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FROM SILENT SPRING TO SILENT NIGHT: A TALE OF TOADS AND MEN

The herbicide, atrazine is a potent endocrine disrupter that chemically castrates and feminizes exposed male amphibians. Further, when combined with other pesticides, exposure results in a hormonal stress response that leads to retarded growth and development, and immuno-suppression. The immuno-suppression results in increased disease rates and mortality. Though many factors likely contribute to amphibian declines, pesticides likely play an important role even in populations that appear to decline for other reasons, such as disease. Pesticides like atrazine are ubiquitous, persistent contaminants. Effects of exposure have been shown in every vertebrate class examined (fish, amphibians, reptiles, and mammals) via common mechanisms. These observations demonstrate the critical impact that pesticides have on environmental health. Furthermore, reproductive cancers and birth defects associated with exposure to many of these same chemicals (e.g. atrazine) via identical mechanisms demonstrate that the impact on environmental health is an indicator of a negative impact on public health. Many of these mechanisms are being revealed only now in the scientific literature and agencies (such as the Environmental Protection Agency) are ill-equipped to deal with this emergent science and translate it efficiently into health-protective policies. Given the importance of this science and relevance to public health, there is a strong need to translate this information and provide public access to this knowledge. In particular, minority populations, more likely to be exposed to these chemicals, more likely to suffer health effects associated with exposure, less likely to have access to adequate health care and less likely to have access to this information, need to be informed. It is especially incumbent upon research scientists to make accurate accounts of these data available when industry and agency representatives (e.g. the EPA) provide inaccurate information to the public.

DR. TYRONE HAYES

SHORT BIO

Class of 43 Chair and Professor of Integrative Biology, Museum of Vertebrate Zoology, Endocrinology, Molecular Toxicology, and Energy and Resources Group

Tyrone B. Hayes was born and raised in Columbia, South Carolina where he developed his love for biology. He received his Bachelor's degree from Harvard University in 1989 and his PhD from the Department of Integrative Biology at the University of California, Berkeley in 1993. After completing his PhD, he began post-doctoral training at the National Institute of Child Health and Human Development, National Institutes of Health and the Cancer Research Laboratories at UC Berkeley (funded by the National Science Foundation), but this training was truncated when he was hired as an Assistant Professor at UC Berkeley in 1994. He was promoted to Associate professor with tenure in 2000 and to full Professor in 2003. Hayes' research focuses on developmental endocrinology with an emphasis on evolution and environmental regulation of growth and development. For the last ten years, the role of endocrine disrupting contaminants, particularly pesticides, has been a major focus. Hayes is interested in the impact of chemical contaminants on environmental health and public health, with a specific interest in the role of pesticides in global amphibian declines and environmental justice concerns associated with targeted exposure of racial and ethnic minorities to endocrine disruptors and the role that exposure plays in health care disparities.