

2017 Research Week Proposal

Title: The Effects of a Common Herbicide (Atrazine) on Juvenile Crayfish Growth and Development

Topic: Environmental Toxicology

Presentation Type: Poster

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Abstract:

Atrazine is one of the most commonly used herbicides in the United States and it is introduced to aquatic environments through runoff (Cragin et al., 2011). Average concentrations are around 20ug/L with concentrations in rural areas occasionally exceeding 500ug/L (Mitchkash et al., 2013). Atrazine has been shown to have a variety of negative effects on many different organisms including amphibians, fish, and invertebrates (Mac Loughlin et al., 2016). For example, fathead minnows have shown reduced reproduction rates and male African clawed frogs have shown feminization with exposure to atrazine (Hayes et al., 2010; Tillitt et al., 2010). In addition, atrazine has been shown to cause lower levels of testosterone and histological damage in the testes of rats (Abarikwu et al., 2015). There is also evidence that atrazine contamination in drinking water below the EPA's maximum contaminant level leads to infertility in women (Cragin et al., 2011). This project measures the effect of atrazine on the growth and development of juvenile male crayfish (*Cambarus bartonii*). Thirty-five juvenile male crayfish were collected from a local stream and exposed to various levels of atrazine (0.005-50 ppb). After four months of development individuals in each treatment were temporarily removed from treatments to assess for morphological changes (carapace length and blotted wet mass). In addition, one individual from each treatment was sacrificed to look for developmental differences in the gonads. Comparison slides of adult male testes and adult female ovaries were prepared to help look for potential feminization in juvenile males caused by the endocrine disrupting compound atrazine. It is expected that the level at which

morphological and histological changes are displayed will be lower than the accepted safety level (3ppb) for human consumption. Histological slides of the gonads were blocked in paraffin wax, microtomed, and stained using H&E stain. Weight and carapace length were also recorded to investigate potential trends of development.

References:

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