

QUARTERLY PROGRESS REPORT

April 1, 2000 - June 30, 2000

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

PRINCIPAL INVESTIGATORS: Lena Q. Ma, Willie G. Harris and Jerry B. Sartain

QUALITY ASSURANCE OFFICER: Ming Chen

AFFILIATION: Soil and Water Science/University of Florida

Gainesville, FL 32611-0290

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PHONE: 352-392-1951

WORK ACCOMPLISHED DURING THIS REPORTING PERIOD:

- ◆ Obtained an approved comprehensive quality assurance plan from FDEP (CompQAP#990111).
- ◆ One hundred more soil samples and some groundwater samples from publicly owned shooting ranges in Florida were collected.
- ◆ Determination of total Pb concentrations in soil and groundwater samples using EPA method 3051a. Total lead concentrations in surface soils ranged from a few hundred to tens of thousand ppm from both rifle/pistol and shotgun shooting ranges in Florida.
- ◆ Characterization of the secondary mineral phases of metallic lead in soils and bullets collected from different ranges using X-ray analysis. The major form of lead in the surface of bullets and shotgun pellets is identified as $PbCO_3$.
- ◆ Toxic characteristics leaching procedure (TCLP) test and Synthetic Precipitation Leaching Procedure (SPLP) test of soil Pb using EPA Methods 1311 and 1312. Results of TCLP and SPLP tests confirmed that Pb contamination in soils of shooting ranges is a serious problem. Research on remediation of lead contaminated soils and best management practices in shooting ranges should be conducted.

INFORMATION DISSEMINATION ACTIVITIES:

- ◆ Submitted annual report entitled "Environmental Impacts of Lead Pellets at Shooting Ranges & Arsenical Herbicides on Golf Courses in Florida" to the Center on June 14, 2000.
- ◆ "Background concentrations of arsenic in Florida surface soils" was presented at the 5th Contaminated Soils Forum at FDEP on May 17, 2000.
- ◆ "Lead Contamination in Soils of Florida Shooting Ranges" was submitted to the ASA-CSSA-SSSA Annual Meetings, Nov. 5-9, 2000, Minneapolis, Minnesota.

TAG MEETINGS:

- ◆ The research team had contacted the technical advisory group members for this project and scheduled a half-day TAG meeting in mid-July or early August at the University of Florida, Gainesville, FL. based on the time availability of all TAG members.