Réseau Microbiologie des matrices résiduaires urbaines et santé

Lettre de Veille Scientifique n°7
23 octobre 2023

Dernières actualités

Retour du Covid-19 : comment la France aurait pu mieux anticiper cette nouvelle vague (L'Express, 12/10/23)

Environmental surveillance for SARS-CoV-2 to complement other public health surveillance (OMS, 12/09/23)

Analyse de risque liée aux variants émergents de SARS-CoV-2 MAJ au 25/09/2023 (Santé Publique France, 25/09/23)

Wastewater testing for COVID-19 expands to include influenza, says Western scientists (Global News, 01/09/23)

Covid-SURGE Toolkit: Using Wastewater Data to Monitor Outbreaks (Mathematica, 08/23)

Portable RT-PCR and MinION Nanopore Sequencing as a Proof-of-Concept SARS-CoV-2 Biosurveillance in Wastewater (Health.mil, 2023)

Using wastewater monitoring to assess patterns in community transmission of COVID-19 (News Medical Life Sciences, 02/08/23)

Are wastewater surveillance metrics associated with high community case and hospitalization rates of COVID-19 across US counties?
(News Medical Life Sciences, 01/08/23)

Autres pathogènes d'intérêt :

Harnessing Wastewater Epidemiology for Public Health (ILM's Water, 04/10/23)

How Wastewater Treatment Plants are Used to Monitor Public Health? (Taylor English, 27/09/23)

Contact : Sophie Marchal-Mauer (sophie.marchal-mauer@anses.fr)
Anses - Laboratoire d'Hydrologie de Nancy

Réseau Microbiologie des matrices résiduaires urbaines et santé

Dernières références bibliographiques

Wastewater-based epidemiology: the crucial role of viral shedding dynamics in small communities. Frontiers in Public Health, 11. Abstract >>

The dominance of co-circulating SARS-CoV-2 variants in wastewater. International Journal of Hygiene and Environmental Health, 253, 114224. Abstract >>

Chronic Shedding of a SARS-CoV-2 Alpha Variant Lineage Q.3/Q.4 in Wastewater. medRxiv, 2023.07.26.23293191. Abstract >>

Public Health Interventions Guided by Houston's Wastewater Surveillance Program During the COVID-19 Pandemic. Public Health Reports, in press. Abstract >>

The daily updated Dutch national database on COVID-19 epidemiology, vaccination and sewage surveillance. Scientific Data, 10, 469. Abstract >>

Detection of SARS-CoV-2 RNA in wastewater from an enclosed college campus serves as an early warning surveillance system. PLOS ONE 18(7): e0288808. Abstract >>

Association of wastewater SARS-CoV-2 load with confirmed COVID-19 cases at a university hospital in Sapporo, Japan during the period from February 2021 to February 2023. Science of The Total Environment, 899, 165457. Abstract >>

Sensor-based Wastewater Monitoring Framework to Detect COVID-19. 19th International Conference on Wireless and Mobile Computing, Networking and Communications (WiMob), Montreal, QC, Canada, pp. 387-392. Abstract >>

Analysis of sampling strategies for pulse loads of SARS-CoV-2: implications for wastewater-based epidemiology. Water Science and Technology, in press. Abstract >>

Evaluation of wastewater-based epidemiology of COVID-19 approaches in Singapore's 'closed-system' scenario: a long-term country-wide assessment. Water Research, in press. Abstract >>

The Rise and Fall of Omicron BA.1 Variant as Seen in Wastewater Supports Epidemiological Model Predictions. Preprints, 20 July 2023. Abstract >>

Contact : Sophie Marchal-Mauer (sophie.marchal-mauer@anses.fr)
Anses - Laboratoire d'Hydrologie de Nancy

Wastewater-Based Surveillance of Sars-Cov-2 and Description of Variants of Concern in Northern South Africa: Observations from 2021 – 2022. SSRN, 20 Jul 2023. Abstract >>

Monitoring SARS-CoV-2 in Municipal Wastewater and Correlation of Results with Covid-19 Cases from Five Municipalities in Ontario, Canada. Carleton University (Canada), 90 p. Abstract >>

Time series modelling for wastewater-based epidemiology of COVID-19: A nationwide study in 40 wastewater treatment plants of Belgium, February 2021 to June 2022. Science of The Total Environment, 899, 165603. Abstract >>

