

ENVIRONMENTAL HEALTH RESEARCH SCAN

WITH COVID-19 SECTIONS

VOL 5 (9) SEPTEMBER 2021



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Environmental Health (EH) Research Scan: Aims and Scope

NCCEH's EH Research Scan aims to expand awareness of topics in environmental health, in line with NCCEH's vision to be the indispensable online resource for environmental health practitioners and policy-makers across Canada. "We focus on health risks associated with the physical environment and identify evidence-based interventions to mitigate those risks." This review is not official or peer reviewed. It does not cover all research, news, and information, and NCCEH is not responsible for the accuracy of the content from media or databases. How to access the items? Click on the link related to each entry and it should take you to the item. Not all links are open access; some are abstract links where paid journal subscription is required. **COVID-19 Publications** are listed in the sections above and there are also **COVID-19 Additional Topics** at the end of this issue.

EDITOR PICKS

Canadian Urban Environmental Health Research Consortium (CANUE) - Extreme heat, forest fires and the role of the built environment [webinar]

Sarah B Henderson, Scientific Director, Environmental Health Services, BCCDC

This webinar will:

- review trends and population health impacts of extreme heat and forest fires
- explain how the built environment can contribute to and protect against extreme heat and wildfire smoke exposure in cities
- explore local and national policy options to reduce harmful effects of extreme heat and wildfire smoke exposure



Impact of climate change and wild weather on mental and physical health, lost time from work and the need to prepare [webinar]

Blair Feltmate, Professor and Head, Intact Centre on Climate Adaptation

This webinar reviewed several aspects of climate change, including costs (financial, mental/psycho-social), mitigating risks, and adaptation standards and guidelines.



Infectious disease and climate change in Canada: Key informant interviews

Canadian Public Health Association

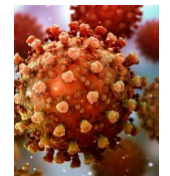
The project aims to build the knowledge and capacity of professionals and providers across Canada so they can inform and educate their communities, and respond to the increasing demands posed by climate change and infectious diseases. To scope the project's work and identify key issues, CPHA conducted 16 key informant interviews during the fall of 2020. This report summarizes our conversations with key informants.



Environmental health resources for the COVID-19 pandemic [topic page]

National Collaborating Centre for Environmental Health

This topic page has been created to promote key COVID-19 resources to environmental health practitioners and related professions.



Community health and climate change mapping exposure, sensitivity, and adaptive capacity to four health-related climate hazards

Emily Peterson

This project was created to help identify the differences between communities under the responsibility of these health authorities in terms of their vulnerability to four hazards: higher summer temperatures; coastal and riverine flooding; wildfire smoke events; ozone air pollution



ENVIRONMENTAL HEALTH RESEARCH SCAN

SELECTED STAFF PUBLICATIONS

NCCEH

Webinars, eNews

1. Henderson S. Canadian Urban Environmental Health Research Consortium (CANUE) - **Extreme heat, forest fires and the role of the built environment [webinar]**. Victoria, BC: CANUE; 2021 Oct 7. Available from: <https://ncceh.ca/events/canue-extreme-heat-forest-fires-and-role-built-environment>.
2. National Collaborating Centre for Environmental Health. **NCCEH eNews (Aug 2021) : Long-term Evacuation and Public Health Response; more...** Vancouver, BC: NCCEH; 2021 Aug15. Available from: <https://tinyurl.com/4jt5bsbp>.

BCCDC

1. Henderson SB, Morrison KT, McLean KE, Ding Y, Yao J, Shaddick G, et al. **Staying Ahead of the Epidemiologic Curve: Evaluation of the British Columbia Asthma Prediction System (BCAPS) During the Unprecedented 2018 Wildfire Season**. *Frontiers in public health*. 2021;9:499309-. Available from: <https://pubmed.ncbi.nlm.nih.gov/33777871>
2. Nguyen PDM, Martinussen N, Mallach G, Ebrahimi G, Jones K, Zimmerman N, et al. **Using Low-Cost Sensors to Assess Fine Particulate Matter Infiltration (PM2.5) during a Wildfire Smoke Episode at a Large Inpatient Healthcare Facility**. *Int J Environ Res Public Health*. 2021;18(18):9811. Available from: <https://www.mdpi.com/1660-4601/18/18/9811>.
3. Rice MB, Henderson SB, Lambert AA, Cromar KR, Hall JA, Cascio WE, et al. **Respiratory Impacts of Wildland Fire Smoke: Future Challenges and Policy Opportunities**. An Official American Thoracic Society Workshop Report. *Annals of the American Thoracic Society*. 2021;18(6):921-30. Available from: <https://www.atsjournals.org/doi/abs/10.1513/AnnalsATS.202102-148ST>.

