

# Behavioral and Somatic Disorders in Children exposed *in utero* to Synthetic Hormones: a Testimony-Case Study in a French Family Troop

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## Abstract

Development of brain is under genetic control of neurohormones during fetal life. Synthetic oestrogens such as Diethylstilbestrol (DES) that were prescribed to pregnant women for many years were demonstrated to be responsible for devastating effects in children. Other synthetic hormones as 17-alpha ethinylestradiol and delayed progestins are also involved. Regarding behavior disorders, research on mice or rats has highlighted the effects of such xenoestrogens, even at very low doses and programmed window of the foetal exposure. Few research studies on humans have been carried out and large epidemiological studies are scarce. We investigated spontaneous testimonies collected by HHORAGES-France Association from 2002 to 2007 and followed by sending specific questionnaires to families who were first informed by various media about our hypothesis of links between exposure *in utero* to synthetic hormones and psychiatric and somatic disorders in the exposed children: first we analyzed testimonies from 297 mothers (511 siblings), then from 470 mothers (967 siblings), and finally from 529 mothers (1180 siblings) concerning 1180 pregnancies exposed or not in the same family to synthetic hormones. We analyzed the behavioral and associated somatic disorders of their *in utero* exposed and unexposed children born from 1946 to 2000. Somatic and/or psychiatric disorders were noted in both boys and girls after or not exposition to DES, EE and/or progestin delay. In multiparous families, in most cases the exposed child suffered disorders while the unexposed did not; the majority of families did not present any previous psychiatric history. Comparison between girls and boys data allowed us to notice that girls are clearly more vulnerable than boys in the case of both psychiatric disorders and of somatic ones. This study shows that there are serious effects on the psychological and physical health of the descendants of women treated with synthetic hormones during their pregnancy. Preliminary results by a group in Paris have recently been published [1], based on observations and diagnoses of psychiatric disorders in a small sample of children from the HHORAGES families, which reinforce our own observations. Our analyses of the data from the "life-size" HHORAGES-France troop show demonstratively in favour of the hypothesis of a causal link: in siblings, with the exception of a few testimony-cases, the majority of children exposed *in utero* suffered psychiatric and/or somatic disorders, while those unexposed do not. **What is interesting is the observation that girls are more vulnerable to synthetic estrogens than boys both for psychiatric diseases and for somatic malformations or other genital disorders. Mechanisms of genetic and epigenetic transmission to following generations are discussed as well as the preferential effects of DES upon female versus male.**

**Keywords:** Synthetic oestrogens, diethylstilbestrol, ethinylestradiol, behavioral and somatic disorders, French HHORAGES troop,

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