THE ACUTE AND CHRONIC EFFECTS OF PERFLUOROOCTANE SULFONATE (PFOS) TO NORTHERN BOBWITE QUAIL (COLINUS VIRGINIANUS)

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INTRODUCTION

- Perfluorooctane sulfonate (PFOS) is a fluorine-containing, octa-carboxylic acid with a terminal sulfonate that has been found to be resistant to hydrolysis, photolysis, microbial degradation, and metabolism by animals (Figure 1).
- PFOS has amphiphilic and unique molecular properties such that it exhibits both wetting and repelling properties to water and other phases.
- In global monitoring studies, PFOS has been documented in wildlife populations including aquatic birds and mammals.
- PFOS has been found in human breast milk and umbilical cord blood.
- To evaluate, the toxicological significance of PFOS concentrations has not been thoroughly evaluated.

OBJECTIVES

- Characterize acute and chronic effects of PFOS to the northern bobwhite (Colinus virginianus).
- Characterize the accumulation and elimination kinetics of PFOS in juvenile and adult quail.
- Determine NOAEL Observed Adverse Effect Concentrations (NOAELs) and Lowest Observed Adverse Effect Concentrations (LOAELs) based on body weight, body weight gain, feed consumption and reproductive parameters.
- Compare quality of data to both acute and chronic monitoring data.

AAll values based on the reduction of body weight in treated quail.  Liver and serum PFOS concentrations measured from Day 8 samples.

RESULTS

- No overt signs of toxicity and mortality observed in adult birds from any dietary treatment.
- Treatment-related effects on food consumption noted in adult quail fed 17.6 mg PFOS/kg in the feed.
- No treatment-related effects noted on body weight, body weight gain, feed consumption and reproductive parameters in adult females.
- No treatment-related effects noted on serum protein concentrations in adult birds.

PFOS Time Concentrations:

- PFOS concentrations noted in blood and liver of adult females 12 weeks post-hatch.
- No treatment-related effects noted on liver or serum parameters.

CONCLUSIONS

- PFOS accumulation in a time and sex dependent manner (Table 3).
- PFOS concentrations noted in blood and liver of adult females 12 weeks post-hatch.
- No effects noted on serum protein concentrations.

References