INDIGENOUS ENVIRONMENTAL HEALTH

1. Cameron L, Courchene D, Ijaz S, Mauro I. **'A change of heart': Indigenous perspectives from the Onjisy Aki Summit on climate change**. *Clim Change*. 2021;164(3):43. Available from: <https://doi.org/10.1007/s10584-021-03000-8>.
2. Heck C, Eaker M, Cobos S, Campbell S, Carnevale FA. **Pandemic Impacts for Indigenous Children and Youth Within Canada: An Ethical Analysis**. *YOUNG*. 2021;29(4):381-98. Available from: <https://journals.sagepub.com/doi/abs/10.1177/11033088211032791>.
3. US Climate Resilience Toolkit. **Indigenous Health Indicators Tool**. US Climate Resilience Toolkit; 2021 Jun. Available from: <https://toolkit.climate.gov/tool/indigenous-health-indicators-tool>.
4. Webber ZR, Webber KGI, Rock T, St Clair I, Thompson C, Groenwald S, et al. **Diné citizen science: Phytoremediation of uranium and arsenic in the Navajo Nation**. *Sci Total Environ*. 2021;794:148665. Available from: <https://doi.org/10.1016/j.scitotenv.2021.148665>.

AGRICULTURAL OPERATIONS

1. Anderson V, Gough WA. **Nature-Based Resilience: A Multi-Type Evaluation of Productive Green Infrastructure in Agricultural Settings in Ontario, Canada.** *Atmosphere*. 2021;12(9):1183. Available from: <https://www.mdpi.com/2073-4433/12/9/1183>.
2. Audate PP, Cloutier G, Lebel A. **The motivations of urban agriculture practitioners in deprived neighborhoods: A comparative study of Montreal and Quito.** *Urban Forestry & Urban Greening*. 2021;62:127171. Available from: <https://www.sciencedirect.com/science/article/pii/S1618866721001965>.
3. Demetriou SC. **Cultivating Care: Backyard Hens and the Changing Geography of Human-Chicken Relations in Toronto** [M.A. thesis]. Ann Arbor: University of Toronto (Canada); 2021. Available from: <https://tspace.library.utoronto.ca/handle/1807/106452>.
4. Hertelendy AJ, Howard C, de Almeida R, Charlesworth K, Maki L. Wildfires: A conflagration of climate-related impacts to health and health systems. Recommendations from 4 continents on how to manage climate-related planetary disasters. *Journal of Climate Change and Health*. 2021:100054. Available from: <https://www.sciencedirect.com/science/article/pii/S2667278221000511>.
5. Institution for European Environmental Policy (IEEP) and the Mission of Canada to the European Union. **Life on a farm: Nature-based solutions to the climate challenge [webinar]**. IEEP and Health Canada; 2021 Jun 23. Available from: <http://119.78.100.173/C666/handle/2XK7JSWQ/332658>.
6. McClintock N, Miewald C, McCann E. **Governing urban agriculture: Formalization, Resistance and Re-visioning in Two 'Green' Cities.** *International Journal of Urban and Regional Research*. 2021;45(3):498-518. Available from: <https://onlinelibrary.wiley.com/doi/abs/10.1111/1468-2427.12993>.
7. Puigdueta I, Aguilera E, Cruz JL, Iglesias A, Sanz-Cobena A. **Urban agriculture may change food consumption towards low carbon diets.** *Global Food Security*. 2021;28:100507. Available from: <https://www.sciencedirect.com/science/article/pii/S2211912421000171>.
8. Wason P. **T.U.R.F. (Transformative Urban Rooftop Farming): Alleviating Food Insecurity in Toronto.** Waterloo, ON: University of Waterloo; 2021. Available from: <https://uwspace.uwaterloo.ca/handle/10012/17309>.