Field-deployable assay based on CRISPR-Cas13a coupled with RT-RPA in one tube for the detection of SARS-CoV-2 in wastewater. Journal of Hazardous Materials, 459, 132077. Abstract >>

Early and Sensitive Detection of Pathogens for Public Health and Biosafety: An Example of Surveillance and Genotyping of SARS-CoV-2 in Sewage Water by Cas12a-Facilitated Portable Plasmonic Biosensor. Research, 6, ID-0205. Abstract >>

Strategic use of SARS-CoV-2 wastewater concentration data could enhance, but not replace, high-resolution community prevalence survey programmes. medRxiv, 2023.08.17.23293589. Abstract >>

Targeting a free viral fraction enhances the early alert potential of wastewater surveillance for SARS-CoV-2: a methods comparison spanning the transition between delta and omicron variants in a large urban center. Frontiers in Public Health, 11. Abstract >>

Economic Evaluation of Wastewater Surveillance Combined with Clinical COVID-19 Screening Tests, Japan. Emerging Infectious Diseases, 29 (8). Abstract >>

Comparison of Nanotrap® Microbiome A Particles, membrane filtration, and skim milk workflows for SARS-CoV-2 concentration in wastewater. Frontiers in Microbiology, 14. Abstract >>

Quantification and Whole Genome Characterization of SARS-CoV-2 RNA in Wastewater and Air Samples. JoVE Journal, 196, e65053. Abstract >>

Removal of intI1, ARGs, and SARS-CoV-2 and changes in bacterial communities in four sewage treatment facilities. Science of The Total Environment, 903, 165984. Abstract >>

Establishing a Statewide Wastewater Surveillance System in Response to the COVID-19 Pandemic: A Reliable Model for Continuous and Emerging Public Health Threats. Journal of Public Health Management and Practice, in press. Abstract >>

Contact : Sophie Marchal-Mauer (sophie.marchal-mauer@anses.fr)
Anses - Laboratoire d'Hydrologie de Nancy

Réseau Microbiologie des matrices résiduaires urbaines et santé

Wastewater surveillance of the most common circulating respiratory viruses in Athens: The impact of COVID-19 on their seasonality. Science of The Total Environment, in press. Abstract >>

Improving estimates of epidemiological quantities by combining reported cases with wastewater data: a statistical framework with applications to COVID-19 in Aotearoa New Zealand. medRxiv, 2023.08.14.23294060. Abstract >>

A Mixed-Effects Model to Predict COVID-19 Hospitalizations Using Wastewater Surveillance. medRxiv, 2023.08.14.23293945. Abstract >>

Refining detection methods for emerging SARS-CoV-2 mutants in wastewater: A case study on the Omicron variants. Science of The Total Environment, in press. Abstract >>

Circulation of SARS-CoV-2 Omicron sub-lineages revealed by multiplex genotyping RT-qPCR assays for sewage surveillance. Science of The Total Environment, 904, 166300. Abstract >>

Comparison of ordinary reverse transcription real-time polymerase chain reaction (qRT-PCR) with a newly developed one-step single-tube nested real-time RT-PCR (OSN-qRT-PCR) for sensitive detection of SARS-CoV-2 in wastewater. Environmental Science and Pollution Research, in press. Abstract >>

Campus node-based wastewater surveillance enables COVID-19 case localization and confirms lower SARS-CoV-2 burden relative to the surrounding community. Water Research, in press. Abstract >>

Wastewater surveillance of the most common circulating respiratory viruses in Athens: The impact of COVID-19 on their seasonality. Science of The Total Environment, in press. Abstract >>

Wastewater genomic sequencing for SARS-CoV-2 variants surveillance in wastewater-based epidemiology applications. Water Research, 244, 120444. Abstract >>

Understanding the efficacy of wastewater surveillance for SARS-CoV-2 in two diverse communities. PLOS ONE 18(8): e0289343. Abstract >>

Elucidating the role of environmental management of forests, air quality, solid waste and wastewater on the dissemination of SARS-CoV-2. Hygiene and Environmental Health Advances, 3, 100006. Abstract >>

