

Challenges and opportunities for the Latin American cement industry

Latin America is a subcontinent yet to be built. Millions of urban roads, thousands of highways, tunnels, seaports, public transportation and sanitation systems and urban furniture, among others; millions of people with needs to be met and governments eager to find mechanisms that allow the integration of its citizens to inclusive, fair economic and social systems.

The institutional challenges faced by cement companies towards the future are substantial. Latin America is no exception. It is necessary to lead the promotion of good manufacturing practices across the region, press for nonrestrictive regulations in the different countries, share examples of social and environmental responsibility, encourage cement- and concrete-based construction systems and, finally, to promote the regional development in a sustainable frame.