

# Chemical toxins have a feminising effect on our bodies

- Toxic chemicals in our food and environment accumulate in the body and act like female hormones.
- Men are much more vulnerable than women to infertility due to pollutants.
- Endocrine disrupting toxins in women are related to an increase in certain pathologies such as hormone-dependent cancers: breast, ovarian and thyroid, but they do not affect embryonic / foetal ovarian development; a higher level of oestrogen does not alter this process.
- Institut Marquès presents at the 37th Congress of the European Society of Human Reproduction and Embryology (ESHRE) a study comparing the effects of chemical toxins on male and female fertility.

***"Toxic endocrine disrupting chemicals affect the development of the male reproductive system but do not appear to affect the female"*** is the title of the scientific study presented this week by [Institut Marquès](#) at the 37th Congress of the European Society of Human Reproduction and Embryology (ESHRE).

According to this study, [toxic substances](#) found in our surroundings, in the environment and in our food alter the endocrine system and act as female hormones. They are deposited in the fat of animals and humans in such a way that, during pregnancy, they can cause malformations in the genitals of male offspring and affect the quality of their sperm in the future. On the other hand, it would not affect the gestation of a girl, nor would it affect the quality of the eggs. In conclusion, Institut Marquès' study shows that *"environmental pollution with toxic chemicals is the main cause of poor semen quality. Now, we have shown that the male is much more exposed than the female to suffer infertility due to the action of polluting substances, as they do not alter the ovarian reserve"* explains Dr Marisa López-Teijón, Director of this international centre for Assisted Reproduction.

## **They worsen semen quality and cause genital malformations in boys**

[Endocrine disruptors](#) are a long list of chemicals created by humans in recent decades. They are commonly used in industry, agriculture and in the home: pesticides, plastics, paints,

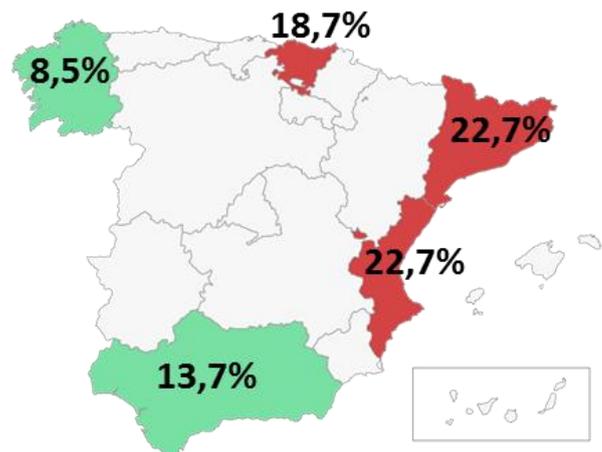
varnishes, carpets, detergents, dyes, dioxins released from waste incinerators, etc. They are highly resistant to biodegradation.

They are very resistant to biodegradation, nature does not know how to metabolise or degrade them. Pollution by persistent organic pollutants is an invisible pollution that is present in our food and environment.

These substances accumulate in the body and behave like female hormones. An example of their "feminising" effect is the proliferation of fish with genital malformations in rivers that have suffered toxic spills, for example.

One of the consequences of endocrine disruptors is the deterioration of semen quality: According to the WHO, until 1985 the normal number of spermatozoa in the ejaculate was 100 million/cc. This average has decreased over the years to 60 million/cc in 1986, to 20 million/cc in 1992 and to 15 million/cc in 2010.

### SPERM QUALITY IN SPAIN



*Percentage of males with altered semen concentration.*

In [previous studies on semen quality in Spain](#), Institut Marquès has shown that there are large geographical differences in the map of male fertility. After analysing the semen analysis and medical history of 1,239 volunteers aged 18 to 30, the results showed a higher prevalence of oligozoospermia (reduced concentration of sperm in the ejaculate) in Valencia (22.7%), Barcelona (22.7%) and the Basque Country (18.7%). In other words, in the regions of Spain with the highest degree of industrialisation over the last 50 years. And less in Galicia (8.5%) and Andalusia (13.7%), regions with less industry.

The first contact with these toxic chemicals begins early in life. They reach the foetus from the mother's blood, through the placenta. The type and amount of toxins that the foetus will receive will depend on the levels that the mother has in her body. During the development of the child's testicles, at 2-3 months of pregnancy, the action of testosterone, the male hormone, is very important. However, the "false oestrogens" compete with it and do not allow it to perform its function correctly, fewer sperm-producing cells are formed and, in the most severe cases, chromosomal (genetic) alterations occur.

