

# CORONASTEP Airport Report 01 (2023 - Weeks 02 to 04) SARS-CoV-2 Airport Sewage Surveillance in Luxembourg

## Summary

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The latest EU recommendations ([https://health.ec.europa.eu/latest-updates/opinion-health-security-committee-common-eu-approach-response-covid-19-situation-china-2023-01-05\\_en](https://health.ec.europa.eu/latest-updates/opinion-health-security-committee-common-eu-approach-response-covid-19-situation-china-2023-01-05_en)) state that EU/EEA countries should consider introducing or strengthening wastewater monitoring, especially in waters originating from airports with international flights and/or aircraft after long-haul flights, with a particular focus on passenger flights from China. However, the variants currently circulating in China are already circulating within the EU/EEA and no new variants have been detected so far.

Following these recommendations and at the request of the Health Directorate, LIST added an additional wastewater sampling point in the airport area.

In order to maximise the geographical coverage and the number of people captured, we have, in collaboration with SIDEST, defined a collection point in the sewage system of the airport area. This point captures both the wastewater from the aircrafts and that from the airport itself (option 3 in the EU guidelines<sup>1</sup>).

In a similar way to what is done for the wastewater treatment plant monitoring network, sampling is carried out once a week over a 24-hour period, before being reported to LIST for analysis.

As requested in the EU guidelines<sup>1</sup>, the following analyses are performed:

- Generic detection of SARS-CoV-2 by RT-qPCR (E gene)
- Search for specific mutations by RT-ddPCR
- High throughput sequencing to determine circulating variants and mutations. Sequencing is performed at LNS and bioinformatic analysis at LIST

***Overall, the first results obtained confirm that so far no new SARS-CoV-2 variants (or mutations) have been detected, but that all those currently circulating have been identified.***

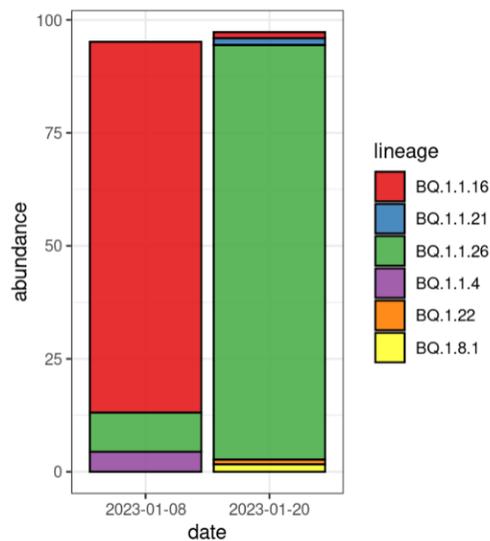
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<sup>1</sup> European Commission. Adhoc guidance: Wastewater sampling of aircrafts and airports for SARS-CoV-2 surveillance. 10 January 2023. European Commission Brussels 2023.

Table 1: SARS-CoV-2 concentration (RT-qPCR) and mutations detected (RT-ddPCR) in the airport sewage samples.

Sampling date	SARS-CoV-2 concentration	Mutations detected by RT-ddPCR	Variants of concern carrying the mutation
08 January 2023	3.7 x 10 <sup>4</sup> genome copies/L	L452R LLPA24S K417N R346T	Omicron BA.4, BA.5, BQ.1 Omicron BA.2, BA.4, BA.5, BA.2.12.1, BA.2.75, BQ.1, XBB Omicron BA.1, BA.2, BA.4, BA.5, BA.2.12.1, BA.2.75, BQ.1, XBB Omicron XBB, BQ.1
20 January 2023	1.1 x 10 <sup>4</sup> genome copies /L	L452R LLPA24S K417N	Omicron BA.4, BA.5, BQ.1 Omicron BA.2, BA.4, BA.5, BA.2.12.1, BA.2.75, BQ.1, XBB Omicron BA.1, BA.2, BA.4, BA.5, BA.2.12.1, BA.2.75, BQ.1, XBB
26 January 2023	2.0 x 10 <sup>4</sup> genome copies /L	L452R LLPA24S K417N R346T	Omicron BA.4, BA.5, BQ.1 Omicron BA.2, BA.4, BA.5, BA.2.12.1, BA.2.75, BQ.1, XBB Omicron BA.1, BA.2, BA.4, BA.5, BA.2.12.1, BA.2.75, BQ.1, XBB Omicron XBB, BQ.1

Figure 1: Pango lineages identified\* by next generation sequencing in the airport sewage samples.



\*Please note that the quality of sequencing is not very good (not enough depth), which can lead to a lot of variance and uncertainty on the presented results.