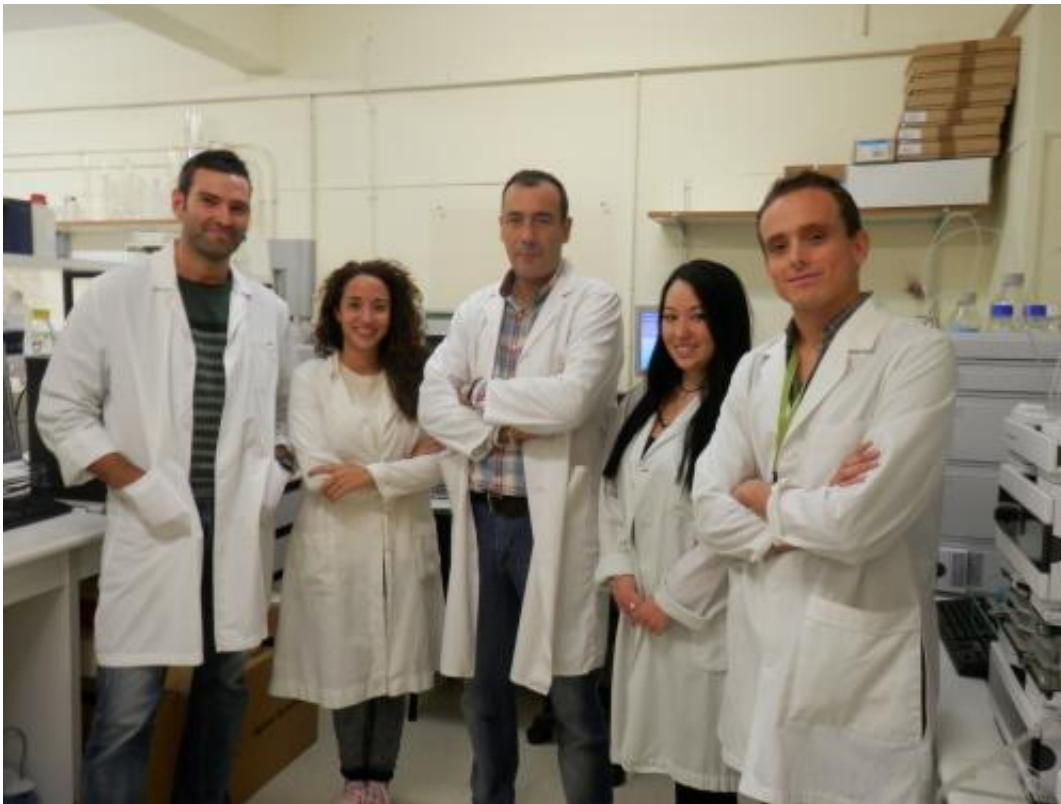


# **A study relates the level of pollutants accumulated in the body with obesity levels**

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Research Team at the University of Granada

A team of Spanish scientists, which includes several researchers from the University of Granada, has confirmed that there is a relation between the levels of certain environmental pollutants that a person accumulates in his or her body and their level of obesity. Subjects with more pollutants in their systems also present higher levels of cholesterol and

triglycerides, which are important risk factors for cardiovascular disease.

This study is published in the prestigious journal *Environmental Pollution*, with the participation of researchers from the University of Granada, the San Cecilio and Virgen de las Nieves university hospitals, and the Andalusian School of Public Health, all members of the Granada Biohealth Research Institute.

This research has analysed the levels of pollutants accumulated in adipose tissue (fat) in nearly 300 men and women, who were attended in the surgery services of two hospitals in the province of Granada (Spain).

The substances, known as [persistent organic pollutants](#) (POPs), can remain in the environment for years, even decades, without degrading.

"Humans are exposed to POPs mainly through diet. POPs accumulate gradually in body fat, and this is the reason why the median levels in our study give us an idea of an individual's accumulated exposition over a number of years," says Juan Pedro Arrebola, the main author of the article.

Using complex statistical methods, these scientists confirmed that the accumulated levels of several POPs were related to obesity and to serum levels of cholesterol and triglycerides in individuals, irrespective of the gender, age, place of residence or smoking habits of participants in the survey.

"In general we found that people with higher levels of POPs were quantitatively more obese, and also showed higher levels of cholesterol and triglycerides, all regarded as important risk factors for [cardiovascular disease](#), although these relations were complex and they did not always show linear patterns", Arrebola claims.

## POPs subject to analysis

Those POPs subject to analysis include DDE, the main metabolite of pesticide DDT, widely used all over the world in the 1980s, and currently employed by some countries to combat malaria. They also included the insecticide lindane, frequently used in the past in agriculture and also in certain medicaments for lice and scabies

The survey also included a group of polychlorinated biphenyls or PCBs, used in numerous industrial equipment, and which are still present in old electric transformers. All these pollutants were somehow associated with obesity indexes, as well as cholesterol and / or triglycerides levels.

In spite of the fact that their use is currently very restricted, POPs are a very serious public health problem. Actually, 100% of participants in this survey presented detectable levels of one or more of these compounds.

"This universal exposition turns their impact on human health into a most important issue. Besides, our results suggest that there are no safe exposure levels for these pollutants, which can also interact with each other to affect health," Arrebola added.

Previous studies have demonstrated that the general population is exposed to POPs mainly through food with a high fat content. This includes fish and meat from large animals with a high level of fat. This is why a growing number of researchers recommend moderate consumption.

Doctor Arrebola's research group is currently monitoring the subjects of their study over the course of several years, to confirm whether those subjects exposed have shown a higher risk of developing certain pathologies, such as high blood pressure, obesity, or cardiovascular

disease.

## "Obesity-genic" Pollutants

Obesity has become a universal epidemic whose impact in Europe has tripled during the last few decades. The most important problem is that obese people have a high risk of suffering from numerous health problems such as cardiovascular disease, which the World Health Organisation considers the main cause of death worldwide.

It has been traditionally thought that obesity results from a high caloric intake in comparison with energy expenditure. "We believe that the results are not just the consequence of a higher intake of food by obese people. There is evidence that human exposure to certain chemical substances called "obesogenic" could favour the growth and proliferation of adipocytes (fat cells), and provoke therefore an increase in body fat. We suspect besides that certain [environmental pollutants](#) could also provoke alterations in cholesterol and [triglycerides](#) levels and therefore contribute to the development of cardiovascular disease," Arrebola concludes.

**More information:** "Associations of accumulated exposure to persistent organic pollutants with serum lipids and obesity in an adult cohort from Southern Spain." *Environ Pollut.* 2014 Aug 28;195C:9-15. [DOI: 10.1016/j.envpol.2014.08.003](https://doi.org/10.1016/j.envpol.2014.08.003)

Provided by University of Granada

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