Exploring the effects of environmental pollutants on brain health

A new European research project studying the effects of environmental pollutants on brain health and their role in neurodegenerative diseases launched in January. ExpoSignalz has been awarded funding from Horizon Europe, the European Union's research and innovation programme. Led by the National Institute of Health and Medical Research (INSERM) in France, the project will use interdisciplinary approaches, combining experimental and epidemiological studies, to address this pressing global health challenge.

Over five years, the ExpoSignalz project aims to uncover how specific chemical pollutants, such as persistent organic pollutants, electronic waste, and pharmaceutical residues, affect brain ageing and contribute to dementia, a leading cause of death worldwide. Researchers will investigate these impacts across life stages, with a focus on understanding their mechanisms and developing strategies for early diagnosis and prevention of Alzheimer's disease, which accounts for 70% of dementia cases.

The project will identify pollutants with neurotoxic and pro-amyloidogenic effects and their association with neurodegenerative brain disease. The project will measure exposure to these pollutants using samples from cohort studies to understand how they impact brain health. A key component of the project will specifically explore how exposure during early life influences our susceptibility to neurodegenerative diseases when we are older.

This initiative brings together ten partners from five countries and includes universities, research institutes and small and medium-sized enterprises. They bring expertise in the neuro-physiopathology of neurodegenerative diseases, epidemiology, database management, biostatistics, biomonitoring and communications.

The scientific coordinator, Dr. Véronique Perrier from INSERM, an expert in biochemistry and neurophysiopathology, says, "We expect to identify one or more specific pollutant signatures in Alzheimer's patients that are absent in individuals with normal brain ageing. We will then investigate these signatures in various models of Alzheimer's disease to understand their mechanisms in neurodegenerative processes."

ExpoSignalz will develop tools and publications to help inform future environmental and public health policy to encourage healthy ageing among European citizens.

The project's kick-off meeting took place at INSERM in Montpellier on the 2nd and 3rd of April 2025, marking the start of this groundbreaking project.

To stay updated on the progress of ExpoSignalz, follow us on our website www.exposignalz.com and LinkedIn https://www.linkedin.com/company/exposignalz/

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About ExpoSignalz

Project name: Dissecting Brain Pollutant Exposure and its Contribution to Neurodegeneration and Alzheimer's Disease: From Signatures to Prevention Strategies to Protect and Maintain a Healthy Brain.

Project Number: 101156353

Partners:

- Inserm - National Institute of Health and Medical Research, France
- Uppsala University, Sweden
- Utrecht University, The Netherlands
- University of Bordeaux, France
- Umeå University, Sweden
- Luxembourg Institute of Health, Luxembourg
- French School of Public Health, France
- INSERM Transfer SA, France
- Beta Technology Limited, UK
- Bordeaux University Hospital, France (affiliated partner)

The ExpoSignalz project, which started on 1st January 2025, is a five-year project with a total grant of €9 309 879.82 from Horizon Europe. A comprehensive website will be launched by June 2025.

Funding Statement

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