

## What is environmental medicine?

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Environmental medicine is fundamentally different from environmental health, both theoretically and in practice.

Whereas the latter is a matter of public concern aiming at proving and interpreting links between the degradation of the environment and health (using epidemiological, toxicological, exposure and biological methods); environmental medicine by definition deals with patient's diagnosis, prognostic evaluation, treatments, protective and precautionary measures and finally medical recommendations for protection and prevention, for patients suffering from different diseases or medical disorders whose environmental origin is suspected or has been proven.

Importantly this new medical discipline is based first and foremost on a science-based characterization of diseases or medical disorders and on their clinico-biological recognition and nosological classification, through the use of objective tests to prove their environmental origin; and elucidating how they can be induced by environmental causes and how they can be diagnosed and treated according to these environmental causes.

This outlines the need to identify and characterize environment-associated biological markers reflecting the causal mechanisms of diseases or disorders upstream of their detectable clinical effects.

Unlike the common medical approach, environmental medicine must therefore be based on the implementation of treatments aimed at treating the true causes of diseases or medical disorders (as is the case for infectious diseases), not mainly their symptomatic effects. Furthermore, it must provide patients with preventive measures that not only include a healthier lifestyle and the abandonment of addictions (broadly defined); but also - and this is essential – it must provide individual precautionary protection measures to address environmental factors causing the diseases/disorders being considered. Therefore, treatment is focused not only on the classical bio-chemical effects observed, but mainly on upstream patho-physiological causal mechanisms.

Recent biological discoveries have considerably strengthened this view point by showing that many severe chronic diseases or medical disorders which constitute present public health plagues are in fact induced by environment-related mechanisms, meaning that besides the Darwinian selective interpretation of disease occurrence, we should also consider epigenetics-associated neo-Lamarckian mechanisms of disease induction.

Moreover it has been recently shown that due to environment changes, the first steps of many diseases or medical disorders may occur *in utero*. While this might be

particularly true in children with congenital malformations; developmental exposures are known to affect so called “rare diseases”, as well as autism, hypo-fecundity, cancer, obesity, type 2 diabetes mellitus, allergy, asthma and so called neurodegenerative diseases such as Alzheimer disease.

We should therefore consider in addition to genetic alterations, epigenetic mechanisms upstream; the intra-organic development of diseases or disorders, as epigenetics plays a major interface role between the organism and its environment. We therefore should be aware that the global approach of environmental medicine can only complement the implementation of the public health-related primary prevention and precaution toward the environmental causes of disease.

The concept of environmental medicine first occurred in the United States, in 1962, by allergist Theron G. Randolph who promoted medical ecology and described what was called the Multiple Chemical Sensitivity Syndrome (MCS) later on. Practice of environmental medicine was then implemented in the eighties and nineties in the US and more recently in Europe more particularly in Germany, through the efficient efforts of Dr Peter Ohnsorge who created the European Environmental Medicine Academy.

This new medicine however still lacks recognized scientific basis and standardized practice. Consequently it may easily be mistaken for alternative or complementary medicines – or even be taken over by some of their adepts.

Actually, since the Hippocrates’ “ On Airs, Waters and Places “ treatise, environmental medicine was organized into a paradigm that health is very dependent on organism’s environment (recognized today as the ‘environmental paradigm’ of medicine). Moreover, environmental medicine and more particularly its diagnostic and therapeutic approaches should use the methods of science-based objective observation and scientific reasoning as standard medicine does. This fundamentally distinguishes environmental medicine from any ideologic or philosophy-based (non-scientific) approaches.