SUMMER 2021

CLIMATE QUARTERLY

The Newsletter of the AAD ERG on Climate and Environmental Affairs

CLIMATE CHANGE IN THE LITERATURE AND NEWS

Literature Review
John Barbieri, MD, MBA

Dayrit et al. Climate change, human migration, and skin disease: Is there a link? Int J Dermatol. May 2021.

Summary: This systematic review evaluates the literature on whether there may be a link between climate change, migration, and skin disease. This review highlights that climate change may directly and indirectly impact migration patterns and the health of populations. Changing weather patterns associated with climate change can result in increased natural disasters and unfavorable agricultural circumstances resulting in food scarcity. In addition, climate change can lead to increased prevalence of heat related illnesses and infectious disease outbreaks. Notably, skin diseases are among the most commonly observed health conditions observed in migrant populations.

Continued

IN THIS ISSUE

Lee et al. The positive environmental impact of virtual isotretinoin management. Pediatr Dermatol. Apr 2021.

Summary: This retrospective cross-sectional study finds that between March 25 to December 1, 2020, the increased use of virtual visits for patients with acne being treated with isotretinoin resulted in a 5,137kg reduction of greenhouse gas emissions in CO2 equivalents at a single academic institution in West Virginia. The study authors estimate that at this single academic institution, nearly 50,000kg of greenhouse gas emissions annually could be prevented by using virtual visits for managing isotretinoin follow-up. In addition, it is suggested that using virtual visits for other chronic skin disease could result in even greater reductions given that isotretinoin management represents only a fraction of the overall carbon footprint associated with travel to dermatology visits.

Limaye V and De Alwis D. The Costs of Inaction: The Economic Burden of Fossil Fuels and Climate Change on Health in the U.S. NRDC. May 20, 2021

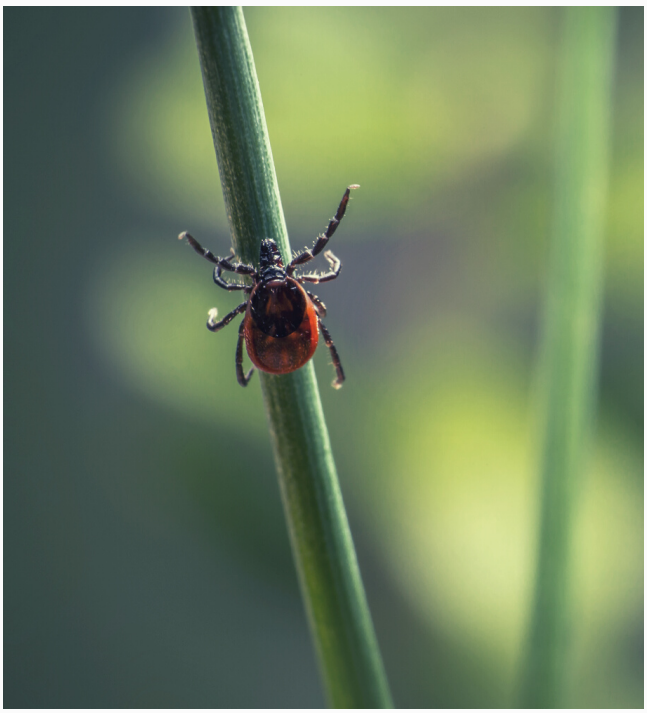
Summary: In this report, it is estimated that the health costs of air pollution and climate change already exceed $800 billion per year, and will continue to grow without substantial changes to address climate change. In addition, climate change has the potential to worsen existing health and economic burdens, particularly for the most vulnerable among us, including children, low-income communities, and people of color.

Hsu et al. Disproportionate exposure to urban heat island intensity across major US cities. Nat Commun. Vol 12. May 25, 2021.

Summary: This study, which combines surface urban heat island data with census tract-level demographic data, finds that average person of color lives in a census tract with higher surface urban heat island intensity than non-Hispanic whites in all but 6 of the 175 largest urbanized areas in the United States. Similar patterns are observed for people living in households below the poverty line.

Tessum et al. PM 2.5 polluters disproportionately and systemically affect people of color in the US. Sci Adv. 2021;7(18)

Summary: This study explores which emission categories contribute greatest to observed racial-ethnic differences in exposure to high ambient levels of fine particulate air pollution (PM2.5). The study finds that nearly all major emission categories (e.g. industry, vehicles, construction, residential, etc) contribute to the systemic PM2.5 exposure disparity experienced by people of color. The most inequitable emission source types by state and city are summarized, highlighting potential opportunities to address this issue.



