



## INFORMATION RELEASE

# Common diseases linked to chemical exposures before birth

**Paris/Brussels, 16 May 2012** – Exposure to environmental contaminants in the womb may result in many individuals being more susceptible to serious disease later in life, according to a consensus statement released at a scientific conference, which closes in Paris today.

The draft consensus statement represents the current outcome of the conference, “*PPTox III, Environmental stressors in the developmental origins of disease: Evidence and Mechanisms*”, 14-16 May 2012. The meeting was attended by over 250 participants, many of them leading researchers on early life exposures and diseases.(1) The statement highlights that nutritional imbalances, infections, stress, and exposure to chemicals, including contaminants in our environment, are all factors which can act on the child in the womb to increase its risk of future disease.

The statement entitled, “*Developmental Origins of Non-Communicable Diseases and Dysfunctions: Implications for Research and Public Health*”, was presented in the final session of the PPTox conference for comments from participants. Written by a group of international scientific experts (2), it describes how nutritional imbalance and exposure to certain chemicals during pre and postnatal development leads to disease in adults, including cancer and diabetes, and how prevention of the long term health impacts needs to be addressed.

Important points include:

- Early development (particularly *in-utero*) is particularly sensitive to perturbations by chemical exposures with likely adverse consequences for health in later life, including obesity, diabetes, neuro-developmental disorders, precocious puberty, and hormone related cancers, such as of the breast, prostate and testes. Undescended testicles, low semen quality, sub-fecundity, polycystic ovarian syndrome and uterine fibromyoma have also all been linked to chemical exposures.
- Chemicals termed endocrine disruptors are of particular concern as these de-rail the home-grown hormones that carry signals from one cell in the body to another. These endocrine disrupting chemicals (EDCs) can have effects at very low doses which are not predictable from testing at high dose levels. 900 chemicals are now suspected EDCs.
- All complex diseases have an environmental component. The fraction that scientists attribute solely to fixed genetic variation is shrinking as a result of better understanding of the role of environmental influences.(3)
- The diseases and dysfunctions resulting from the increased susceptibility can manifest years or decades later and will depend on the exposure and timing.

Disease examples:

- **DIABETES and OBESITY:** Exposure to environmental chemicals has been linked with increased risk of obesity and diabetes in later life. There are now about 20 chemicals that can lead to increased risk of weight gain in later life; these chemicals are referred to as obesogens.
- **REPRODUCTION:** Development of the human reproductive system begins towards the end of the first trimester. A variety of dysfunctions and diseases, such as undescended testicles, low sperm count, polycystic ovary syndrome and testicular cancer have been linked to developmental exposures to EDCs.

Policy implications:

- Because early development is particularly sensitive to perturbations with adverse health consequences, both research and disease prevention strategies should focus on the life stages that are most vulnerable.
- A policy change towards ‘primary prevention’ is needed.



- Improved nutrition and reduced environmental chemicals exposures pre-pregnancy, during pregnancy and in the first few years of life is vital. This policy shift is likely to have a very large impact on disease rates and the costs of health care, whilst at the same time increasing the quality of life for the population at large.

Representatives from regulatory authorities and civil society organisations were called upon to consider the consensus statement in terms of their future EU and national policy and programme discussions.

Robert Barouki, INSERM - Paris Descartes University and co-chair of the conference organizing committee said: "Scientific evidence is now available which wasn't the case a few years ago. Nutritional imbalances or exposure to certain chemicals during the prenatal period could have consequences for health later in life. Although we don't know the exact magnitude of the consequences, the science is there and is ripe for public action."

Genon Jensen, Executive Director of the Health and Environment Alliance (HEAL) said five civil society groups (HEAL), Réseau Environnement Santé (RES), Générations Futures (GF), Women in Europe for a Common Future (WECEF), and CHEM Trust welcome and support the consensus statement. The health and environment civil society organisations plan to bring this call to the relevant discussions at EU level, including related to the revision of the EU strategy on EDCs, as well as to other relevant policy fora.

"The consensus statement provides important direction for future policy discussions and decisions on endocrine disrupting chemicals. It shows that more focus needs to be given to preventing harmful exposures during sensitive periods of human development. Up till now, despite the growing evidence of harm from EDCs, changes in regulatory action are happening so slowly as to be ineffective. We expect this important new statement to galvanize primary prevention rather than solely early detection and treatment," she said.

The consensus statement will be published as a commentary in the prestigious online publication Environmental Health (anticipated in early June 2012).

## Notes

1. Details of the conference at [http://www.toxicology.org/ai/meet/cct\\_pptoxiii.asp](http://www.toxicology.org/ai/meet/cct_pptoxiii.asp)
2. The consensus statement was written by Robert Barouki, INSERM UMR-S 747, Université Paris Descartes, Paris 06, 75270 France; Peter D. Gluckman, University of Auckland, Private Bag 92019, Auckland 01142, New Zealand; Philippe Grandjean, Environmental Medicine, University of Southern Denmark, 5000 Odense, Denmark and Harvard School of Public Health, Boston, MA 02215, USA; Mark Hanson, University of Southampton, Mailpoint 887, Southampton General Hospital, SO16 6YD, UK; Jerrold J Heindel, National Institute of Environmental Health Sciences, P O Box 12233, Research Triangle Park, NC 27709, USA. The draft consensus statement is open for comments from conference participants until 28 May 2012, and then will be open for signatories.
3. One reason for this conclusion is the substantial increase in incidence of many chronic diseases during the last 20-40 years, a time interval much too short to be attributable to genetic change.

## Contacts

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