

**Forest Service Technology & Development
Program
Project Proposal**

Project Name/Title:
Smoke effect on cognitive function during
wildfire suppression.

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OVERALL PROBLEM/OBJECTIVE STATEMENT (*Describe the problem, how the work is currently being done, and why improvement is needed*):

Currently there is conflicting research on carbon monoxide (CO) levels and cognitive function, and no research regarding the synergistic effects of all smoke components.

An extensive EPA review on CO effects (2000) concluded that behavioral impairments in healthy adults are not significant below 20% carboxy hemoglobin (COHb). However, some studies have showed mild impairments at 5% COHb or below. Cigarette smokers have COHb levels of 5-10%, sometimes as high as 15%. In view of the reported adverse effects among fire staff, suspect additive or synergistic interactions among pollutants that worsen the neurobehavioral effects that would be predicted from CO exposure alone.

PROPOSED TECHNOLOGY & DEVELOPMENT WORK (*Describe your concept of the end product, such as a new equipment design, a PowerPoint presentation, a video, a handbook, Web site, CD, etc.*):

The deliverable outcome of the proposed project is a report detailing the levels of smoke exposure and cognitive effects. This could then be used by IMT, crew bosses along with training (RX-410) to help individuals better understand the potential cognitive effects when exposed to wildland fire smoke.

POTENTIAL BENEFITS (*Describe how this project will reduce cost, save time, improve safety, increase efficiency, or improve resource management*):

This project will help us to better understand the effects of wildfire smoke on our cognition, which would increase safety of fire personal.

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