BIOLOGICAL AGENTS

BUILT ENVIRONMENT

1. Acuto M, Akhmouch A, Asgari N, Assiagio J, Chapman T, Falco G, et al. **Safe Cities Index 2021.** *The Economist*. 2021. Available from: <https://safecities.economist.com/safe-cities-2021-whitepaper/>.
2. Bell S, Fleming LE, Grellier J, Kuhlmann F, Nieuwenhuijsen MJ, White MP, editors. **Urban Blue Spaces Planning and Design for Water, Health and Well-Being.** New York, NY: Routledge; 2021. Available from: <https://www.routledge.com/Urban-Blue-Spaces-Planning-and-Design-for-Water-Health-and-Well-Being/Bell-Fleming-Grellier-Kuhlmann-Nieuwenhuijsen-White/p/book/9780367173180>.
3. Brazeau-Béliveau N, Cloutier G. **Citizen participation at the micro-community level: The case of the green alley projects in Quebec City.** *Cities*. 2021;112:103065. Available from: <https://www.sciencedirect.com/science/article/pii/S026427512031413X>.
4. Contardo C, Costa L. **On the optimal layout of a dining room in the era of COVID-19 using mathematical optimization.** *ArXiv*. 2021 08 07. Available from: <https://arxiv.org/abs/2108.04233>.

5. Din Dar MU, Shah AI, Bhat SA, Kumar R, Huisingh D, Kaur R. **Blue Green infrastructure as a tool for sustainable urban development.** *Journal of Cleaner Production.* 2021;318. Available from: <https://doi.org/10.1016/j.jclepro.2021.128474>.
6. Dvorak B, editor. **Ecoregional Green Roofs Theory and Application in the Western USA and Canada.** New York, NY: Springer; 2021. Available from: <https://www.springer.com/gp/book/9783030583941>.
7. Fisher D, Blackstock K, Irvine K. "It's on the 'nice to have' pile": Potential principles to improve the implementation of socially inclusive Green Infrastructure. *Ambio.* 2021;50(8):1574-86. Available from: <https://doi.org/10.1007/s13280-020-01372-2>.
8. Grebner DL, Bettinger P, Siry JP, Boston K. **Chapter 14 - Forest disturbances and health.** In: Grebner DL, Bettinger P, Siry JP, Boston K, editors. *Introduction to Forestry and Natural Resources (Second Edition).* San Diego: Academic Press; 2022. p. 335-63. Available from: <https://www.sciencedirect.com/science/article/pii/B9780128190029000146>.
9. Haley M. **Shock Proofing the Built Environment: An Evidence Review for Sustainable Buildings Canada.** Sustainable Buildings Canada; 2020. Available from: <https://sbcanada.org/wp-content/uploads/2017/04/Evidence-Review-Pandemic-Response.pdf>.
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11. Javadi R, Nasrollahi N. **Urban green space and health: The role of thermal comfort on the health benefits from the urban green space; a review study.** *Build Environ.* 2021;202. Available from: <https://doi.org/10.1016/j.buildenv.2021.108039>.
12. Jay O, Capon A, Berry P, Broderick C, de Dear R, Havenith G, et al. **Reducing the health effects of hot weather and heat extremes: from personal cooling strategies to green cities.** *The Lancet.* 2021;398(10301):709-24. Available from: [https://doi.org/10.1016/S0140-6736\(21\)01209-5](https://doi.org/10.1016/S0140-6736(21)01209-5).
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15. Marselle MR, Hartig T, Cox DTC, de Bell S, Knapp S, Lindley S, et al. **Pathways linking biodiversity to human health: A conceptual framework.** *Environ Int.* 2021;150:106420. Available from: <https://www.sciencedirect.com/science/article/pii/S0160412021000441>.
16. Moreno Rangel A, Yesiltepe D. **Built environment, sedentary behaviour and air quality impact on asthmatic and obese children: a review of existing literature.** *Environments by Design.* 2021. Available from: <https://eprints.lancs.ac.uk/id/eprint/158007/>.
17. Prakash R, Digumarthi UK. An Emphasis on Engineering Controls and Administrative Controls in the Prevention and Control of COVID-19 in an Orthodontic Setting: Thinking Beyond Tomorrow. *Journal of Indian Orthodontic Society.* 2021;55(2):190-201. Available from: <https://journals.sagepub.com/doi/abs/10.1177/0301574220988185>.
18. Pugh TA, Mackenzie AR, Whyatt JD, Hewitt CN. **Effectiveness of green infrastructure for improvement of air quality in urban street canyons.** *Environ Sci Technol.* 2012;46(14):7692-9. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/22663154>.