Comparing solid-based concentration methods for rapid and efficient recovery of SARS-CoV-2 for wastewater surveillance. Journal of Virological Methods, 320, 114790. Abstract >>

Contact : Sophie Marchal-Mauer (sophie.marchal-mauer@anses.fr)
Anses - Laboratoire d'Hydrologie de Nancy

Four Models of Wastewater-Based Surveillance for SARS-CoV-2 in Jail Settings: How Monitoring Wastewater Complements Individual Screening. medRxiv, 2023.08.04.23293152. Abstract >>

Wastewater Based Epidemiology as a surveillance tool during the current COVID-19 pandemic on a college campus (East Carolina University) and its accuracy in predicting SARS-CoV-2 outbreaks in dormitories. medRxiv, 2023.08.04.23293359. Abstract >>

Effect of chlorine disinfectant influx on biological sewage treatment process under the COVID-19 pandemic: Performance, mechanisms and implications. Water Research, 244, 120453. Abstract >>

Application of Passive Samplers for SARS-CoV-2 Wastewater Surveillance. University of Ottawa, 51 p. Abstract >>

Covid-19 Hospitalizations and Deaths Predicted by Sars-Cov-2 Levels in Boise, Idaho Wastewater. SSRN, in press. Abstract >>

A phenomenological neural network powered by the National Wastewater Surveillance System for estimation of silent COVID-19 infections. Science of The Total Environment, in press. Abstract >>

PCR standard curve quantification in an extensive wastewater surveillance program: Results from the Dutch SARS-CoV-2 Wastewater Surveillance. Frontiers in Public Health, 11, 1141494. Abstract >>

Wastewater-based epidemiology of SARS-CoV-2 and Campylobacter: detection optimization and understanding of in-sewer decay. University of Wollongong (Australia). Abstract >>

Wastewater-based Epidemiology and SARS-CoV-2: Variant Trends in the Apulia Region (Southern Italy) and Effect of Some Environmental Parameters. Food and Environmental Virology, in press. Abstract >>

SARS-CoV-2 Burden in Wastewater and its Elimination Using Disinfection. Microbiology Insights, 16, 11786361231201598. Abstract >>

Tracking community infection dynamics of COVID-19 by monitoring SARS-CoV-2 RNA in wastewater, counting positive reactions by qPCR. Science of The Total Environment, 904, 166420. Abstract >>

Positive association of SARS-CoV-2 RNA concentrations in wastewater and reported COVID-19 cases in Singapore – A study across three populations. Science of The Total Environment, 902, 166446. Abstract >>

Contact : Sophie Marchal-Mauer (sophie.marchal-mauer@anses.fr)
Anses - Laboratoire d'Hydrologie de Nancy

Interactive SARS-CoV-2 dashboard for real-time geospatial visualisation of sewage and clinical surveillance data from Dhaka, Bangladesh: a tool for public health situational awareness. BMJ Global Health, 8:8, e012921. Abstract >>

Digital PCR: A Partitioning-Based Application for Detection and Surveillance of SARS-CoV-2 from Sewage Samples. PCR: Methods and Protocols, 1-16. Abstract >>

Structured Ethical Review for Wastewater-Based Testing in Support of Public Health. Environmental Science & Technology, 57:35, 12969-12980. Abstract >>

Evaluation of the pilot wastewater surveillance for SARS-CoV-2 in Norway, June 2022 – March 2023. BMC Public Health, 23:1, 1714. Abstract >>

Comparison of Different PCR Methods for the Detection of SARS-CoV-2 RNA in Wastewater Based on the Reported Incidence of COVID-19 in Finland. medRxiv, 2023.2009.2007.23295183. Abstract >>

Wastewater Monitoring for Infectious Disease: Intentional Relationships between Academia, the Private Sector, and Local Health Departments for Public Health Preparedness. Int J Environ Res Public Health, 20:17. Abstract >>

The Lavatory Lens: Tracking the Global Movement of Pathogens via Aircraft Wastewater. Critical Reviews in Environmental Science and Technology, in press. Abstract >>

Four Models of Wastewater-Based Surveillance for SARS-CoV-2 in Jail Settings: How Monitoring Wastewater Complements Individual Screening. medRxiv, 2023.2008.2004.23293152. Abstract >>