Climate Sensitive Disease

How climate change is increasing the risks of recreational outdoor exposure

Eva R. Parker, MD, FAAD

With summer upon us, our time spent outside has greatly increased, especially during a pandemic. But climate change is creating more recreational perils associated with gardening, hiking, and camping that carry dermatologic significance.

Longer growing seasons due to global warming mean that average spring temperatures are warmer and the last frost is occurring later in the year. When this is combined with higher atmospheric CO_2 levels, range expansion and increased pollen production by allergenic plant species is occurring in North America and Europe.1 Higher concentrations of aeroallergens induce sensitization in larger numbers of people and contribute to worsening atopic disease.1,2

Similarly, the same factors are causing many plant species to grow faster and larger, supercharging the antigenicity of native plants such as poison ivy and invasive plant species like giant hogweed, which is implicated in cases of severe phytophotodermatitis.3,4

Many insects and creatures are also benefitting from global warming. Range expansion, enhanced reproduction, and improved survival of ticks, mosquitos, and sand flies have increased the incidence of vector-borne diseases globally.5 Specifically in Europe and North America, as temperatures have warmed, ticks have invaded habitats at higher altitudes and latitudes, causing substantial spread of borreliosis as evidenced by the emergence of Lyme Disease in Canada and the rising incidence of both borreliosis and tick-borne encephalitis in Europe. 5-7 Moreover, since 2009, new tick-borne viral infections have emerged in Asia and the U.S. including severe fever with thrombocytopenia syndrome virus (SFTSV), Heartland virus, and Bourbon virus. Haemaphysalis longicornis, the tick vector responsible for transmitting SFTSV in Asia, is the first new tick species reported in the U.S. in many decades, first appearing in 2017 and now identified in at least 15 states.8,9 Heat combined with extreme precipitation events and flooding provide ideal conditions for breeding and geographic expansion of mosquitoes with increasing reports of Zika, dengue, chikungunya, and West Nile virus in Europe and the U.S.5 Additionally, Phlebotomus sandflies are expanding in the southern U.S. with leishmaniasis now considered endemic in Texas. 5,10

Global warming has also triggered a significant northward spread of armadillos in the U.S. While these creatures commonly end up as roadkill, they also love to find their way into our yards and gardens where they burrow in the soil in search of insects, often

Continued

destroying landscaping in the process. Deterring them is the best approach to minimize this nuisance behavior, but many have resorted to killing the animals instead. However, armadillos serve as a natural reservoir for Mycobacterium leprae, and while they pose a low risk overall, zoonotic transmission of Hansen's disease is reported in the U.S.11 Consequently, people are advised to avoid contact when possible, but if one must handle an armadillo, the use of gloves and thorough hand washing is recommended to minimize exposure. Importantly, consuming armadillo meat is strongly discouraged. 11,12

The incidence of snake bites is also rising globally, due to urbanization and range expansion associated with global warming.13 In the U.S., thousands of people are bitten annually, with envenomation by pit vipers accounting for at least half of snake bites. Children playing outdoors are at particular risk.14 Snake bites also increase after precipitation events and flooding which are becoming increasingly frequent events owing to climate change.15

As dermatologists, it is imperative that we recognize the cutaneous manifestations of these exposures and counsel patients on protective clothing, insect repellants, and heightened awareness of these threats as our climate changes, especially for patients living in regions where these exposures have not been historically identified.

1. Barnes CS. Impact of Climate Change on Pollen and Respiratory Disease. Curr Allergy Asthma Rep. 2018;18(11):59. doi: 10.1007/s11882-018-0813-7.

2. Lake IR, Jones NR, Agnew M, et al. Climate Change and Future Pollen Allergy in Europe. Environ Health Perspect. 2017;125(3):385-91. doi: 10.1289/EHP173.

3. Mohan JE, Ziska JH, Schlesinger WH, et al. Biomass and toxicity responses of poison ivy (Toxicodendron radicans) to elevated atmospheric CO2. Proc Natl Acad of Sci. 2006;103(24):90869. doi: 10.1073/pnas.0602392103

4. Germann P. (2018). Modeling potential distributions of the invasive species Giant Hogweed under present climate conditions and a future climate scenario. www.researchgate.net/publication/330901565

5. Semenza JC, Suk JE. Vector-borne diseases and climate change: a European perspective. FEMS Microbiol Lett. 2018;365(2):fnx244. doi: 10.1093/femsle/fnx244.

