Project Goals
- Develop appropriate design and performance requirements for ensembles worn by mine rescue teams during emergency response
- Establish a best practice/guidance document and produce recommendations for standards for mine rescue ensembles

Background
- The Mine Improvement and New Emergency Response (MINER) Act was passed by Congress in 2006. Provisions of the MINER Act were intended to improve the mine rescue service.
- Historically, there has been no consistency in protective clothing and equipment worn by various mine rescue teams, although they could respond to the same emergency.
- No guidance documents, standards or recommended best practices exist that establish minimum design and performance criteria.

Stakeholders
- Mine Rescue Teams
- United Mine Workers of America
- Mine Operators
- Ensemble Manufacturers / Material Suppliers
- Government Agencies

Procedure
- Identify the specific hazards and use conditions related to mine rescue ensembles
- Investigate mine rescue team needs related to garments, helmets, hoods, gloves, boots, SCBA, visibility, flammability resistance, and eye/face protection devices
- Identify current products in use or that could be used and performance properties of the products
- Examine mine rescue protective clothing and equipment to identify existing limitations, gaps and best practices
- Select available test methods that can assess or measure critical performance properties (e.g. human factors and physical properties)
- Analyze the findings to determine if the selected test methods discriminate product performance consistent with field expectations
- Establish design and performance criteria for mine rescue ensembles that include evaluation of the interoperability and integration of all protective clothing and equipment components

Significance
- As of March 2010, there were 408 mine rescue teams comprised of 3609 mine rescue team members. These teams are responsible for emergency response in 973 mines (coal, metal and non-metal) in the United States.
- Mine rescue team activities include: rescuing miners, providing first aid, erecting and extracting mine seals, underground and surface fire fighting, barricading, recovery, seismic locating, and responding to HAZMAT and surface disasters.
- This project will utilize previous NIOSH research from the fire service and apply the applicable findings to personal protective equipment used for underground rescue.

Project Milestones and Timeline

<table>
<thead>
<tr>
<th>Activity</th>
<th>Completion</th>
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<tbody>
<tr>
<td>Complete research protocol</td>
<td>Q1 2011</td>
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<tr>
<td>Complete external peer-review</td>
<td>Q2 2011</td>
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<tr>
<td>Obtain approval from HSRB</td>
<td>Q3 2011</td>
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<tr>
<td>Complete human subject testing</td>
<td>Q2 2012</td>
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<tr>
<td>Complete data analysis, recommendations and guidance</td>
<td>Q3 2012</td>
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<tr>
<td>Project completion/journal articles</td>
<td>Q3 2013</td>
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Expected Project Outputs / Outcomes
- Presentations at mining and personal protective equipment conferences
- Peer reviewed publications
- Produce best practice/guidance document for mine rescue ensembles
- Use of project outputs in the development of new standards for assessing mine rescue ensembles