Quantitative analysis of SARS-CoV-2 RNA in wastewater and evaluation of sampling frequency during the downward period of a COVID-19 wave in Japan. Science of The Total Environment, in press. Abstract >>

SARS-CoV-2 RNA in Wastewater and Bivalve Mollusk Samples of Campania, Southern Italy. Viruses, 15:8. Abstract >>

Interlaboratory comparison using inactivated SARS-CoV-2 variants as a feasible tool for quality control in COVID-19 wastewater monitoring. Science of The Total Environment, 903, 166540. Abstract >>

Environmental surveillance for SARS-CoV-2 for outbreak detection in hospital: A single centre prospective study. medRxiv, 2023.2008.2028.23294549. Abstract >>

Contact : Sophie Marchal-Mauer (sophie.marchal-mauer@anses.fr)
Anses - Laboratoire d'Hydrologie de Nancy

Réseau Microbiologie des matrices résiduaires urbaines et santé

Survivability of Delta and Omicron variants of SARS-CoV-2 in wastewater. Water Research, in press. Abstract >>

Wastewater Surveillance for SARS-CoV-2 at Long-Term Care Facilities: Mixed Methods Evaluation. JMIR Public Health and Surveillance, 9:1, e44657. Abstract >>

Modeled and measured SARS-CoV-2 virus in septic tank systems for wastewater surveillance. Journal of Water and Health in press. Abstract >>

The role of smart technologies in wastewater-based epidemiology. Journal of Environmental Exposure Assessment 2, 18. Abstract >>

Long-Term Wastewater Monitoring of SARS-CoV-2 Viral Loads and Variants at the Major International Passenger Hub Amsterdam Schiphol Airport: A Valuable Addition to COVID-19 Surveillance. SSRN in press. Abstract >>

Correlation between wastewater and COVID-19 case incidence rates in major California sewersheds across three variant periods. Journal of Water and Health in press. Abstract >>

Early warning of statewide COVID-19 Omicron wave by sentineled urbanized sewer network monitoring using digital PCR in a province capital city of Gandhinagar, India. Science of The Total Environment in press. Abstract >>

Long-term monitoring of COVID-19 prevalence in raw and treated wastewater in Salvador, the largest capital of the Brazilian Northeast. Scientific Reports 13:1, 15238. Abstract >>

Correlative Analysis of Wastewater Trends with Clinical Cases and Hospitalizations through Five Dominant Variant Waves of COVID-19. ACS EST Water, in press. Abstract >>

Assessment of rapid wastewater surveillance for determination of communicable disease spread in municipalities. Science of The Total Environment, in press. Abstract >>

SARS-CoV-2 infectivity potential in municipal wastewater: Implications for public health & water treatment. The University of Western Ontario. Abstract >>

The Rise and Fall of Omicron BA.1 Variant as Seen in Wastewater Supports Epidemiological Model Predictions. Viruses 15:9. Abstract >>

Contact : Sophie Marchal-Mauer (sophie.marchal-mauer@anses.fr)
Anses - Laboratoire d'Hydrologie de Nancy

Réseau Microbiologie des matrices résiduaires urbaines et santé

Fate of Coronaviruses during the Wastewater Coagulation with Ferric Chloride. ACS ES&T Water in press. Abstract >>

Spatiotemporal Tracking of SARS CoV-2 RNA Utilizing Wastewater Based Epidemiology. The University of North Carolina at Wilmington. Abstract >>

Impact de la quantité de drainage sur la concentration virale du SARS-CoV-2. Novatech 2023. Abstract >>

Wastewater-Based Epidemiology of SARS-CoV-2 and Other Respiratory Viruses: Bibliometric Tracking of the Last Decade and Emerging Research Directions. Water, 15:19. Abstract >>

Highly efficient and sensitive membrane-based concentration process allows quantification, surveillance, and sequencing of viruses in large volumes of wastewater. medRxiv, 2023.2009.2025.23296071. Abstract >>

Human origin ascertained for SARS-CoV-2 Omicron-like spike sequences detected in wastewater: a targeted surveillance study of a cryptic lineage in an urban sewershed. medRxiv, 2022.2010.2028.22281553. Abstract >>

Simulation of COVID-19 Epidemic from Potential Viral Loads in Saudi Arabian Wastewater Treatment Plants. medRxiv, 2023.2009.2030.23296175. Abstract >>

