

# WEEKLY REPORT – WASTEWATER-BASED EPIDEMIOLOGICAL SURVEILLANCE OF THE SARS-COV-2

## — RESULTS OF 26/01/2022

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In collaboration with:



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# 1. Summary

In the present work, the circulation of the SARS-CoV-2 virus in the environment is assessed based on three indicators. The analysis of wastewater samples collected in 42 wastewater treatment plants covers 45% of the Belgian population, with increased accuracy in the urban areas. The results of the wastewater surveillance are a source of complementary information to the infection cases number. Indeed, the wastewater results do notably include all asymptomatic persons, and are independent of the testing strategy.

Here are the conclusions based on the latest results of January 26<sup>th</sup> 2022:

- At the national level: At the 4th wave's peak, the reduction of the Fast increase area's number was followed a week later by a reduction of the Increasing trend area's number. This week's indicators may follow a similar pattern with 36, 26 and 37 areas on Wednesday 19th and 33, 3, 27 areas on Wednesday 26th January 2022, respectively for the High circulation, Fast increase and Increasing trend indicators. Therefore, the behaviour of the indicators may indicate that the 5th wave peak is reached. But a significant reduction of the Increasing trend area's number is necessary next week to validate this hypothesis.
- At the provincial level: all the provinces are positive to the High circulation indicator. Regarding the Increasing trend indicator, Brussels, Vlaams-Brabant and West-Vlaanderen provinces do not show an Increasing trend anymore, meaning that the viral circulation is either in a decrease or in a stabilizing phase. In Liège, Brabant wallon and Luxembourg provinces, the Increasing trend has become positive, meaning that an increasing phase is re-occurring. The provinces of Liege and Luxembourg are of particular concern as the conditions for 3 indicators are met in these provinces.
- At the covered areas level: an alerting situation is evidenced for the covered areas of Arlon, Liège Oupeye, and Vallée du Hain (L'Orchis) as all three indicators are fulfilled.
- The risk of underestimating the Omicron variant in wastewater was assessed to be negligible.

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The wastewater situation can be followed on a weekly basis on:

- The graphics available on the public [COVID-19 dashboard](#)
  - The Risk Assessment Group (RAG) updating the weekly epidemiological situation through a report validated by the Risk Management Group (RMG) and published every Friday in [French](#) and [Dutch](#).
  - Further details on the methodology applied for the wastewater surveillance can be found in [the Appendix Methodology document \(access available online\)](#).
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## 2. Introduction

In mid-September 2020 started the SARS-CoV-2 national wastewater surveillance project. The present report is an outcome of this project aiming to assess weekly the wastewater-based epidemiological situation of Belgium.

The surveillance is based on the analysis of water samples collected twice per week from the influent of 42 WasteWater Treatment Plants (WWTPs) spread over Belgium. The evolution of the SARS-CoV-2 viral concentrations measured over time in the different treatment plants is analyzed at different levels: regional, provincial, and the catchment area covered by the individual treatment plants. Also, three alerting indicators were developed to highlight areas of concern regarding the high circulation, the fast evolution, and the increasing trend of the observed viral concentrations.

In this report, the weekly wastewater-based epidemiological situation is presented and discussed at the above-mentioned levels based on the three categories of alerting indicators. Moreover, the remaining sources of uncertainties are discussed together with their expected impacts on the wastewater results interpretation.

## 3. Methodology

### 3.1. SAMPLE COLLECTION AND ANALYSIS

The surveillance project, which started in mid-September 2020 covers around 45% of the Belgian population. The population covered is 40% in the Flemish region, 35% in the Walloon region, and nearly 100% in the Brussels region. Figure 1 shows the catchment areas covered by the 42 WWTPs included in the project, which are located in high population density areas. A catchment area is defined by the area delimiting the population covered by a specific wastewater sample, collected at the inlet of the WWTPs. Further coverage details can be found in Table 2 by province (see also Table A1 in the [Appendix Methodology document \(access available online\)](#) ) and on the [Sciensano public dashboard](#). In practice, 24-hour composite samples are collected twice a week on Mondays and Wednesdays from the influent of WWTP and are analysed for the presence of SARS-CoV-2 RNA by three different laboratories. The resulting SARS-CoV-2 concentrations (3 targeted genes) are delivered to Sciensano within 2 days for data analysis purpose. Concretely, the results which are representative of Mondays and Wednesdays are respectively available on Wednesdays and Fridays.



Figure 1: The population located in the areas covered by the wastewater treatment plants (highlighted in yellow) and the population density for each municipality (indicated by the blue scale). Note that due to the recent flooding, the treatment plants of Wegnez and Liège (Grosses Battes) are out of order. These areas are, hence, not considered anymore in the wastewater surveillance and has been partially replaced by the treatment plant of Soumagne.

### 3.2. WASTEWATER RESULTS

The quantification of SARS-CoV-2 in RNA copies/ ml (concentration) was generalized in mid-February 2021 to all the treatment plants investigated. Before this date, the quantitative values were estimated based on the retrospective application of the quantification method (see details in Appendix) from mid-September 2020 to mid-February 2021 for Flanders and Brussels. In Wallonia, the quantitative results were available since the start.

Preliminary results allowed for estimating the limit of quantification of the analytical method at 20 copies/ml.

