

PEGS Personalized Environment & Genes Study Newsletter

Powerful science for integrating genomic and environmental data to understand human health

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Message From the Principal Investigators of PEGS

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Thank you all for your continued participation in PEGS!



We have received funding for an exciting new initiative to collect additional samples, which will provide more data on the health and environmental exposures of our study participants. We will be calling 1,500 PEGS participants about your willingness to come to the NIEHS Clinical Research Unit in Research Triangle Park, North Carolina, for a study visit. If you are called and can come in, you will be compensated. During the visit, we will ask for updated questionnaire information and will take blood, urine, and other samples, like hair and a nasal swab.



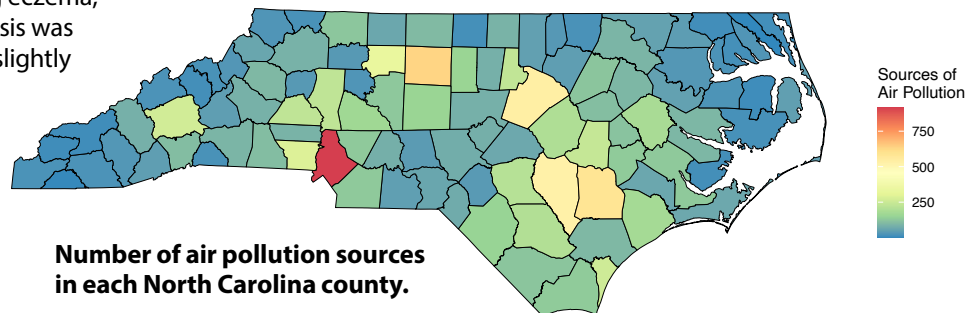
What Are We Learning From PEGS?

PEGS Air Pollution Data

PEGS researchers are creating geographic information system (GIS) maps to link participant data to public environmental data. The map below shows the number of air pollution sources in each county in North Carolina, with the blue counties having the lowest number of air pollution sources. Air pollution sources can include factories, power plants, landfills, airports, animal feeding operations, and other facilities that report environmental data to the government.

Few studies have looked at a link between air pollution and skin health conditions. But a recent PEGS study found a link between air pollution and smoking with both **psoriasis** and **eczema** using this environmental data.¹

Nearly 10% of PEGS participants report having eczema, which is similar to the national average. Psoriasis was reported in 4% of PEGS participants, which is slightly higher than the national average. As a PEGS participant, you are playing an important role in understanding how the environment may be linked to these skin conditions in North Carolina and nationally!





What Are Psoriasis and Eczema?

Eczema and psoriasis are both skin conditions that cause patches of red, itchy skin. They are not contagious, but are uncomfortable and can lead to infections.

Psoriasis (shown in photograph) is an autoimmune disease, which means the body's immune system becomes overactive and attacks normal body tissues.

The causes of **eczema** are unknown, but there is evidence that both environmental and genetic factors are important.

The conditions may appear similar, so you should see a dermatologist for a diagnosis. There are treatments for both conditions, such as topical ointments, which a doctor can tell you about.

To learn more about psoriasis or eczema: www.aad.org/public/diseases/psoriasis; www.aad.org/public/diseases/eczema

Pollution From Animal Farming

Recent PEGS research looked at health effects related to hog farming in North Carolina. Researchers mapped where large hog farms are located and compared this data with information provided by PEGS participants about their autoimmune diseases.

PEGS participants who live close to a large hog farming facility had a higher incidence of autoimmune diseases as a whole and particularly rheumatoid arthritis.² In addition, we found this environmental effect was greater in participants with a specific genetic predisposition.²



What Is Rheumatoid Arthritis?



Rheumatoid arthritis is an autoimmune and inflammatory disease, which means the body's immune system attacks normal body tissues, causing inflammation. Rheumatoid arthritis commonly affects joints, especially the hands, wrists, and knees, but can also harm other parts of the body. This disease can be treated and managed with medication and other self-management strategies. Talk to your doctor for diagnosis and treatment options.

To learn more about rheumatoid arthritis, visit this CDC webpage: www.cdc.gov/arthritis/basics/rheumatoid-arthritis.html

Interested in Joining the PEGS Participant Advisory Board?

We are looking for volunteers to join our Participant Advisory Board. The goal of the advisory board is to provide PEGS investigators with input such as:

- Feedback on study materials and activities.
- Suggestions for future research.
- Ideas for how best to inform participants of news and scientific advances.

To learn more about joining this board, please email us at niehs-pegs-info@nih.gov.

What Made You Join PEGS?

We want to learn more about your experience as a PEGS participant and why you joined our study.

If you're interested in sharing your thoughts, please send us an email at niehs-pegs-info@niehs.nih.gov. Let us know why you decided to participate in the study and give any other feedback. We would like to hear from you!

References:

1. Lowe ME, Akhtari FS, Potter TA, Fargo DC, Schmitt CP, Schurman SH, Eccles KM, Motsinger-Reif A, Hall JE, Messier KP. The skin is no barrier to mixtures: Air pollutant mixtures and reported psoriasis or eczema in the Personalized Environment and Genes Study (PEGS). *J Expo Sci Environ Epidemiol.* 2023 May;33(3):474-481.
2. Ayala-Ramirez M, MacNeill N, McNamee LE, McGrath JA, Akhtari FS, Curry MD, Dunnon AK, Fessler MB, Garantziotis S, Parks CG, Fargo DC, Schmitt CP, MotsingerReif AA, Hall JE, Miller FW, Schurman SH. Association of distance to swine concentrated animal feeding operations with immune-mediated diseases: An exploratory gene-environment study. *Environ Int.* 2023 Jan;171:107687.

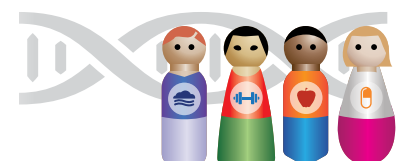


For more information:

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Please add our email address to your contact list to stay up to date on study progress: niehs-pegs-info@nih.gov