The Rise and Fall of Omicron BA.1 Variant as Seen in Wastewater Supports Epidemiological Model Predictions. Viruses, 15:9. Abstract >>

Quantification and Differentiation of SARS-CoV-2 Variants in Wastewater for Surveillance. Environment & Health, 1:3, 203-213. Abstract >>

Schools and Wastewater Surveillance: Practical Implications for an Emerging Technology to Impact Child Health. Health Promotion Practice, in press. Abstract >>

Ohio Coronavirus Wastewater Monitoring Network: implementation of statewide monitoring for protecting public health. Journal of Public Health Management and Practice, 29:6, 845-853. Abstract >>

Effectiveness of monochloramine for inactivation of coronavirus in reclaimed water. Science of The Total Environment, in press. Abstract >>

Methods Development for Sars-CoV-2 Wastewater Surveillance. University of Illinois at Chicago. Abstract >>

Contact : Sophie Marchal-Mauer (sophie.marchal-mauer@anses.fr)
Anses - Laboratoire d'Hydrologie de Nancy

Machine Learning for Detecting Virus Infection Hotspots Via Wastewater-Based Epidemiology: The Case of SARS-CoV-2 RNA. Geohealth, 7:10, e2023GH000866. Abstract >>

Sunlight photolysis of SARS-CoV-2 N1 gene target in the water environment: considerations for the environmental surveillance of wastewater-impacted surface waters. Journal of Water and Health, 21:9, 1228-1241. Abstract >>

Application of MALDI-MS and Machine Learning to Detection of SARS-CoV-2 and non-SARS-CoV-2 Respiratory Infections. medRxiv, 2023.2008.2031.23294891. Abstract >>

Evaluation of concentration procedures, sample pre-treatment, and storage condition for the detection of SARS-CoV-2 in wastewater. Environmental Science and Pollution Research, in press. Abstract >>

Continued selection on cryptic SARS-CoV-2 observed in Missouri wastewater. medRxiv, 2023.2009.2018.23295717. Abstract >>

Simulation of COVID-19 Epidemic from Potential Viral Loads in Saudi Arabian Wastewater Treatment Plants. medRxiv, 2023.2009.2030.23296175. Abstract >>

Effective Target Capture/Enrichment of Respiratory Viruses from Wastewater. protocols.io. Abstract >>

Molecular detection and characterization of SARS-CoV-2 in wastewater in Thailand during 2020-2022. Journal of Infection and Public Health, in press. Abstract >>

SARS-CoV-2 removal in municipal wastewater treatment plants: Focus on conventional activated sludge, membrane bioreactor and anaerobic digestion. Science of The Total Environment, in press. Abstract >>

The emergence of a virus variant: dynamics of a competition model with cross-immunity time-delay validated by wastewater surveillance data for COVID-19. Journal of Mathematical Biology, 86:5, 63. Abstract >>

SARS-CoV-2 Wastewater Genomic Surveillance: Approaches, Challenges, and Opportunities. arXiv, 23 Sep 2023. Abstract >>

Estimate the Prevalence of Covid-19 Cases Through the Analysis of Sars-Cov-2 Rna Copies Derived from Wastewater Samples from North Dakota. SSRN, 26 Sep 2023. Abstract >>

Trends in SARS-CoV-2 clinically confirmed cases and viral load in wastewater: A critical alignment for Padua city (NE Italy). Heliyon, 9:10, e20571. Abstract >>

Contact : Sophie Marchal-Mauer (sophie.marchal-mauer@anses.fr)
Anses - Laboratoire d'Hydrologie de Nancy

Targeted community wastewater surveillance for SARS-CoV-2 and Mpox virus during a festival mass-gathering event. Science of The Total Environment, in press. Abstract >>

Autres pathogènes d'intérêt :

Monkeypox :

Monkeypox Virus in Wastewater Samples from Santiago Metropolitan Region, Chile. Emerging Infectious Disease journal, 29:11. Abstract >>

Targeted community wastewater surveillance for SARS-CoV-2 and Mpox virus during a festival mass-gathering event. Science of The Total Environment, in press. Abstract >>