### 3.3. ALERTING INDICATORS

To highlight the areas of possible concern, the three following types of alerting indicators are assessed twice a week, based on the viral concentration (RNA copies/ml) measured for the three targeted gene fragments (E, N1, and N2):

1. The **High circulation** indicator highlights the catchment areas where the viral concentrations are high. It corresponds to a situation where the viral concentrations exceed half of the highest value recorded during the third wave (i.e. from mid-February 2021 till begin of May).
2. The **Fast increase** indicator highlights the catchment areas where the viral concentrations have rapidly increased for the last week. It corresponds to a situation where the moving average on the past 7 days of the viral concentration has increased faster than 70% per week if being above the estimated limit of quantification. The increasing slope is normalized for each treatment plant.
3. The **Increasing trend** indicator highlights the catchment areas where the viral concentrations have been increasing for more than 6 days. The indicator is computed based on the moving average on the past two weeks of the viral concentration.

The indicators were developed in order to be able to track the different phases of an outbreak. Typically, when the viral concentrations in wastewaters in an area start to increase, the indicator Increasing trend will be the first fulfilled. If the concentrations increase quickly, the Fast increase indicator will be fulfilled. Finally, after the initial increasing phase, the concentrations in an area may be sufficiently high to result in the High circulation to be fulfilled.

Figure 3 was developed to offer a dynamic view of the three alerting indicators over time. Rainy events may dilute the viral concentrations measured in the wastewater samples causing an underestimation of the area's number highlighted by the indicators. The dates impacted by rainy events are marked by blue bars on Figure 3 and were estimated analysing the daily flow rate recorded at the wastewater treatment plant's inlet.

### **3.4. CASES RESULTS**

The cases number data presented in this report come from the COVID-19 laboratory-confirmed cases database centralized by Sciensano. The cases number, used to compute the 14 days-incidence, only accounts for the physical areas covered by the wastewater project (see Figure 1).

### **3.5. CAUTION POINTS FOR THE RESULTS INTERPRETATION**

Only the trends, observed through the alerting indicators, should be assessed for the comparison of different areas. As the concentration values differ from an WWTP to another, notably due to the differences in population sizes covered, absolute values should not be compared. Additionally, the situation comparison between the regions should be considered with caution. The degree of comparability is not yet known and depends on the comparability of the results between the different laboratories performing the analysis (see [the Appendix Methodology document \(access online\)](#)).

Moreover, the wastewater concentrations and the cases numbers presented in this report do not originate from the same population, even though the positive cases are selected only for the municipalities covered by the wastewater surveillance. For instance, the wastewater results account for all infected persons (whatever age or symptomatic condition) while the cases numbers include only the persons clinically tested positive. Likewise, an infected person covered by the wastewater results could be associated with another area in the clinical surveillance as the person's postal code is used for clinical statistics, i.e. mobility bias. Therefore, the correlation between the wastewater concentrations and the cases number varies according to the area considered. The wastewater results are thus complementary and independent information to the results of the cases.

The correlation between the wastewater viral concentrations and the cases numbers could also be influenced by the vaccination campaign and the circulation of variants.

Finally, all values below the limit of quantification (< 20 RNA copies/ml) should be considered as non-quantitatively reliable values. A reported value lower than 20 copies/ml only shows that SARS-CoV-2 has been detected in the sample but at an undetermined concentration.

## 4. Results

### 4.1. REGIONS

Figure 2 represents the quantitative SARS-CoV-2 RNA concentrations in the wastewaters and the 14 days incidence for each region, compiling the incidence data of the area covered by the wastewater surveillance. The estimated viral concentrations can also be seen for the period before mid-February (see 2.2. in [the Appendix Methodology document \(access online\)](#) for more details).

Several waves can be seen in Figure 2:

- The 2<sup>nd</sup> wave occurring in November 2020
- The 3<sup>rd</sup> wave occurring in March 2021. In Wallonia, several hypotheses could explain the lower viral concentration measured compared to the ones in Flanders and Brussels: (1) the sizes of the treatment plants in Wallonia are smaller than the ones located in the two other regions, affecting the viral concentrations measured; (2) the extent to which the results are comparable between the different laboratories is unknown (see [Methodology](#) for more details)
- The 4<sup>th</sup> wave occurring in December 2021
- The 5<sup>th</sup> wave starting at the beginning of January 2022 when a fast and steep increase in the viral concentrations was observed.

It should be noted that the last viral concentrations in wastewaters are not displayed in the Figure 2 as the regional corresponding trends are based on centred moving averages, and therefore will be validated with the next week results<sup>1</sup>.

Table 1 shows, for each region, the results associated with the samples of Wednesday January 26<sup>th</sup> 2022 allowing to track the changes between the situation as of today (January 26<sup>th</sup> 2022) and the situation as of last week (January 19<sup>th</sup> 2022). Hereby, two distinct cases are taken into account:

1. If a region has at least one indicator fulfilled this week and it was not the case last week, its **name is displayed in bold** in the table.
2. If a region has at least one indicator fulfilled this week and if it also was the case last week, any change in indicator fulfilment (i.e. if the value for any indicator has changed from 0 to 1 or from 1 to 0) is indicated in **coloured bold text**.

The last trends were analysed based on the alerting indicators presented in Table 1. In the three regions, the High circulation indicator is fulfilled. After several weeks of being fulfilled, the Increasing trend indicator is not positive anymore in Brussels as shown in Figure 2. Also in Flanders, the concentrations in wastewaters are increasing for more than 6 days (Increasing trend indicator fulfilled) and both the Fast increase and Increasing trend are fulfilled in Wallonia.

