

QUARTERLY PROGRESS REPORT

July 1, 2000 - Sept 30, 2000

PROJECT TITLE: Environmental Impacts of Lead Pellets at Shooting Ranges & Arsenical Herbicides on Golf Courses in Florida

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COMPLETION DATE: 3/31/2001

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WORK ACCOMPLISHED DURING THIS REPORTING PERIOD:

- ◆ Based on the project milestones (Table 1), one hundred additional soil and bullet/pellet samples from three publicly owned shooting ranges in central Florida were collected.
- ◆ Soil samples were digested using EPA method 3051a. TCLP tests were conducted using EPA method 1311. The weathering products of bullets collected from different ranges using X-ray analysis were characterized.
- ◆ Analyses of total Pb and TCLP Pb in soil samples showed that soils in pistol had greater soil Pb concentrations than those in rifle ranges from the same site..
- ◆ Lead was not evenly distributed in shooting ranges. Soil samples from backstop berms and surface 10 cm usually had the highest Pb concentrations.
- ◆ Soil pH was also high in both the backstop berms and surface 10 cm soils.
- ◆ Lead concentrations in ranges from central Florida tend to have higher Pb concentrations than ranges from the Panhandle area.
- ◆ The major form of lead in the weathering products of bullets from the ranges in central Florida was identified as hydrocerussite. This is different from the results of ranges from the Panhandle area, where both hydrocerussite and cerussite were identified.

Table 1. Project Milestones

Tasks	1st quarter	2nd quarter	3rd quarter	4th quarter
Sample Collection	⊗	⊗		
Sample analysis	⊗	⊗		
Leachability test			×	×
Fractionation test			×	×
Quarterly Report	⊗	⊗	×	×
Annual report				×

⊗: Task that has been accomplished according to the originally proposed timetable.

×: Task need to be accomplished in accordance with the proposal.

INFORMATION DISSEMINATION ACTIVITIES:

- ◆ A presentation titled “Environmental Impact of Lead Bullets in Soils of Florida Shooting Ranges” was given at the 60th Soil and Crop Science Society of Florida annual meeting at Tallahassee, Sept 20-22, 2000.

TAG MEETINGS:

- ◆ A technical advisory group (TAG) meeting was held on August 1, 2000, at the University of Florida, Gainesville, FL. The following people were attended the meeting.
 - Arnaldo Mercado, Orange County Environmental Protection Division
 - Ashwin Patel, Florida Department of Environmental Protection
 - Augustin Olmos, Alachua County
 - Aziz Shiralipour, University of Florida
 - Bob Byrne, Institute of Wildlife
 - Bonnie Finneran, Palm Beach County
 - Beth Knauss, Florida Department of Environmental Protection
 - Clark Vagras, C. Varagas & Associates, LTD.
 - David Singleton, Broward County
 - Don Loatus, University of Florida
 - Edwin Tyer, Florida Fish & Wildlife Conservation Commission.
 - Irene Gleason, Florida Department of Environmental Protection
 - Jim McDonald, Florida Department of Corrections
 - John D. Schert, Florida Center for Solid and Hazardous Waste Management
 - Jane Foos, Florida Department of Agriculture and Consumer Services
 - James Cooper, Florida Department of Agriculture and Consumer Services
 - Ken Petham, Orange County
 - Leslie Smith, Florida Department of Environmental Protection
 - Ligia Mora-Applegate, Florida Department of Environmental Protection
 - Michael P. Baker, National Rifle Association
 - Rhonda Rogers, Florida Center for Solid and Hazardous Waste Management
 - Ron Shema, Range Owner, Gainesville, FL.
 - Shervy Allick, Florida Department of Environmental Protection
 - Steve Robbins, Florida Fish & Wildlife Conservation Commission.
 - Tim Townsend, University of Florida
 - Zoe Kulakowski, Florida Department of Environmental Protection

WORKS TO BE ACCOMPLISHED DURING THE NEXT THREE MONTHS:

- ◆ Leachability and fractionation tests for representative soils samples from different ranges will be conducted in the following two quarters of this fiscal year (Table 1).
- ◆ New soil and pellet samples need to be collected from south Florida to confirm our hypothesis that more hydrocerussite tend to be formed in swet environments.