

**ABSTRACT: A Predictive Ecological Risk Assessment: Effect of Military Training Materials on Indiana Bats, Gray Bats, and Bald Eagles at Fort Leonard Wood, Missouri.**

**AUTHORS:**

Angela Schmidt, M.S. (Presenter)  
Karen Tyrell, Ph.D.  
Russ Romme

**AFFILIATION:**

BHE Environmental, Inc.  
T (513) 326-1165  
F (513) 326-1550  
[aschmidt@bheenv.com](mailto:aschmidt@bheenv.com)

A predictive ecological risk assessment (ERA) was completed to assess toxicological effects of the proposed use of fog oil (SGF 2 – Standard Grade Fuel), terephthalic acid smoke pots and smoke grenades, colored smoke grenades, titanium dioxide, and other military training materials to federally endangered Indiana bats (*Myotis sodalis*), gray bats (*Myotis grisescens*), and federally threatened bald eagles (*Haliaeetus leucocephalus*) that occur on Fort Leonard Wood, Missouri (FLW). The ERA was completed as part of a biological assessment (BA) of the proposed Base Realignment and Closure (BRAC) relocation of the U.S. Army Chemical and Military Police Schools from Fort McClellan, Alabama to FLW. The BRAC realignment implements fog oil obscurant (“smoke”) training at FLW. The BA and ERA were completed to support compliance with requirements of the Endangered Species Act.

The ERA focused on adults and certain nonadult life cycle stages (e.g., juveniles or nursing pups) of each species. Exposure concentrations of fog oil and other training materials were predicted using air dispersion models that incorporated various input parameters developed from proposed training scenarios for FLW. Intake equations were developed using site-specific receptor information for each receptor and life cycle stage. Toxicity values (estimated NOAELs) were derived from published values and modified using uncertainty factors. Risks were defined using a Hazard Quotient method. Direct effects were assessed quantitatively, and indirect effects were evaluated qualitatively. Population densities were used to predict the number of receptors that may be affected by the proposed training on the Installation. This information was used to modify training scenarios to reduce predicted risks to receptors. We will discuss the approach used to complete the ERA as well as estimated risks.