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<sup>1</sup> The trends of SARS-CoV-2 circulation in wastewater, given by the dark line on the graphs, corresponds to a 14 days centred mean of the concentrations measured.

**Table 1: Alerting indicators fulfilled (1) or not (0) on January 26<sup>th</sup> 2022. Columns represent the population coverage of the regions (Pop. coverage) and the three alerting indicators High Circulation (High), Fast increase (Fast) and Increasing trend (Incr.). The specifications of the four last columns are explained in the footnotes 1-4 below the table. Missing data is indicated with a “/”.**

Region	Pop. coverage	High	Fast	Incr.	Norm. viral cc. (%) <sup>1</sup>	Mean viral. cc. (c./ml) <sup>2</sup>	Norm. evol. (%/w) <sup>3</sup>	Incr. days <sup>4</sup>
Brussels	100%	1	0	0	133	11269	-23	0
Flanders	41%	1	0	1	87	1368	-29	9
Wallonia	31%	1	1	1	301	598	135	11

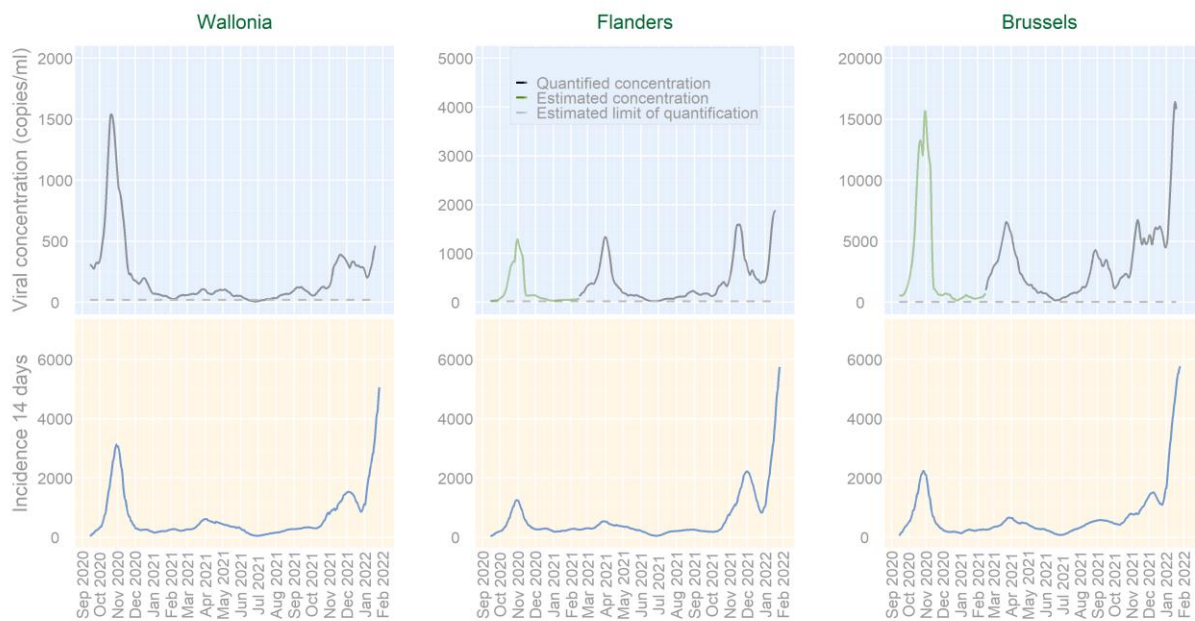
<sup>1</sup> : the viral concentration normalized with the maximum viral concentration measured in the corresponding catchment area during the third wave (i.e. from mid-February 2021 till begin of July).

<sup>2</sup> : the viral concentration computed on the replicate of the three targeted gene fragments.

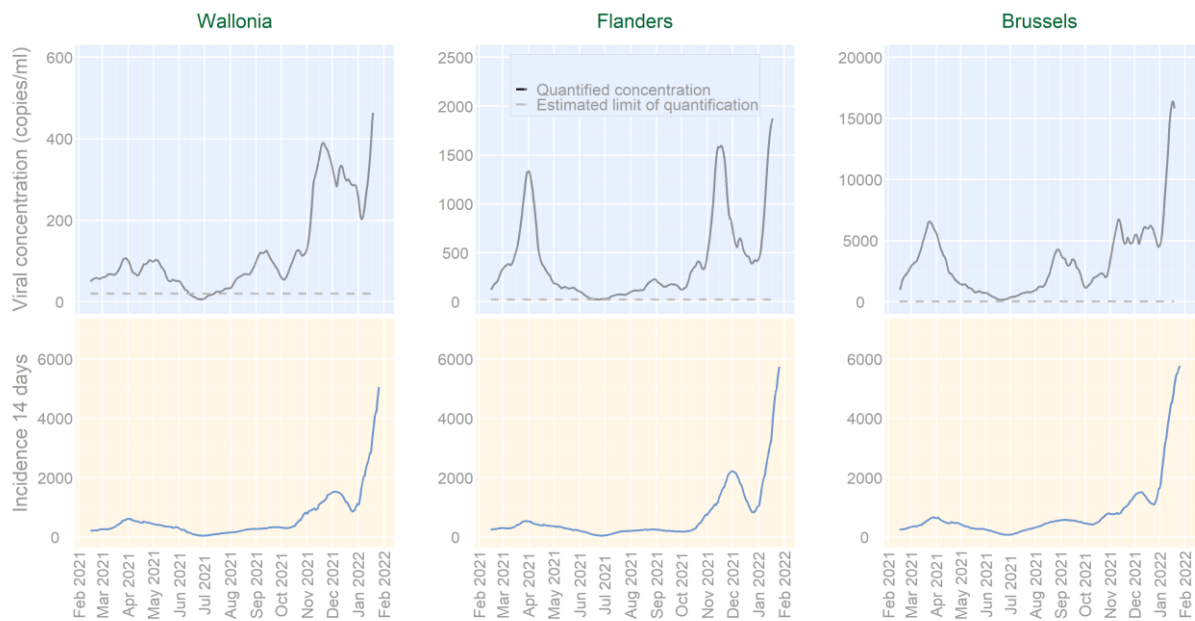
<sup>3</sup> : the slope (%/week) of the past 7 days moving average of the viral concentration if being above the estimated limit of quantification.

