

# Oestrogenicity and chemical target analysis of water from small-sized industries in Pretoria, South Africa

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## Abstract

Increasing concern about endocrine disrupting chemicals (EDCs) and their effects on humans, animals and the environment resulted in this study being conducted. Water from 7 sites in the Pretoria West area (South Africa), with significant numbers of small-sized industries, was screened for oestrogenicity, using the Recombinant Yeast Cell Bioassay (RCBA). Target chemical analyses were carried out to establish the presence of EDCs, including p-nonylphenol (p-NP), bisphenol A (BPA), phthalate esters, polychlorinated biphenyls (PCBs) and various organochlorine pesticides, including dichlorodiphenyltrichloroethane (DDT). p-NP, PCBs and organochlorine pesticides were detected using LECO Pegasus II MSTOF and BPA and phthalates were detected using the GC-MS method. Oestrogenic activity was detected in all the samples collected from these sites. Lindane, an organochlorine pesticide, was detected at one site. p-NP, PCBs and phthalate esters were detected at some of the other sites. Small-size industries were found to contribute to EDC pollution of water in the Pretoria West area.

**Keywords:** oestrogenicity, endocrine disrupting chemicals (EDCs), p-nonylphenol (p-NP), polychlorinated biphenyls (PCBs), bisphenol A (BPA), phthalate esters, organochlorine pesticides, dichlorodiphenyltrichloroethane (DDT), lindane