Rapidly developed, optimized, and applied wastewater surveillance system for real-time monitoring of low-incidence, high-impact MPOX outbreak. Journal of Water and Health, 21:9, 1264-1276. Abstract >>

Stability of Monkeypox Virus in Body Fluids and Wastewater. Emerging Infectious Disease journal, 29:10, 2065. Abstract >>

Monitoring of monkeypox viral DNA in Prague wastewater. Science of The Total Environment, 902, 166110. Abstract >>

Enhanced detection of mpox virus in wastewater using a pre-amplification approach: A pilot study informing population-level monitoring of low-titer pathogens. Science of The Total Environment, in press. Abstract >>

Tracing the transmission of Mpox through wastewater surveillance in Southeast Asia. Journal of Travel Medicine, in press. Abstract >>

Autres :

More than a Tripledemic: Influenza A Virus, Respiratory Syncytial Virus, SARS-CoV-2, and Human Metapneumovirus in Wastewater during Winter 2022–2023. Environmental Science and Technology Letters, 10 (8), 622-627. Abstract >>

An alternative method for monitoring and interpreting influenza A in communities using wastewater surveillance. Frontiers in Public Health, 11. Abstract >>

Contact : Sophie Marchal-Mauer (sophie.marchal-mauer@anses.fr)
Anses - Laboratoire d'Hydrologie de Nancy

Wastewater Surveillance Data as a Complement to Emergency Department Visit Data for Tracking Incidence of Influenza A and Respiratory Syncytial Virus—Wisconsin, August 2022–March 2023. MMWR. Morbidity and Mortality Weekly Report 72:37, 1005-1009. Abstract >>

Development and application of influenza virus wastewater surveillance in Hong Kong. Water Research in press. Abstract >>

Wastewater-based epidemiology revealed in advance the increase of enterovirus circulation during the Covid-19 pandemic. Science of The Total Environment, 902, 166539. Abstract >>

Tracking the effects of the COVID-19 pandemic on viral gastroenteritis through wastewater-based retrospective analyses. Science of The Total Environment, in press. Abstract >>

Wastewater-based epidemiology revealed in advance the increase of enterovirus circulation during the Covid-19 pandemic. Science of The Total Environment, in press. Abstract >>

Surveillance of SARS-CoV-2, rotavirus, norovirus genogroup II, and human adenovirus in wastewater as an epidemiological tool to anticipate outbreaks of COVID-19 and acute gastroenteritis in a city without a wastewater treatment plant in the Peruvian Highlands. Science of The Total Environment, 905, 167161. Abstract >>

Assessment of rapid wastewater surveillance for determination of communicable disease spread in municipalities. Science of The Total Environment, 901, 166541. Abstract >>

Passive Sampler Technology for Viral Detection in Wastewater-Based Surveillance: Current State and Nanomaterial Opportunities. Viruses 15:9. Abstract >>

To sample or not to sample: A governance-focused decision tree for wastewater service providers considering participation in wastewater-based epidemiology (WBE) in support of public health programs. Science of The Total Environment, 905, 167128. Abstract >>

Semiparametric inference of effective reproduction number dynamics from wastewater pathogen surveillance data. arXiv 31 Aug 2023. Abstract >>

Assessment of seasonality and normalization techniques for wastewater-based surveillance in Ontario, Canada. Frontiers in Public Health, 11. Abstract >>

Making waves: Establishing a modeling framework to evaluate novel targets for wastewater-based surveillance. Water Research, 245, 120573. Abstract >>

Contact : Sophie Marchal-Mauer (sophie.marchal-mauer@anses.fr)
Anses - Laboratoire d'Hydrologie de Nancy

Wastewater-Based Epidemiology as a Tool for Monitoring Public Health. Frontiers in Water 5, 1283810. Abstract >>

Using Wastewater Surveillance to Monitor Gastrointestinal Pathogen Infections in the State of Oklahoma. Microorganisms, 11:9. Abstract >>

Harnessing Wastewater Surveillance to Detect Livestock-Linked Viruses. Preprints, 25 September 2023. Abstract >>

Wastewater Surveillance in Europe for Non-Polio Enteroviruses and Beyond. Microorganisms, 11:10. Abstract >>

Contact : Sophie Marchal-Mauer (sophie.marchal-mauer@anses.fr)
Anses - Laboratoire d'Hydrologie de Nancy