<sup>4</sup> : the cumulative number of days of increase of the past 14 days moving average of the viral concentration





**Figure 2A:** The SARS-CoV-2 RNA estimated and quantified concentrations expressed as copies/ml (based on the two weeks centered moving average applied on the linear interpolation) and the estimated limit of quantification of 20 SARS-CoV-2 RNA copies/ml (dashed line) (Top), and the 14 days incidence in the population covered by the wastewater surveillance since the surveillance starting date (bottom).



**Figure 2B:** The SARS-CoV-2 RNA estimated and quantified concentrations expressed as copies/ml (based on the two weeks centered moving average applied on the linear interpolation) and the estimated limit of quantification of 20 SARS-CoV-2 RNA copies/ml (dashed line) (Top), and the 14 days incidence in the population covered by the wastewater surveillance since mid-February 2021 (bottom).

## 4.2. PROVINCES

Table 2 shows, for each Province, the results associated with the samples of Wednesday January 26<sup>th</sup> 2022 allowing to track the changes between the situation as of today (January 26<sup>th</sup> 2022) and the situation as of last week (January 19<sup>th</sup> 2022). Hereby, two distinct cases are taken into account:

1. If a province has at least one indicator fulfilled this week and it was not the case last week, its **name is displayed in bold** in the table.
2. If a province has at least one indicator fulfilled this week and if it also was the case last week, any change in indicator fulfilment (i.e. if the value for any indicator has changed from 0 to 1 or from 1 to 0) is indicated in **coloured bold text**.

Here are the results associated with the samples of Wednesday January 26<sup>th</sup> 2022:

- Last week on Wednesday January 19<sup>th</sup> 2022, all provinces had at least one alerting indicator positive.
- This week on Wednesday January 26<sup>th</sup> 2022, all provinces have at least one alerting indicator positive.
- All the provinces are positive to the High circulation indicator
- In a significant number of provinces, the Fast increase indicator is not fulfilled anymore.
- Regarding the Increasing trend, Brussels, Vlaams-Brabant and West-Vlaanderen provinces do not show an Increasing trend anymore, meaning that the viral circulation is either in a decrease or in a stabilizing phase. In Liège, Brabant wallon and Luxembourg provinces, the Increasing trend has become positive this week.
- The provinces of Liege and Luxembourg are of particular concern as 3 indicators are fulfilled in these provinces.

**Table 2: Alerting indicators fulfilled (1) or not (0) on January 26<sup>th</sup> 2022. Columns represent the population coverage of the WWTPs within the Province (Pop. coverage) and the three alerting indicators High circulation (High), Fast increase (Fast) and Increasing trend (Incr.). The specifications of the four last columns are explained in the footnotes 1-4 below the table. Missing data is indicated with a “/”.**

Province	Pop. coverage	High	Fast	Incr.	Norm. viral cc. (%) <sup>1</sup>	Mean viral. cc. (c./ml) <sup>2</sup>	Norm. evol. (%/w) <sup>3</sup>	Incr. days <sup>4</sup>
Antwerpen	41%	1	0	1	61	505	-30	12
Brabant Wallon	33%	1	0	1	435	553	50	11
Brussels	100%	1	0	0	133	11269	-23	0
Hainaut	29%	1	0	1	181	379	22	11
Liège	50%	1	1	1	401	865	293	10
Limburg	26%	1	0	1	236	437	-28	17
Luxembourg	10%	1	1	1	217	423	145	11
Namur	23%	1	0	1	173	389	-4	15
Oost-Vlaanderen	38%	1	0	1	93	1448	-30	10
Vlaams-Brabant	61%	1	0	0	92	2992	-33	1
West-Vlaanderen	52%	1	0	0	54	1490	-26	6

<sup>1</sup> : the viral concentration normalized with the maximum viral concentration measured in the corresponding catchment area during the third wave (i.e. from mid-February 2021 till begin of July).

<sup>2</sup> : the viral concentration computed on the replicate of the three targeted gene fragments.

<sup>3</sup> : the slope (%/week) of the past 7 days moving average of the viral concentration if being above the estimated limit of quantification.