6. Tokarevich NK, Tronin AA, Blinova OV, et al. The impact of climate change on the expansion of Ixodes persulcatus habitat and the incidence of tick-borne encephalitis in the north of European Russia. Glob Health Action. 2011;4:8448. doi: 10.3402/gha.v4i0.8448.

7. Nelder MP, Wijayasri S, Russell CB, et al. The continued rise of Lyme disease in Ontario, Canada: 2017. Can Commun Dis Rep. 2018;44(10):231-6. doi: 10.14745/ccdr.v44i10a01

8. Madison-Antenucci S, Kramer LD, Gebhardt LL, Kauffman E. Emerging Tick-Borne Diseases. Clin Microbiol Rev. 2020;33(2):e00083-18. doi:10.1128/CMR.00083-18

9. https://www.cdc.gov/ticks/longhorned-tick/index.html

10. McIlwee BE, Weis SE, Hosler GA. Incidence of Endemic Human Cutaneous Leishmaniasis in the United States. JAMA Dermatol. 2018;154(9):1032–9. doi:10.1001/jamadermatol.2018.2133

11. Truman RW, Singh P, Sharma R, et al. Probable zoonotic leprosy in the southern United States. N Engl J Med. 2011;364(17):1626-33. doi: 10.1056/NEJMoa1010536

12. da Silva MB, Portela JM, Li W, et al. Evidence of zoonotic leprosy in Pará, Brazilian Amazon, and risks associated with human contact or consumption of armadillos. PLoS Negl Trop Dis 2018;12(6): e0006532. https://doi.org/10.1371/journal.pntd.0006532

13. Gutiérrez JM. Snakebite envenoming from an Ecohealth perspective. Toxicon X. 2020;7:100043. doi: 10.1016/j.toxcx.2020.100043

14. Schulte J, Domanski K, Smith EA, et al. Childhood Victims of Snakebites: 2000-2013. Pediatrics. 2016;138(5):e20160491. doi: 10.1542/peds.2016-0491.

15. Phillips C, Lipman GS, Gugelmann H, et al. Snakebites and climate change in California, 1997-2017. Clin Toxicol (Phila). 2019;57(3):168-74. doi: 10.1080/15563650.2018.1508690.

TIPS FOR GREENING YOUR OFFICE

David Fivenson, MD

We all get products delivered to our homes and offices that are in styrofoam (expanded polystyrene or EPS) and it is a bulky problem that is slowly being tackled by industry. Most municipalities have specific guidelines for different types of styrofoam packing including food related containers and packing 'peanuts'. The EPS Industry Alliance lists sites that offer different types of recycling. The #6 imprint on the thicker packing and cooler foam is what to look for as a guide for EPS recycling.

Other options for recycling are being developed by Dart Container Corporation, who make the machines used to produce much of the plastic and styrofoam containers we get with our takeout food orders. Dart Container has foam recycling drop-off centers located in multiple states.

The drop-offs are publicly accessible 24-hours per day, seven days per week and completely free of charge. They provide an option for residents, businesses and organizations to recycle foam, often mistakenly referred to as Styrofoam, labeled with a #6 chasing arrows symbol. These sites accept a wide variety of recyclable foam including cups, egg cartons, meat trays, ice chests, and packaging. Here are the guidelines for participation in Dart's programs:

- Make sure foam has the #6 chasing arrows symbol on it.
- Deposit foam in a clear or translucent bag.
- Rinse or wipe foodservice containers free from food.
- Remove straws, lids, tape or any other non-foam material.
- Most sites will not take foam-packaging peanuts

Polystyrene packing peanuts are not biodegradable and pollute landfills and waterways. The Peanut Hotline (800-828-2214) is a consumer service that provides referrals to the nearest locations that accept loose fill such as packing peanuts for reuse. Additionally, all Pak Mail locations are part of the Peanut Hotline and have more than 500 locations across the U.S., Canada, Mexico, and Japan.

When polystyrene is recycled, it is turned into small pellets or compressed into dense, flat slabs. These can then be used to make everything from construction materials (roof tiles, baseboards, crown molding) to traffic cones to park benches to household items such as coat hangers and picture frames. This unique plastic polymer byproduct is exceptionally durable, meaning it can last for many years after recycling, giving new life to recycled Styrofoam shipping products.