19. Roberts M, Irvine KN, McVittie A. **Associations between greenspace and mental health prescription rates in urban areas.** *Urban Forestry & Urban Greening.* 2021;64:127301. Available from: <https://www.sciencedirect.com/science/article/pii/S1618866721003289>.
20. Rojas-Rueda D, Morales-Zamora E. **Built Environment, Transport, and COVID-19: a Review.** *Curr Environ Health Rep.* 2021;8(2):138-45. Available from: <https://doi.org/10.1007/s40572-021-00307-7>.
21. Sax DL. **Expelled from the garden? Understanding the dynamics of green gentrification in Vancouver, British Columbia** [Text thesis]2021. Available from: <https://open.library.ubc.ca/collections/24/items/1.0401826>.
22. Smith N, Georgiou M, King AC, Tiegies Z, Webb S, Chastin S. **Urban blue spaces and human health: A systematic review and meta-analysis of quantitative studies.** *Cities.* 2021;119:103413. Available from: <https://www.sciencedirect.com/science/article/pii/S0264275121003127>.
23. Wiese C. **Rethinking office design for our post-COVID return.** 2020 [Nov 12]; Available from: <https://blogs.poly.com/rethinking-office-design-for-our-post-covid-return>.
24. Xie Q, Lee C, Lu Z, Yuan X. **Interactions with artificial water features: A scoping review of health-related outcomes.** *Landscape Urb Plan.* 2021;215:104191. Available from: <https://www.sciencedirect.com/science/article/pii/S0169204621001547>.
25. Ye Y, Qiu H. **Using urban landscape pattern to understand and evaluate infectious disease risk.** *Urban forestry & urban greening.* 2021;62:127126. Available from: <https://doi.org/10.1016/j.ufug.2021.127126>.

CHEMICAL AGENTS – METALS, GENERAL

General

1. Adlard B, Lemire M, Bonefeld-Jørgensen EC, Long M, Ólafsdóttir K, Odland JO, et al. **MercuNorth – monitoring mercury in pregnant women from the Arctic as a baseline to assess the effectiveness of the Minamata Convention.** *Int J Circumpolar Health.* 2021;80(1):1881345. Available from: <https://doi.org/10.1080/22423982.2021.1881345>.
2. Feiteiro J, Mariana M, Cairrão E. **Health toxicity effects of brominated flame retardants: From environmental to human exposure.** *Environ Pollut.* 2021;285:117475. Available from: <https://www.sciencedirect.com/science/article/pii/S0269749121010575>.
3. Morales-McDevitt ME, Becanova J, Blum A, Bruton TA, Vojta S, Woodward M, et al. **The Air That We Breathe: Neutral and Volatile PFAS in Indoor Air.** *Environ Sci Technol Lett.* 2021. Available from: <https://doi.org/10.1021/acs.estlett.1c00481>.
4. Ng C, Cousins IT, DeWitt JC, Glüge J, Goldenman G, Herzke D, et al. **Addressing Urgent Questions for PFAS in the 21st Century.** *Environ Sci Tech.* 2021. Available from: <https://doi.org/10.1021/acs.est.1c03386>.
5. Tan X, Zhong J, Fu C, Dang H, Han Y, Král P, et al. **Amphiphilic Perfluoropolyether Copolymers for the Effective Removal of Polyfluoroalkyl Substances from Aqueous Environments.** *Macromolecules.* 2021;54(7):3447-57. Available from: <https://doi.org/10.1021/acs.macromol.1c00096>.

CHEMICAL AGENTS – PESTICIDES

1. Aggarwal A, Rai R, Joshi G, Gahtori P. **Implicit, Intrinsic, Extrinsic (or Environmental), and Host Factors Attributing the Covid-19 Pandemic. Part 2- Implicit Factor Pesticide Use: A Systematic**

Analysis. medRxiv. 2021:2021.09.09.21263347. Available from:

<https://www.medrxiv.org/content/medrxiv/early/2021/09/16/2021.09.09.21263347.full.pdf>.

2. El-Nahhal I, El-Nahhal Y. **Pesticide residues in drinking water, their potential risk to human health and removal options.** J Environ Manage. 2021;299:113611. Available from: <https://www.sciencedirect.com/science/article/pii/S030147972101673X>.

CHEMICAL AGENTS – SHALE GAS

1. Hill CB, Yadav OP, Khan E. Systemic risk analyses for potential impacts of onshore unconventional oil and gas development on public health and the environment: A critical review. Sci Total Environ. 2021;786. Available from: <https://doi.org/10.1016/j.scitotenv.2021.147512>.
2. Hill E, Ma L. **The fracking concern with water quality.** Science. 2021;373(6557):853-4. Available from: <https://science.sciencemag.org/content/sci/373/6557/853.full.pdf>.