<sup>4</sup> : the cumulative number of days of increase of the past 14 days moving average of the viral concentration

### 4.3. CATCHMENT AREAS

Table 3 shows, for each catchment area, the values of the three alerting indicators obtained based on the results of last Wednesday's sample. It is a snapshot of the number of areas highlighted by the indicators for the last results obtained. Table 3 allows to track the changes between the situation as of today (January 26<sup>th</sup> 2022) and the situation as of last week (January 19<sup>th</sup> 2022). Hereby, three distinct cases are taken into account:

1. If an area has at least one indicator fulfilled this week and it was not the case last week, its **name is displayed in bold** in the table.
2. If an area has at least one indicator fulfilled this week and if it also was the case last week, any change in indicator fulfilment (i.e. if the value for any indicator has changed from 0 to 1 or from 1 to 0) is indicated in **coloured bold text**.
3. Any area which had at least one indicator fulfilled last week but not this week is listed below Table 3.

Here are the results associated with the samples of Wednesday January 26<sup>th</sup> 2022:

- The High circulation indicator is fulfilled in 33 covered areas. Last week, this indicator was fulfilled in 36 covered area. In several areas, the measured viral concentration exceeded the maximal concentration registered during the 3rd wave (see Table 3 and appendices).
- The Fast increase indicator is fulfilled in 3 areas: Liège Oupeye (508% increase per week), Arlon (199% increase per week) and Vallée du Hain (L'Orchis) (168% increase per week). Last week, this indicator was fulfilled in 26 covered area. Since last week, in a significant number of areas, the Fast increase indicator is not fulfilled anymore (see Table 3 and appendices).
- The Increasing trend indicator is fulfilled in 27 covered areas. Last week, this indicator was fulfilled in 37 covered area (see Table 3 and appendices).
- An alerting situation is evidenced for the covered areas of Arlon, Liège Oupeye, and Vallée du Hain (L'Orchis) as all three indicators are fulfilled.

The wastewater results can be accessed online for each area on the [COVID-19 dashboard](#).

**Table 3: Alerting indicators fulfilled (1) or not (0) on January 26<sup>th</sup> 2022. Columns represent the provinces, different WWTPs within the Provinces and the three alerting indicators High circulation (High), Fast increase (Fast) and Increasing trend (Incr.). The specifications of the four last columns are explained in the footnotes 1-4 below the table. Missing data is indicated with a “/”.**

Province	WWTP	High	Fast	Incr.	Norm. viral cc (%) <sup>1</sup>	Mean viral cc (c./ml) <sup>2</sup>	Norm. evol. (%/w) <sup>3</sup>	Incr days <sup>4</sup>
Oost-Vlaanderen	Aalst	<b>1</b>	0	1	57	1170	4	21
Antwerpen	Aartselaar	<b>0</b>	<b>0</b>	1	48	287	-15	21
Liège	Amay	1	<b>0</b>	1	446	654	60	14
Antwerpen	Antwerpen-North	1	0	0	74	233	-12	0
Antwerpen	Antwerpen-South	0	<b>0</b>	1	26	534	-52	21
Luxembourg	Arlon	1	<b>1</b>	<b>1</b>	229	443	199	9
Brabant Wallon	Basse Wavre (Dyle)	1	<b>0</b>	1	329	454	-35	14
Vlaams-Brabant	Beersel	1	0	<b>0</b>	71	4610	-27	0
West-Vlaanderen	Brugge	1	0	<b>0</b>	70	661	-46	0
Brussels	Brussels-North	1	0	<b>0</b>	131	10315	-14	0

Province	WWTP	High	Fast	Incr.	Norm. viral cc (%) <sup>1</sup>	Mean viral cc (c./ml) <sup>2</sup>	Norm evol. (%/w) <sup>3</sup>	Incr days <sup>4</sup>
Brussels	Brussel-South	1	0	0	138	14466	-53	0
Oost-Vlaanderen	Dendermonde	1	0	1	103	369	-32	16
Oost-Vlaanderen	Destelbergen	0	0	1	31	1625	-50	21
Hainaut	Froyennes	1	0	1	190	247	16	14
Limburg	Genk	1	0	1	106	396	-14	23
Oost-Vlaanderen	Gent	1	0	0	124	2052	-33	0
Vlaams-Brabant	Grimbergen	1	0	0	193	5030	-52	2
West-Vlaanderen	Harelbeke	1	0	0	77	1877	7	0
Limburg	Hasselt	1	0	1	495	575	-33	16
Vlaams-Brabant	Leuven	1	0	0	56	1692	-48	0
Liège	Liège Oupeye	1	1	1	310	704	508	7
Liège	Liège Sclessin	1	0	1	562	1226	2	14
Luxembourg	Marche-en-Famenne	1	0	1	191	379	23	14
Hainaut	Marchienne-au-Pont	1	0	1	184	409	-10	14
Antwerpen	Mechelen-Noord	1	0	1	188	483	-49	16
West-Vlaanderen	Menen	0	0	1	14	3162	0	21
Hainaut	Montignies-sur-Sambre	1	0	1	255	648	23	21
Namur	Mornimont	1	0	1	282	458	33	14
Hainaut	Mouscron versant Espierres	1	0	1	264	482	35	16
Namur	Namur-Brumagne	1	0	1	128	360	-19	16
West-Vlaanderen	Oostende	1	0	1	56	1472	-52	16
Oost-Vlaanderen	Sint-Niklaas	1	0	1	70	766	-52	16
Liège	Soumagne	1	0	1	179	779	-30	16
Limburg	Tessenderlo	1	0	1	119	465	-52	16
Antwerpen	Turnhout	1	0	1	136	533	-65	16
Brabant Wallon	Vallée du Hain (L'Orchis)	1	1	1	580	688	168	7
Hainaut	Wasmuel	1	0	0	108	173	31	0

<sup>1</sup> : the viral concentration normalized with the maximum viral concentration measured in the corresponding catchment area during the third wave (i.e. from mid-February 2021 till begin of July).

