Environmental Chemicals and Reproductive & Developmental Health - A Global Problem Needing a Global Solution.

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A growing body of evidence suggests that reproductive health and ultimately our reproductive capacity are under strain across the globe. Indicators of reproductive adversity include increased rates of poor birth outcomes, developmental disorders and chronic childhood diseases, hormone-dependent cancers, obesity, early pubertal onset, and, in specific populations, altered sex ratios and longer time to pregnancy. As these changes have occurred in a relatively short timeframe, they are unlikely explained solely by genetic mutations, warranting consideration of other causes, including the environment. In developed and developing countries, air pollution, stress, nutrition, and chemicals in agricultural areas, personal care and household cleaning products, and in industrial waste, pesticides, and nearly ubiquitous plastics are of concern. Toxicity testing of various chemicals varies from country to country and continent to continent. While in Europe, the Registration, Evaluation, Authorisation and Restriction of Chemical substances (REACH) regulation has been the most progressive approach, the majority of chemicals in commerce known to have health impacts have been tested after a health problem is recognized or potentially associated. This is in marked contrast with pharmaceuticals that undergo extensive pre-clinical testing before widespread use is permitted. This lecture will focus on representative examples of environmentally-based reproductive compromise and experimental evidence for epigenetic and trans-generational persistence of some modifications and phenotypes with an eye to how this global problem can benefit from a global solution.