

# FINDING OF NO SIGNIFICANT IMPACT

## Site Specific Environmental Assessment Rangeland Grasshopper and Mormon cricket Suppression Program Idaho EA Number ID-16-01

The U.S. Department of Agriculture, Animal and Plant Health Inspection Service (APHIS), has prepared an environmental assessment (EA) that analyzes alternatives for suppressing Grasshopper and Mormon cricket outbreaks on federally managed rangeland in southern Idaho. The EA, incorporated by reference in this document, is available from USDA APHIS PPQ, 9118 W. Blackeagle Drive, Boise, ID 83709.

The EA includes an analysis of the potential impacts of four alternatives. These alternatives include (1) No Action, (2) Insecticide Applications at Conventional Rates and Complete Area Coverage, (3) Reduced Agent Area Treatments (RAATs), and (4) Modified Reduced Agent Area Treatments (MRAATs). The preferred alternative is MRAATs.

Carbaryl bait, Diflubenzuron or Malathion spray would be considered under the preferred alternative at the following application rates:

- 10.0 pounds (0.50 lb a.i.) of 5 percent carbaryl bait per acre; or
- 10.0 pounds (0.20 lb a.i.) of 2 percent carbaryl bait per acre; or
- 0.75 fluid ounce (0.012 lb a.i.) of diflubenzuron per acre: or
- 6.0 fluid ounces (0.465 lb a.i.) of malathion per acre

Applications of bait or spray would be made to no more than 75% of the land area within any specific treatment block.

APHIS has determined that the proposed suppression program utilizing the MRAATs Alternative, conducted in accordance with the Guidelines for Treatment of Rangeland Grasshoppers and Mormon Crickets (treatment guidelines), which contains the operational procedures, will not significantly impact the quality of the human environment.

The finding of no significant impact for the MRAATs alternative was determined based on the following:

**Human health--** Potential exposures to the general public from MRAATs application rates are infrequent and of low magnitude. These low exposures to the public pose no risk of direct toxicity, carcinogenicity, neurotoxicity, genotoxicity, reproductive toxicity, or developmental toxicity. APHIS will offer the opportunity for hypersensitive individuals to register a request that treatments not occur near their property. The no spray request form is available at the following link:

[rogram/ghprogramhttp://www.agri.state.id.us/AGRI/Categories/PlantsInsects/GrasshopperMor](http://www.agri.state.id.us/AGRI/Categories/PlantsInsects/GrasshopperMor)

[monCricketControlPomplaintforms.php](#) . The potential for adverse effects to workers is negligible if proper safety procedures are followed, including wearing the required protective clothing. Therefore, routine safety precautions are expected to provide adequate worker health protection.

APHIS is in the process of revising its 2002 Environmental Impact Statement, and will include information on the risks to rangeland firefighters exposed to pyrolysis products of insecticides used by APHIS.

The Bureau of Land Management (BLM) provided APHIS with 6 specific questions regarding the potential health risks to rangeland fire fighters exposed to pyrolysis products of carbaryl bait. These questions follow in bold italics.

***What is the half-life of the Carbaryl bait (in the pelleted formulation), after being dispersed in a Southern Idaho rangeland environment?*** We did not find information specific to the pelleted bait formulation. The information we did find was consistent in mentioning a 7 to 28 day half-life for carbaryl in aerobic soils and 72 days in anaerobic soils (National Pesticide Information Center, February, 2016). Link: <http://npic.orst.edu/ingred/carbaryl.html>

***What is the composition of the carrier?*** The carrier is apple pomace. Pomace is the solid component of a fruit after pressing for juice, in this case apple. It has long been a carrier in grasshopper baits and is referenced in the 1950-51 Yearbook of Agriculture in that capacity. Link: <http://naldc.nal.usda.gov/naldc/download.xhtml?id=IND43894066&content=PDF>

***What is its [the carrier's] contribution to the bait's toxicity?*** The pomace would not contribute to the bait's toxicity. Without Carbaryl, apple pomace pellets are sold for livestock and dairy feed. A Michigan State University Beef Brief on pomace as feed is available at the following link: <http://msue.anr.msu.edu/uploads/236/58572/FeedingApplesorApplePomace.pdf>

***What influence does the carrier have on the breakdown of the carbaryl in it?*** Carbaryl degrades through hydrolysis, photolysis and interaction with microbes (Xu, 2000). Carbaryl retained in a carrier would presumably be somewhat protected from those processes. Conversely, the bait would be applied in areas of grasshopper and Mormon cricket infestation, and some to all of the bait would be consumed by those insects.