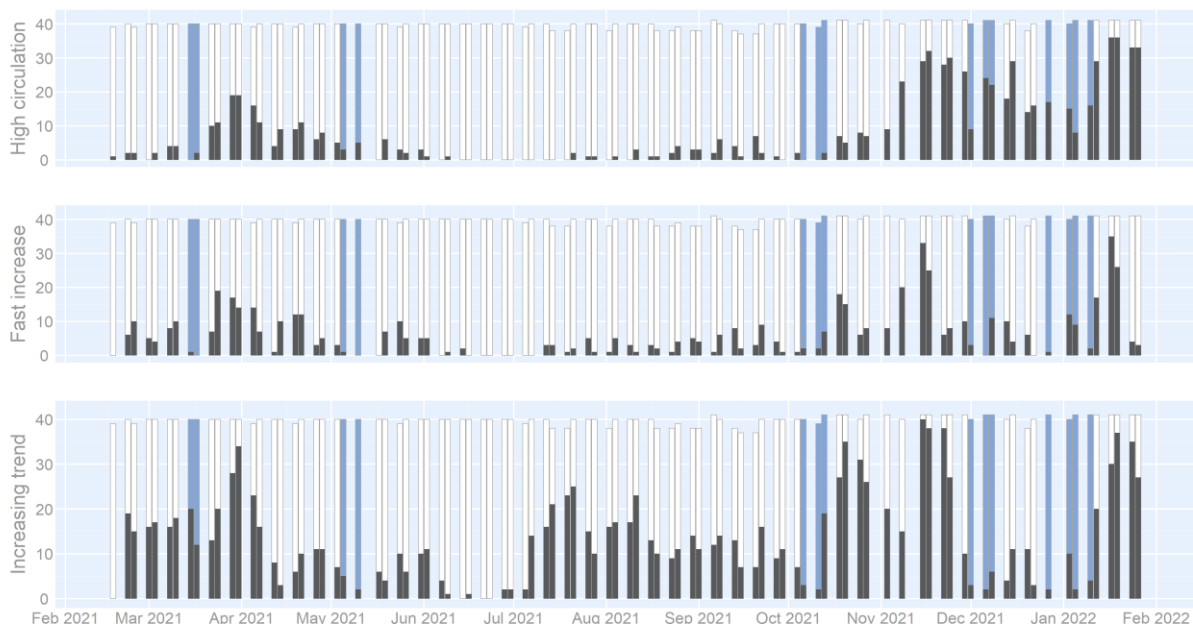
<sup>2</sup> : the viral concentration computed on the replicate of the three targeted gene fragments.

<sup>3</sup> : the slope (%/week) of the past 7 days moving average of the viral concentration if being above the estimated limit of quantification.

<sup>4</sup> : the cumulative number of days of increase of the past 14 days moving average of the viral concentration.

The covered areas of Deurne, Houthalen-Centrum, Liedekerke, and Roeselare had at least one indicator fulfilled last week but not this week. Details on covered area without fulfilled indicators can be found in Table A4.

Figure 3 was developed to offer a dynamic view of the three alerting indicators over time. See section 3.3 for further insights on the dynamic of the different indicators and dilution effect. At the 4th wave's peak, the reduction of the Fast increase area's number was followed a week later by a reduction of the Increasing trend area's number. This week's indicators may follow a similar pattern with 36, 26 and 37 areas on Wednesday 19th and 33, 3, 27 areas on Wednesday 26th January 2022, respectively for the High circulation, Fast increase and Increasing trend indicators. Therefore, the behaviour of the indicators may indicate that the 5th wave peak is reached. But a significant reduction of the Increasing trend area's number is necessary next week to validate this hypothesis.



**Figure 3: The number of areas (among the 41 covered by the wastewater surveillance this week and the 42 normally considered), with positive alerting indicators (black) compared to total number of areas considered every week in the wastewater surveillance (white). Latest results (last bar) from January 26<sup>th</sup> 2022. The white bars represent the total number of areas considered every week in the wastewater surveillance. The blue bars indicate dates at which an underestimation of the viral concentrations due to dilution in the wastewaters occurred.**

#### 4.4. VARIANTS

The Omicron variant represents a high proportion of all reported cases in Belgium<sup>2</sup>. The impact of the variant of concern Omicron was assessed to be negligible for the following reason: mutations present in the Omicron variant on the N1 and E genes could have potentially led to a drop out of those two genes leading to an underestimation of the viral concentrations in wastewaters. Preliminary experimental lab results indicate that no drop out of the genes should be expected. Hence, the sensitivity of the analytical lab methods used was not impacted. Therefore, the circulation of the Omicron variant is not underestimated in wastewaters.

However, the Omicron variant might have an impact on the faecal shedding load if infected people would excrete less in their faeces than for Delta. That stays hypothetical as we do not have strong evidence on it yet.

A regular investigation of the possible impact of variants of concern is done in order to screen their evolution in time.

<sup>2</sup> Source :[Molecular surveillance of SARS-CoV-2](#)

## 5. Appendix – Areas classified by alerting indicator

A 1: Covered areas (33 out of 41 on January 26<sup>th</sup> 2022) characterized as High circulation sorted in the descending order of importance.

