

GHG Emission Verification Opinion

Macrogen, Inc.

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1. Verification Goal

The goals of greenhouse gas (GHG) emission verification (hereinafter referred to as 'verification') conducted by the Korean Standards Association are as follows.

- Confirming the conformity with standards and procedures of GHG emission and GHG emissions calculated within the scope of verification
- Checking the validity of declarations related to the organization's GHG emissions or removals
- Confirming the effective implementation of the organization's management of GHG emissions or removals
- Confirming the conformity of processes for implementing, managing and improving the organization's GHG emissions or removals estimates

2. Verification Scope

Korean Standards Association conducted limited guarantee level verification for Scope1, Scope2, Scope3 for Macrogen's Greenhouse Gas declaration.

- Reporting Target : Gangnam HQ, Gasan Genome Center, Daejeon Genome Center, GEM Center
- Boundary : Scope1(Direct emissions), Scope2(Indirect emissions), Scope3(Other Indirect emissions)
 - Scope1 : Stationary combustion, Mobile combustion
 - Scope2 : Externally purchased power
 - Scope3 : Category 1. Purchased goods and services
Category 6. Business Travel
- Year : January 1, 2022 to December 31, 2023

3. Verification Criteria and Guidelines

Korean Standards Association conducted verification according to international standards and the standards and guidelines of the National Institute of Environmental Research.

- KS I ISO 14064-1:2018, KS I ISO 14064-3:2019
- Verification Guidelines for the Operation of the Greenhouse Gas Emissions Trading System (Ministry of Environment Notice No. 2021-112)
- Guidelines for Reporting and Certification of Emissions from Greenhouse Gas Emissions Trading System (Ministry of Environment Notice No. 2023-221)
- 2006 IPCC Guidelines for National Greenhouse Gas Inventories
- WRI(World Resources Institute) Greenhouse Gas Protocol
- Corporate Value Chain (Scope3) Accounting and Reporting Standard (WRI)

4. Level of assurance verification and Responsibility

Korean Standards Association provides verification at limited level of assurance to strengthen GHG management for your company's GHG emissions.

- On-site inspection : Visit to Gangnam HQ
- Method of confirmation :
 - Interview with greenhouse gas emissions manager and field staff
 - Review of the management system and data used to calculate greenhouse gas emissions during the reporting period
 - Tracking review of internal documents and basic data

Macrogen, Inc. should provide fair data on information and evidence related to GHG emissions, and the KSA is limited to guaranteeing GHG emissions.

5. Verification Limit

GHG emissions can be affected by factors such as data limits and uncertainties in the scope of verification, and inherent limitations may exist accordingly.

6. Verification Conclusion

Only of the MacroGen's verification scope has confirmed that the verification results performed in accordance with the international standards of ISO 14064-3 are not materially accurate, and there is no evidence that greenhouse gas data and information are not fairly expressed.

● Appendix. GHG emissions in 2022, 2023

(Unit : tCO₂eq)

Year	Division	Scope1	Scope2	Scope3**	Subtotal*
2022	Gangnam HQ	44.294	333.307	61.649	439
	Gasam Genome Center	121.911	1837.936	23.465	1,983
	Deajeon Genome Center	103.796	54.121	1.860	159
	GEM Center	160.310	267.783	0.270	428
Total		430.277	2,493.147	87.244	3,009

(Unit : tCO₂eq)

Year	Division	Scope1	Scope2	Scope3**	Subtotal*
2023	Gangnam HQ	25.141	344.788	15.679	385
	Gasam Genome Center	160.020	1,858.496	22.370	2,040
	Deajeon Genome Center	115.989	49.277	0.666	165
	GEM Center	128.949	223.099	0.506	352
Total		430.098	2,475.660	39.221	2,942

* Total greenhouse gas emissions by workplace was cut below the decimal point and expressed in integer units.

** Only Category1(Water), 6(Business travel) emissions for Scope3.

July 25, 2024



KOREAN STANDARDS ASSOCIATION

KSA



국립환경과학원

GHG Verification Statement

Macrogen CO., LTD

✔ Scope of Verification

Korean Standards Association has conducted verification under the limited assurance level on the year of 2021 Greenhouse Gas Emissions(Scope 1, 2, 3) of Macrogen CO., LTD.

✔ Reference Standard

- ISO 14064- 1,2,3 : 2018 · IPCC Guideline : 2006 · WRI GHG Protocol
- Korea ETS guideline provided by Ministry of Environment, Republic of Korea

✔ Verification Opinion

As a result of verification activities, verification team has found no significant errors. Therefore, Korean Standards Association confirms that following emissions data are adequately quantified.

•GHG Emissions & Energy (Scope1, 2, 3)

No	workplace	annual GHG emission(ton CO2_eq)			
		(scope1)	(scope2)	(scope3)	overall emission
1	Head office	57.197	315.985	19.329	392
2	genome center	122.445	1,743.492	9.832	1,875
3	Daejeon genome center	60.426	44.479	1.388	106
4	GEM center	164.419	256.634	0.001	421
Total		-	-	-	2,794

※ Scope3 boundary : water, business travel

※ Emissions by workplace are expressed in integer units (rounded off to the nearest decimal point)

July 22, 2022



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•GHG Emissions & Energy (Scope1, 2, 3)

No	workplace	annual GHG emission(ton CO2_eq)			
		(scope1)	(scope2)	(scope3)	overall emission
1	Head office	50.499	302.901	34.832	388
2	genome center	135.228	1,754.763	43.367	1,933
3	Daejeon genome center	67.868	47.676	0.152	115
4	GEM center	183.034	241.655	0.001	424
Total		—	—	—	2,860

※ Scope3 boundary : water, business travel

※ Emissions by workplace are expressed in integer units (rounded off to the nearest decimal point)

July 22, 2022



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