Biomechanical and Biological Accumulation of Lead in Ants at a Shooting Range

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ABSTRACT Purpose: This project looked at the possible negative effect shotgun sports can have on the bioaccumulation of lead in Western Harvester ants. Ants have been observed collecting lead shot onto their ant hills at shooting ranges. Procedure: I measured the distribution of lead in soils, seeds, ants, grasshoppers, and in the soil moisture which was a water source for the ants. I observed the ant behavior in collecting the lead shot and extracting water from the soil. Results: The concentration of lead in the soil around shotgun sports was 20 times more, and the concentration of lead in ants was 27 times more compared to a control nest located away from the shooting range. Very little lead was found in the soil moisture in the control nest. The bioaccumulation factor for lead shot in ants was 0.4. Conclusions: Examination of the possible lead sources shows that seeds were primarily responsible for the bioaccumulation. The findings show that biomechanical accumulation of lead was extreme but was not responsible for the bioaccumulation in the ants.

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