Continued

Eco-friendly packing alternatives:

- Biodegradable Sealed Air Peanuts made from non-food plant ingredients and are anti-static. No more bits of foam sticking to everything when you unpack an item! These are reported to perform better than EPS or Styrofoam peanuts.
- ClimaCell made by TemperPack is an alternative to styrofoam shippers and is made from renewable plant-based components and paper. With excellent thermal performance and a competitive cost structure, it is the ideal replacement for unsustainable insulators like Styrofoam. The new units also ship flat and help lower the carbon footprint of new shipping materials. They are currently being used by Albertsons and was used by Diplomat prior to being bought out by Optum Rx in 2019.

Recycle/Reuse

- Some biologic medications will have return shipping labels that allow for reuse of coolers. This is one of the more energy efficient ways to keep these containers out of landfills. Some specialty pharmacies and pharma companies offering this include Abbvie, Walgreens Alliance Rx, Bristol Myers, AstraZeneca and Merck.
- Other companies are diverting EPS coolers from the trash by "take back" programs where the company will pay for researchers/medical facilities to ship their coolers back to them for reuse. These programs are great because they remove the burden from users to find a way to responsibly dispose of the packaging.
- There is increasing interest in repurposing coolers. The more creative amongst us may opt for use as planters, patio ottomans, composting bins, and even stray cat shelters! Ideas abound on Pinterest and Insteading.

HIGHLIGHTS FROM THE ERG

- The ERG held a successful annual meeting virtually on March 18, 2021 during which many members signed up to participate in committees.
- Mary Williams and Misha Rosenbach were featured speakers at the Annual Meeting of the Medical Society Consortium on Climate and Health on May 22, 2021. View the replay here.
- Misha Rosenbach directed a very successful session on Climate Change and Dermatology at the 2021 AAD VMX Meeting in April. Multiple talks from this symposium received additional media coverage from Dermatology Times, AJMC, and Practical Dermatology!

KEEPING UP WITH 'THE JOE'

Tracking President Biden's Environmental Policy

Caroline Nelson, MD

During his campaign, President Biden outlined a plan to "secure environmental justice and equitable economic opportunity". Dermatologists, even those with an interest in climate change and public policy, are busy. In this column, my goal is to summarize three impactful environmental policy actions taken by the United States (US) federal government during the last quarter. While content curation is unavoidable, I will refrain from editorializing. May we successfully thread the needle.

In the last installment of this column, we examined President Biden's first week in the Oval Office. In a flurry of executive activity, he returned the US to the Paris Agreement and signed executive orders with lofty goals – even promising to convert to an all-electric federal fleet. Have President Biden's words materialized into actions?

1. **Black gold**: When it comes to pipelines, President Biden's record is mixed. On the one hand, he cancelled the permit for the Keystone XL crude oil pipeline, designed to transport crude oil from oil sands in Alberta to Nebraska. This action has received significant press, prompting celebration among environmentalists and Native American tribes and disappointment among the project's backers, including Canadian Prime Minister Justin Trudeau. On the other hand, President Biden has not yet shut down the Dakota Access pipeline while an environmental review is underway.
2. **Infrastructure**: It's easy to sign an executive order, but lasting change requires congressional action. President Biden's climate-friendly infrastructure bill is facing stiff head winds in an evenly divided senate. A proposal to build a national electric vehicle charging network has been a flashpoint. The good news, if you are an environmentalist, is that the "invisible hand" appears to be directing the market towards clean energy regardless. Note the plunging cost of solar and wind.
3. **"Forever chemicals"**: While this topic may not rise into the top three for all audiences, it bears particular relevance to dermatologists. The Environmental Protection Agency (EPA) withdrew Trump-era guidance on certain uses of per- and polyfluoroalkyl substances (PFAS) and proposed the first reporting requirements for PFAS manufactured in the US. PFAS consist of a chain of linked carbon and

Continued

and fluorine atoms that do not degrade in the environment. The most common PFAS is polytetrafluoroethylene (Teflon). A recent study found that 52% of 231 makeup products purchased in the US and Canada, especially foundations (63%), waterproof mascara (82%) and long-lasting lipstick. This report raised concern regarding the potential for bioaccumulation in the body leading to increased risk of cancer, among other adverse health impacts. The "No PFAS in Cosmetics Act" was recently introduced in the US House and Senate. Stay tuned.

References:

https://www.washingtonpost.com/graphics/2021/climate-environment/biden-climate-environment-actions/

https://www.usatoday.com/story/news/politics/2021/06/09/keystone-pipeline-canceled-after-biden-had-blocked-permit/7627122002/

https://www.cnbc.com/2021/01/30/bidens-climate-change-agenda-to-face-obstacles-with-senate-.html

https://abcnews.go.com/GMA/News/biden-climate-change-activists-applauding-waiting/story?id=77240848

https://www.cnn.com/2021/06/15/health/makeup-toxic-chemicals-wellness/index.html

GET INVOLVED AND TAKE ACTION!