Province	WWTP	High	Fast	Incr.	Norm . viral cc (%) <sup>1</sup>	Mean viral cc (c./ml) <sub>2</sub>	Norm evol. (%/w) <sub>3</sub>	Incr days <sup>4</sup>	Date Max cc <sup>5</sup>
Brabant Wallon	Vallée du Hain (L'Orchis)	1	1	1	580	688	168	7	26/01/2022
Liège	Liège Sclessin	1	0	1	562	1226	2	14	17/01/2022
Limburg	Hasselt	1	0	1	495	575	-33	16	17/01/2022
Liège	Amay	1	0	1	446	654	60	14	26/01/2022
Brabant Wallon	Basse Wavre (Dyle)	1	0	1	329	454	-35	14	29/11/2021
Liège	Liège Oupeye	1	1	1	310	704	508	7	15/11/2021
Namur	Mornimont	1	0	1	282	458	33	14	26/01/2022
Hainaut	Mouscron versant Espierres	1	0	1	264	482	35	16	26/01/2022
Hainaut	Montignies-sur-Sambre	1	0	1	255	648	23	21	24/01/2022
Luxembourg	Arlon	1	1	1	229	443	199	9	24/01/2022
Vlaams-Brabant	Grimbergen	1	0	0	193	5030	-52	2	17/01/2022
Luxembourg	Marche-en-Famenne	1	0	1	191	379	23	14	26/01/2022
Hainaut	Froyennes	1	0	1	190	247	16	14	24/01/2022
Antwerpen	Mechelen-Noord	1	0	1	188	483	-49	16	17/01/2022
Hainaut	Marchienne-au-Pont	1	0	1	184	409	-10	14	17/01/2022
Liège	Soumagne	1	0	1	179	779	-30	16	17/01/2022
Brussels	Brussel-South	1	0	0	138	14466	-53	0	19/01/2022
Antwerpen	Turnhout	1	0	1	136	533	-65	16	17/01/2022
Brussels	Brussels-North	1	0	0	131	10315	-14	0	12/01/2022
Namur	Namur-Brumagne	1	0	1	128	360	-19	16	17/01/2022
Oost-Vlaanderen	Gent	1	0	0	124	2052	-33	0	17/11/2021
Limburg	Tessenderlo	1	0	1	119	465	-52	16	17/01/2022
Hainaut	Wasmuel	1	0	0	108	173	31	0	24/01/2022
Limburg	Genk	1	0	1	106	396	-14	23	15/11/2021
Oost-Vlaanderen	Dendermonde	1	0	1	103	369	-32	16	17/01/2022
West-Vlaanderen	Harelbeke	1	0	0	77	1877	7	0	18/10/2021
Antwerpen	Antwerpen-North	1	0	0	74	233	-12	0	29/11/2021

Province	WWTP	High	Fast	Incr.	Norm . viral cc (%) <sup>1</sup>	Mean viral cc (c./ml) <sub>2</sub>	Norm evol. (%/w) <sub>3</sub>	Incr days <sup>4</sup>	Date Max cc <sup>5</sup>
Vlaams-Brabant	Beersel	1	0	0	71	4610	-27	0	19/01/2022
West-Vlaanderen	Brugge	1	0	0	70	661	-46	0	17/11/2021
Oost-Vlaanderen	Sint-Niklaas	1	0	1	70	766	-52	16	17/01/2022
Oost-Vlaanderen	Aalst	1	0	1	57	1170	4	21	15/11/2021
Vlaams-Brabant	Leuven	1	0	0	56	1692	-48	0	17/11/2021
West-Vlaanderen	Oostende	1	0	1	56	1472	-52	16	19/01/2022

<sup>1</sup> : the viral concentration normalized with the maximum viral concentration measured in the corresponding catchment area during the third wave (i.e. from mid-February 2021 till begin of July).

<sup>2</sup> : the viral concentration computed on the replicate of the three targeted gene fragments.

<sup>3</sup> : the slope (%/week) of the past 7 days moving average of the viral concentration if being above the estimated limit of quantification.

<sup>4</sup> : the cumulative number of days of increase of the past 14 days moving average of the viral concentration.

<sup>5</sup> : date at which the measured viral concentration was the highest since the beginning of the measurements. If the date was between 15th February and 15th May 2021, the date is considered to be during the third wave and mentioned as such.

## A 2: Covered areas (3 out of 41 on the January 26<sup>th</sup> 2022) characterized as Fast increase sorted in the descending order of importance.

Province	WWTP	High	Fast	Incr.	Norm . viral cc (%) <sup>1</sup>	Mean viral cc (c./ml) <sub>2</sub>	Norm evol. (%/w) <sub>3</sub>	Incr days <sup>4</sup>	Date Max cc <sup>5</sup>
Liège	Liège Oupeye	1	1	1	310	704	508	7	15/11/2021
Luxembourg	Arlon	1	1	1	229	443	199	9	24/01/2022
Brabant Wallon	Vallée du Hain (L'Orchis)	1	1	1	580	688	168	7	26/01/2022

<sup>1</sup> : the viral concentration normalized with the maximum viral concentration measured in the corresponding catchment area during the third wave (i.e. from mid-February 2021 till begin of July).

<sup>2</sup> : the viral concentration computed on the replicate of the three targeted gene fragments.

<sup>3</sup> : the slope (%/week) of the past 7 days moving average of the viral concentration if being above the estimated limit of quantification.