### **They do not affect oocytes**

The goal of the study presented by Institut Marquès at the ESHRE congress is to analyse geographical variations in pollution by oestrogenic disruptors and to assess whether they affect embryonic and foetal development in both sexes in the same way. The results show that they do not affect the ovarian reserve, as Dr Marisa López-Teijón, Director of the centre, explains: *"Women want to have children at an increasingly advanced age, but they are born with a certain number of oocyte precursors (around 300,000) and we wanted to know if this*

ovarian reserve could be altered in the same way that the quality of their semen is altered in the case of men. Statistically significant differences were found between the results from different geographical areas, but no pattern was found to justify them".

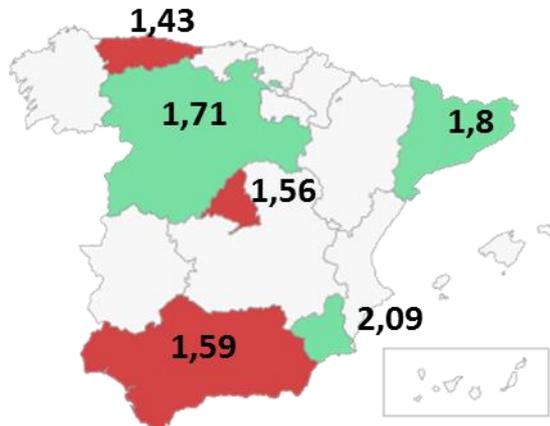
A woman's fertility has a clear clinical marker, the anti-Müllerian hormone (AMH) concentration. Anti-Müllerian hormone is the best way to know a woman's actual ovarian age, the quantity and quality of her eggs. A blood test is all that is needed to determine the levels of this hormone. The results of this analysis are compared with those established as normal for each age. Although until now values from analyses of women from other continents have been used which are not adapted to the reality of women in our country, Institut Marquès has drawn up tables that determine the values of the anti-Müllerian hormone in the European population. In collaboration with Laboratorios Echevarne, it has

shown that there are [significant differences](#) with the values previously published in other countries. These [tables are available to all women](#) who wish to know their fertility accurately.

To carry out their study on the effects of toxins on female fertility, Institut Marquès compared the results of nearly 10,500 women from different autonomous communities "We started from the hypothesis that in the most industrialised areas AMH levels should be lower and that they would correspond to those with the highest prevalence of oligozoospermia in male volunteers, but this was not the case" explains Dr López-Teijón, Best Doctor of the Year in Assisted Reproduction 2019.

Thus, although in women endocrine disrupting toxins are related to an increase in certain pathologies such as hormone-dependent cancers (breast, ovarian and thyroid), they do not affect the development of the embryonic / foetal ovary. The increase in oestrogen levels caused by these substances does not alter this process.

#### OVARIAN RESERVE LEVEL IN SPAIN



According to average AMH values (ng/ml)

## Toxics are breaking our balls

Pioneer in demonstrating to the scientific community that the causes classically attributed to the deterioration of semen quality (stress, tight trousers, alcohol, etc.) are a myth, Institut Marquès, through its studies in Spain, has established that the reality of the problem is due to chemical toxins. Today, under the slogan "Toxics are breaking our balls", it continues to carry out its studies on semen quality with volunteers in Ireland and Italy.



### About Institut Marquès

*Institut Marquès is a Barcelona based centre of international renown in Gynaecology, Obstetrics and Assisted Reproduction with branches in Spain (Barcelona) and Italy (Rome and Milan). The centre is one of the most awarded internationally, in 2021 it has been recognised as "National Award for Assisted Reproductive Medicine".*

*With a wealth of experience in particularly difficult cases, helps people in more than 50 countries achieve their dream of parenthood. Institut Marquès offers the highest pregnancy success rates, with 91% per cycle in IVF with egg donation.*

*Leader in innovation, it conducts an important line of research on the benefits of music in the early stages of life, foetal stimulation and the male role in assisted reproduction treatments.*

*Institut Marquès is also involved in the research of the relationship between toxics and fertility, taking part in many initiatives that support the defence of the environment. In 2018 it started its Corporate Social Responsibility project, "The Forest of Embryos". For every child born with the help of assisted reproduction treatments, a tree is planted. Institut Marquès also supports the manifesto "Citizens for Science in Pesticide Regulation", a coalition of civil society, institutions, scientists and legal experts that demands a reform on the use of pesticides in the European Union.*

### Links of interest:

<https://institutomarques.com/en/study-on-semen-quality/>  
<https://fertility-experiences.com/infertility-and-chemical-substances-endocrine-disruptors/>  
<https://fertility-experiences.com/why-is-male-fertility-decreasing/>  
[https://institutomarques.com/en/?post\\_type=glossary&p=29156](https://institutomarques.com/en/?post_type=glossary&p=29156)

<https://institutomarques.com/en/news/news-2019/the-anti-mullerian-hormone-allows-knowing-if-a-woman-will-have-fertility-problems/>

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