***Identify the expected soil surface temperatures based on vegetation type and fuel loading and how does soil temperature affect risk from dust and ash during mop-up operations?*** Soil surface temperatures are spatially variable and differ according to vegetation type and fuel loads. Neary et al (1999) reported soil surface temperatures during fires of <440 °F (<225 °C) for grasslands, 480 to 1300 °F (250 to 700 °C) in shrub lands, and 930 to 1300 °F (500 to 700 °C) beneath slash piles. However, soil surface temperatures in sagebrush steppe are spatially heterogeneous due to large differences in fuel abundance and structure for interspaces and beneath grass, shrub, or tree canopies. Soil surface temperatures typically ranged from <175 to 400 °F (<79 to 204 °C) in tree or shrub interspaces and from 1166 to 1300 °F (603 to 704 °C) in

tree canopy litter (Bates et al, 2011). Korfmacher et al (2003) reported significantly higher surface temperature beneath shrubs (718 °F [381 °C]) compared to bare ground and under grasses (590 to 585 °F [310 to 307 °C]), respectively. In Utah, soil surface temperatures reached 370 °F (187 °C) in open grassy areas and 1430 °F (777 °C) beneath pinyon and juniper debris piles (Gifford 1981). Beckstead et al (2011) reported cooler soil surface temperatures in their study, but temperatures were averaged across both interspace and canopy (Miller et al).

In summary, since Carbaryl burns at 379.4 degrees Fahrenheit (Volcker), a shrub dominated fire would be expected to largely consume residual Carbaryl bait, where as a grass dominated fire would consume less of the bait with more residual compounds remaining. Because grass dominated fires cool rapidly after burning there would typically require less mop-up activities than a shrub dominated fire scene.

***What is the context of negligible risk?*** The manufacturer of Carbaryl, Novasource, has calculated the maximum concentration of Carbaryl or its breakdown products that would be in the air following a fire event on rangeland treated with 1 pound active ingredient/acre to be 0.217 mg/m<sup>3</sup>, well below the NIOSH limit level of 5 mg/m<sup>3</sup> for carbaryl. Conversion to oral dose for a strenuously working 70 kg man equaled 0.043 mg/kg/day, well below the US EPA no effect level of 1.1 mg/kg/day (Volker 2016). It should be noted that these calculations are for one pound a.i./acre with full coverage, whereas our proposed treatment rate is ½ pound an acre with less than full coverage.

A safety data sheet for 5% Carbaryl from Drexel indicates trace amounts of methyl isocyanate as a hazardous combustion product. In atmospheric chemistry, trace amounts are considered to be gases present at less than 1% composition (Carpenter 2016). Assuming complete combustion at 1/2lb a.i./acre the amount of methyl isocyanate present in the air following a fire event would be no more than 0.0011 mg/m<sup>3</sup> of air (Carpenter 2016). The U.S. occupational health standards for methyl isocyanate are an 8 hour weighted average of 0.05 mg/m<sup>3</sup> for both OSHA and NIOSH (link [here](#)). Thus the potential amount of methyl isocyanate released through pyrolysis is 45 times less than the limits OSHA and NIOSH have set for exposure without adverse health effects.

#### References:

Volker, K. 2016. Pyrolysis of carbaryl and potential hazard to firefighters-Director of Development, TKI NovaSource, National Grasshopper Management Board, January 20-21, 2016

Carpenter, H. 2016. BLM Chief, Safety, Health and Emergency Management-Estimate of Possible Methyl Isocyanate Exposure from Burning Rangeland Bait.

Miller, Chambers, Pyke, Pierson and Williams. 2013. A review of Fire Effects on Vegetation and Soils in the Great Basin Region: Response and Ecological Site Characteristics". United States Department of Agriculture, Forest Service, Rocky Mountain Research Station, General Technical report, RMRS-GTR-308.

Xu, S. 2000 Environmental fate of carbaryl. California Environmental Protection Agency, Department of Pesticide Regulation, Sacramento

**Nontargets**--No vertebrate animal species would be exposed to toxic levels of insecticides. Reduction in insects as prey species for insectivores would be reduced by the insecticide choices and by the reduction in area coverage. Plants would not be exposed to toxic levels of insecticides and any reduction of pollinators would be minor and temporary due to the insecticide choices and by the reduction in area coverage. Impacts on aquatic arthropods would be avoided or minimized by utilizing buffers around water. Impacts on non-target terrestrial arthropods would be minimized by the insecticide choices and by the reduction in area coverage.

**Endangered and Threatened species**-- Protection measures that resulted from the national and local consultation processes with US Fish and Wildlife Service will be implemented and therefore, the proposed suppression program is not likely to adversely affect endangered or threatened species or their habitats.

**Socioeconomic issues**-- Losses caused by Grasshoppers and Mormon crickets would not be as significant under the preferred alternative as under the No Action Alternative.

**Cultural resources and events**-- There would be no significant impact on cultural resources or events.

**Executive Orders 12898** (low income and minorities), **13045** (children), and **13186** (migratory birds). The Program actions pose no disproportionate adverse impacts to children or to low-income or minority populations. There would be no significant impact on migratory birds.

In order to inform the public and give them time to submit comments on the proposed program, APHIS made this EA available for a 30-day comment period which ended April 15, 2016.

Once a treatment request is received and it has been determined that a suppression program will take place, APHIS will re-examine potential program effects on the quality of the human environment. If changes need to be made to the EA, this FONSI, or the Treatment Guidelines; a supplement describing the changes will be prepared. The supplement(s) will be provided to all parties who request it/them.

Based on the analysis of potential environmental impacts contained in the EA, the implementation of the treatment guidelines and the protection measures for endangered and threatened species, I have determined that the proposed suppression program utilizing the MRAATs alternative will not significantly impact the quality of the human environment.



Brian Marschman  
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Date