<sup>4</sup> : the cumulative number of days of increase of the past 14 days moving average of the viral concentration.

<sup>5</sup> : date at which the measured viral concentration was the highest since the beginning of the measurements. If the date was between 15th February and 15th May 2021, the date is considered to be during the third wave and mentioned as such.

## A 3: Covered areas (27 out of 41 on the January 26<sup>th</sup> 2022) characterized as Increasing trend sorted in the descending order of importance.



Province	WWTP	High	Fast	Incr.	Norm . viral cc (%) <sup>1</sup>	Mean viral cc (c./ml) <sub>2</sub>	Norm evol. (%/w) <sub>3</sub>	Incr days <sup>4</sup>	Date Max cc <sup>5</sup>
Limburg	Genk	1	0	1	106	396	-14	23	15/11/2021
Oost-Vlaanderen	Aalst	1	0	1	57	1170	4	21	15/11/2021
Antwerpen	Aartselaar	0	0	1	48	287	-15	21	29/11/2021
Antwerpen	Antwerpen-South	0	0	1	26	534	-52	21	3 <sup>rd</sup> wave
Oost-Vlaanderen	Destelbergen	0	0	1	31	1625	-50	21	3 <sup>rd</sup> wave
West-Vlaanderen	Menen	0	0	1	14	3162	0	21	3 <sup>rd</sup> wave
Hainaut	Montignies-sur-Sambre	1	0	1	255	648	23	21	24/01/2022
Oost-Vlaanderen	Dendermonde	1	0	1	103	369	-32	16	17/01/2022
Limburg	Hasselt	1	0	1	495	575	-33	16	17/01/2022
Antwerpen	Mechelen-Noord	1	0	1	188	483	-49	16	17/01/2022
Hainaut	Mouscron versant Espierres	1	0	1	264	482	35	16	26/01/2022
Namur	Namur-Brumagne	1	0	1	128	360	-19	16	17/01/2022
West-Vlaanderen	Oostende	1	0	1	56	1472	-52	16	19/01/2022
Oost-Vlaanderen	Sint-Niklaas	1	0	1	70	766	-52	16	17/01/2022
Liège	Soumagne	1	0	1	179	779	-30	16	17/01/2022
Limburg	Tessenderlo	1	0	1	119	465	-52	16	17/01/2022
Antwerpen	Turnhout	1	0	1	136	533	-65	16	17/01/2022
Liège	Amay	1	0	1	446	654	60	14	26/01/2022
Brabant Wallon	Basse Wavre (Dyle)	1	0	1	329	454	-35	14	29/11/2021
Hainaut	Froyennes	1	0	1	190	247	16	14	24/01/2022
Liège	Liège Sclessin	1	0	1	562	1226	2	14	17/01/2022
Luxembourg	Marche-en-Famenne	1	0	1	191	379	23	14	26/01/2022
Hainaut	Marchienne-au-Pont	1	0	1	184	409	-10	14	17/01/2022
Namur	Mornimont	1	0	1	282	458	33	14	26/01/2022
Luxembourg	Arlon	1	1	1	229	443	199	9	24/01/2022
Liège	Liège Oupeye	1	1	1	310	704	508	7	15/11/2021
Brabant Wallon	Vallée du Hain (L'Orchis)	1	1	1	580	688	168	7	26/01/2022

<sup>1</sup> : the viral concentration normalized with the maximum viral concentration measured in the corresponding catchment area during the third wave (i.e. from mid-February 2021 till begin of July).

<sup>2</sup> : the viral concentration computed on the replicate of the three targeted gene fragments.

<sup>3</sup> : the slope (%/week) of the past 7 days moving average of the viral concentration if being above the estimated limit of quantification.

<sup>4</sup> : the cumulative number of days of increase of the past 14 days moving average of the viral concentration.

<sup>5</sup> : date at which the measured viral concentration was the highest since the beginning of the measurements. If the date was between 15th February and 15th May 2021, the date is considered to be during the third wave and mentioned as such.

**A 4: Covered areas (4 out of 41 on the January 26<sup>th</sup> 2022) in which no alerting indicator are fulfilled.**

Province	WWTP	High	Fast	Incr.	Norm. viral cc (%) <sup>1</sup>	Mean viral cc (c./ml) <sub>2</sub>	Norm evol. (%/w) <sub>3</sub>	Incr days <sup>4</sup>	Date Max cc <sup>5</sup>
Antwerpen	Deurne	0	0	0	11	649	0	0	17/01/2022
Limburg	Houthalen-Centrum	0	0	0	0	0	-1	0	24/01/2022
Vlaams-Brabant	Liedekerke	0	0	0	45	1270	2	0	3 <sup>rd</sup> wave
West-Vlaanderen	Roeselare	0	0	0	11	1533	0	0	3 <sup>rd</sup> wave

<sup>1</sup> : the viral concentration normalized with the maximum viral concentration measured in the corresponding catchment area during the third wave (i.e. from mid-February 2021 till begin of July).

<sup>2</sup> : the viral concentration computed on the replicate of the three targeted gene fragments.

<sup>3</sup> : the slope (%/week) of the past 7 days moving average of the viral concentration if being above the estimated limit of quantification.

<sup>4</sup> : the cumulative number of days of increase of the past 14 days moving average of the viral concentration.

<sup>5</sup> : date at which the measured viral concentration was the highest since the beginning of the measurements. If the date was between 15th February and 15th May 2021, the date is considered to be during the third wave and mentioned as such.