CHILDREN'S ENVIRONMENTAL HEALTH

1. Buonsenso D, Munblit D, De Rose C, Sinatti D, Ricchiuto A, Carfi A, et al. **Preliminary Evidence on Long COVID in children.** medRxiv. 2021:2021.01.23.21250375. Available from: <https://www.medrxiv.org/content/medrxiv/early/2021/01/26/2021.01.23.21250375.full.pdf>.
2. Chegini V, Chegini V, Parsarad E, Rouhi S. **Long-term effects of the coronavirus disease 2019 pandemic on the health and safety of children and mothers around the world.** Chronic Diseases Journal. 2021;9(2). Available from: <https://pesquisa.bvsalud.org/global-literature-on-novel-coronavirus-2019-ncov/resource/pt/covidwho-1310321>.
3. Gallegos D, Eivers A, Sondergeld P, Pattinson C. **Food Insecurity and Child Development: A State-of-the-Art Review.** Int J Environ Res Public Health. 2021;18(17):8990. Available from: <https://www.mdpi.com/1660-4601/18/17/8990>.
4. Paterson DC, Ramage K, Moore SA, Riaz N, Tremblay MS, Faulkner G. Exploring the impact of COVID-19 on the movement behaviors of children and youth: A scoping review of evidence after the first year. Journal of Sport and Health Science. 2021. Available from: <https://www.sciencedirect.com/science/article/pii/S2095254621000727>.
5. Vaillancourt T, Szatmari P, Georgiades K, Krygsman A, editors. **Chapter 1: The Impact of COVID-19 on the Mental Health of Canadian Children and Youth.** Ottawa, ON: Royal Society of Canada; 2021. Available from: <https://rsc-src.ca/en/covid-19-policy-briefing/children-and-schools-during-covid-19-and-beyond-engagement-and-connection>
6. Viner RM, Mytton OT, Bonell C, Melendez-Torres GJ, Ward J, Hudson L, et al. Susceptibility to SARS-CoV-2 Infection Among Children and Adolescents Compared With Adults: A Systematic Review and Meta-analysis. JAMA Pediatrics. 2021;175(2):143-56. Available from: <https://doi.org/10.1001/jamapediatrics.2020.4573>.
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CLIMATE CHANGE

1. Canadian Public Health Association. **Infectious disease and climate change in Canada: Key informant interviews.** Ottawa, ON: CPHA; 2021 09 10 Sep. Available from: https://www.cpha.ca/sites/default/files/uploads/resources/idcc/CPHA_IDCC_Key_informant_interviews.pdf.
2. Climate for Health. **Climate action fact sheets. Resources and guides.** Climate for Health; 2021. Available from: <https://climateforhealth.org/resources/>.
3. Cremades R, Sanchez-Plaza A, Hewitt RJ, Mitter H, Baggio JA, Olazabal M, et al. **Guiding cities under increased droughts: The limits to sustainable urban futures.** *Ecological Economics.* 2021;189:107140. Available from: <https://www.sciencedirect.com/science/article/pii/S0921800921001981>.
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7. Judah I. Adaptive mitigation: a framework for integrating climate adaptation and mitigation solutions in urban multi-unit residential buildings. Vancouver, BC: University of British Columbia; 2020. Available from: <https://open.library.ubc.ca/soa/cIRcle/collections/ubctheses/24/items/1.0395287>.
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9. New Brunswick Lung Association. **Climate change and human health.** New Brunswick Lung Association; 2021; Available from: <https://nb.lung.ca/climate-change>.
10. Nguyen TMP, Davidson K, Coenen L. **Understanding how city networks are leveraging climate action: experimentation through C40.** *Urban Transformations.* 2020;2(1):12. Available from: <https://doi.org/10.1186/s42854-020-00017-7>.
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<https://www.sciencedirect.com/science/article/pii/S2667278221000237>.
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 18. World Health Organization. **Fast Facts on Climate Change and Health**. Geneva, Switzerland: WHO; 2021 Aug 10. Available from: <https://www.who.int/publications/i/item/fast-facts-on-climate-change-health>.

COMMUNICABLE AND INFECTIOUS DISEASES

See **Covid 19 subsections** in this issue and in the [COVID-19 Additional Topics and Guidance](#) section at the end of this issue (e.g., Occupational Guidance, Transit, Transmission)

1. National Collaborating Centre for Infectious Diseases. **New vector-borne disease debriefs**. Winnipeg, MB: NCCID; 2021. Available from: <https://nccid.ca/disease-debriefs/>.

DRINKING WATER

1. Chen L, Deng Y, Dong S, Wang H, Li P, Zhang H, et al. **The occurrence and control of waterborne viruses in drinking water treatment: A review**. Chemosphere. 2021;281. Available from: <https://doi.org/10.1016/j.chemosphere.2021.130728>.
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COVID-19 ADDITIONAL TOPICS & GUIDANCE



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