Complete this 5-minute Survey of the Attitudes and Behaviors of Dermatologists Regarding Climate Change.

The Medical Society Consortium for Climate and Health is still seeking member societies as well as individuals to sign on to 3 important initiatives including the US Call to Action on Climate, Health and Equity: A Policy Action Agenda, a letter to the U.S. Secretary of Health & Human Services containing climate-related health recommendations, and a letter to the Biden Administration. The SPD has signed on, but we can also sign these as individuals.

Please consider applying for an AAD committee/task force/council and bring your climate voice and leadership to the AAD's governance bodies. If those of us who care about climate health have greater representation, our opportunity to effect meaningful change on an academy-wide scale is enhanced. Particularly relevant groups may include the Young Physicians Committee, Education Research Committee, Diversity Committee, Resident/Fellows Committee, Investments Committee, Curriculum Taskforce, Scientific Assembly Committee, and Congressional Policy Committee. Applications must be submitted by June 30, 2021.

Elsevier's Journal of Climate Change and Health is soliciting papers for a special edition on health care sustainability. Learn more here.

The American Lung Association is reaching out to health professionals to join this important letter calling on the EPA to take a key step toward reducing the largest source of air pollution and GHGs – passenger vehicles – by restoring states' authority to set stricter emissions standards for passenger vehicles and light trucks to reduce harmful health impacts. The deadline to add your name is Wednesday, June 30. Any health credential can join.

Get more involved with the ERG

We are developing task forces around medical education, divestment, greening your office, among other issues. Please let us know if you are interested in any of these initiatives by replying to Eva R. Parker, MD.

ORGANIZATION OF THE EXPERT RESOURCE GROUP ON CLIMATE CHANGE AND ENVIRONMENTAL HEALTH

Since our inception in 2019, the work of the ERG has advanced through the efforts of a handful of dedicated volunteers supported by you, a growing list of interested ERG members. It's time to adopt a more formalized structure that will permit everyone who wants to become more actively engaged in climate work to participate. To this end, we have developed 3 key committees to continue work already begun and expand into new directions. The committees, their leaders and their scope are outlined below. Some of you have already volunteered to contribute in these important areas, but there is plenty of room, as well as need, for others to engage. Please contact one of the leaders to indicate your interest in joining their committee.

GOVERNANCE STRUCTURE
ERG Co-Chairs
Misha Rosenbach
Mary Williams
Secretary/Treasurer
Timothy McCalmont
12-Member Executive Board

COMMUNICATION AND EDUCATION COMMITTEE
Co-Chairs
Eva Parker
Sarah Coates
Present Scope
·ERG list-serve communications, production of ERG newsletters, webinar programming
Future Scope
·Creation of additional educational offerings at AAD meetings, climate-related columns and updates in JAAD and other derm publications, CME programing, website development and maintenance

OUTREACH AND POLICY COMMITTEE
Co-Chairs
Mary Maloney
Markus Boos
Kathleen Carney-Godley
Brad Glick
Present Scope
·Outreach: Intersociety liaising with other dermatological societies including state/local derm societies, drafting resolutions for the AAD Advisory Board to consider, and generating grass roots support from state/local societies and other ERGs.
Inreach: Climate health policy advocacy within the AAD and AADA, coordination with Medical Society Consortium efforts, public health advocacy, coordination of common initiatives with other AAD committees, task forces, and ERGs
Future Scope
·Creation of a Health Equity and Environmental Justice Task Force

INNOVATION AND INITIATIVES COMMITTEE
Co-Chairs
John Barbieri
Caroline Nelson
David Fivenson
Present Scope
·AAD sustainability: Carbon offsets for travel, plastics reduction, virtual meetings
·Green practices: Develop and promote environmentally sound office practices and initiatives to reduce office and surgical wastes, promote personal initiatives and carbon footprint reduction, promote the MyGreenDoctor program
·Environmental Pollutants Task Force: Examine the effects of sunscreen and other skin care products on the environment
·Fossil Fuel Divestment Task Force
Future Scope
·Research task force: Identify knowledge gaps, set priorities, how to foster impactful research, grant review
·Finance task force: Raise funds to support educational, research, and training initiatives in climate, environment and skin health; Pharma, corporate, and philanthropic outreach; and manage ERG budget for meetings, membership, and mentorship grants
·Other Green initiatives: Carbon fee and dividend, Green Building Task Force, EV charging station subsidies at offices