POSSIBLE CARCINOGENIC EFFECTS OF PERFLUOROOCTANOIC ACID (PFOA) ON NORMAL AND NEOPLASTIC HUMAN PROSTATE CELLS

Terrence T. Wright, Barbara Graham-Evans, Kenneth Ndebele and Paul Tchounwou

_Cancer Immunology and Environmental Research Laboratory, NIH-RCMI Center for Environmental Health, College of Science, Engineering and Technology, Jackson State University, Jackson, MS 39217, USA._

**Abstract:** Perfluorooctanoic acid (PFOA) is an emerging persistent organic pollutant (POP) found in the environment, humans, and wildlife that does not hydrolyze, photolyze, or biodegrade under normal conditions. PFOA has many industrial applications such as non-stick coatings for cookware and stain repellants. Because of its many uses over the years, it has bioaccumulated in the environment. Research has proven that PFOA exposure promotes hepatocarcinogenesis in rodents and alters the production of hormones in both humans and rodents. However there is minimal information directed toward total human health effects associated with PFOA exposure. One study showed that men employed at PFOA production plants for ten years or more was associated with a 3.3 fold increase (95% Cl. 102 to 10.6) in prostate mortality when compared to men with no employment in PFOA production. Based on this study, we hypothesize that PFOA will cause abnormal cell proliferation, oxidative stress, and DNA damage in normal (RWPE-1) and neoplastic (RWPE-2) human prostate cells. To test this hypothesis, a MTT assay will be performed to determine cell viability, lipid peroxidation assay will be used to determine levels of stress exhibited by the cell and for DNA damage Annexin V, Caspace 3, and Comet assay will be utilized.

**Keywords:** Perfluorooctanoic acid, PFOA, oxidative stress, DNA damage, cytotoxicity

**Acknowledgements:** This research is financially supported by the Title III Program and NIH-RCMI grant.