

# Menstrual Cycle Characteristics and Reproductive Patterns in Women Exposed to Atrazine in Drinking Water

Cragin, L<sup>\*</sup>; Kesner, J<sup>†</sup>; Barr, D<sup>‡</sup>; Bachand, A<sup>\*</sup>; Meadows, J<sup>†</sup>; Reif, J<sup>\*</sup>

Epidemiology: November 2006 - Volume 17 - Issue 6 - p S369

ISEE/ISEA 2006 Conference Abstracts Supplement: Poster Abstracts: Abstracts

## Author Information **Authors**   **Article Outline** **Outline**

\*Colorado State University, Fort Collins. †National Institute for Occupational Safety & Health, Cincinnati.

‡National Center for Environmental Health, Centers for Disease Control and Prevention, Atlanta.

- Introduction:
- Methods:
- Results:
- Discussion:

P-343

## Introduction:

Atrazine is the most commonly used herbicide in the United States. The biological properties of atrazine suggest human exposure could result in adverse reproductive outcomes and impaired fertility. Concern regarding the potential health effects of human exposure to atrazine is based on its designation as an endocrine disruptor. Menstrual cycle characteristics provide an indicator of reproductive health and endocrine function. Adverse menstrual cycle characteristics have been associated with disturbances of luteinizing hormone (LH). Since LH is essential for normal menstrual function, a reduction in the LH surge can affect the ovarian cycle and lead to an altered menstrual cycle. We conducted a study to determine whether women exposed to atrazine in municipal drinking water experienced menstrual cycle abnormalities when compared to women not exposed to atrazine and whether these abnormalities were modulated through a diminution of the pre-ovulatory luteinizing hormone surge.

## Methods:

This study was comprised of total of 103 women 18 to 40 years old residing in two agricultural communities, one with atrazine exposure and one without. To evaluate the association between atrazine exposure and menstrual cycle characteristics via LH suppression, menstrual cycle characteristics were assessed prospectively using menstrual cycle diaries and retrospectively using questionnaire data. Women kept diaries through two menstrual bleeding periods. Endocrine hormone levels were evaluated in 36 women by collecting daily urine samples through two menstrual periods. Luteinizing hormone peaks were analyzed

using commercial noncompetitive, two-site, time-resolved immunofluorometric assays. The major of urinary metabolites of estradiol and progesterone were assessed using competitive, double-antibody time-resolved fluoroimmunoassays. Exposure was assessed via municipal water system monitoring as well as through tap water samples collected at the participant's residence and analyzed for atrazine and its twelve degradates.

## Results:

Preliminary results will be presented and discussed at the conference.

## Discussion:

This is the first study to prospectively examine the effects of atrazine on menstrual function. To our knowledge, it is also the first to examine the potential underlying mechanism of this association. Although several European countries have banned atrazine, approximately 32 million kilograms are applied annually to crops in the US where it has been identified in approximately 70% of agricultural and urban rivers. Despite atrazine's ubiquitousness, little is known about its adverse health effects, particularly reproductive effects, in humans.

© 2006 Lippincott Williams & Wilkins, Inc.