

# FIELD RESEARCH SAFETY HAZARD GUIDELINE

## Caves

Caves		
Hazards	Potential Hazards	<p>Cave research presents unique challenges and hazards. This fact sheet provides guidelines and safety precautions to ensure the well-being of researchers while working in cave environments. It is essential to follow these guidelines and take appropriate precautions to prevent accidents and injuries.</p> <ul style="list-style-type: none"> <li>• Uneven Terrain: Be aware of the uneven and slippery surfaces commonly found in caves. Use caution when walking or crawling and utilize appropriate footwear for improved grip.</li> <li>• Falling Objects: Take note of overhead hazards, such as loose rocks, stalactites, or other formations that could potentially fall. Avoid touching or placing excessive pressure on cave features.</li> <li>• Limited Visibility: Carry and use adequate lighting equipment, such as headlamps or flashlights, to ensure good visibility within the cave. Have backup lighting sources readily available.</li> <li>• Air Quality: Some caves may have poor air circulation, potentially leading to reduced oxygen levels or the accumulation of hazardous gases. Monitor air quality and carry appropriate breathing apparatus if necessary.</li> </ul>
	Personal Protective Equipment	<ul style="list-style-type: none"> <li>• Wear a helmet to protect against head injuries from low ceilings and falling objects.</li> <li>• Use gloves to protect hands from sharp rocks, debris, and potential biological hazards.</li> <li>• Consider wearing knee pads and elbow pads to minimize injuries while crawling or navigating tight spaces.</li> <li>• Use appropriate eye protection, such as safety glasses or goggles, to shield against dust, debris, or chemical exposures.</li> <li>• Long-lasting flashlight/headlamp</li> <li>• First Aid Kit</li> <li>• Two-way radio</li> </ul>
Hazard Controls	Preparation and Training	<ul style="list-style-type: none"> <li>• Cave Safety and Awareness Training</li> <li>• Cave Rescue Techniques Training</li> <li>• Technical Rope Work and Climbing Techniques</li> <li>• Cave Ecology and Conservation</li> <li>• It is recommended you take courses in: <u>Wilderness First Aid</u></li> </ul>
	General Work Practice Procedures	<ul style="list-style-type: none"> <li>• Conduct a thorough risk assessment before starting any cave research.</li> <li>• Obtain necessary permits or permissions from relevant authorities for accessing and researching caves.</li> <li>• Ensure all researchers receive appropriate training in cave safety, including cave navigation, emergency procedures, and self-rescue techniques.</li> <li>• Always work in teams of two or more individuals and maintain regular communication with each other.</li> <li>• Develop and communicate a detailed cave rescue plan with all team members.</li> <li>• Share the cave research schedule, location, and expected return time with a designated contact person or supervisor.</li> </ul>

		<ul style="list-style-type: none"> <li>• Carry a communication device, such as a reliable two-way radio or satellite phone, to contact emergency services if needed.</li> <li>• Familiarize yourself with the cave's layout, exit routes, and emergency exit points. Mark these locations on a map or use visible markers in the cave.</li> </ul>
Other	Waste	Containerize, remove, and properly dispose all generated waste when you leave the area.
	Emergencies	<p>In the event of a cave emergency, follow these steps:</p> <p>Step 1: Assess the Situation:</p> <ul style="list-style-type: none"> <li>• Stay calm and assess the immediate surroundings for any immediate dangers or hazards.</li> <li>• Evaluate the condition of the affected individual(s) and determine the nature of the emergency.</li> </ul> <p>Step 2: Communicate:</p> <ul style="list-style-type: none"> <li>• Use a communication device, such as a two-way radio or a satellite phone, to contact emergency services or designated personnel outside the cave.</li> <li>• Provide clear and concise information about the nature of the emergency, the cave location, and the number of individuals involved.</li> </ul> <p>Step 3: Perform Initial Aid:</p> <ul style="list-style-type: none"> <li>• Administer basic first aid to stabilize the injured or affected individual(s) as much as possible, considering the available resources and training.</li> <li>• Attend to any immediate life-threatening injuries or conditions.</li> </ul> <p>Step 4: Implement Rescue Plan:</p> <ul style="list-style-type: none"> <li>• If feasible and safe to do so, initiate self-rescue procedures following the designated cave rescue plan established beforehand.</li> <li>• Utilize proper rope work and climbing techniques, if necessary, to navigate challenging cave features and assist in the rescue.</li> </ul> <p>Step 5: Await Professional Assistance:</p> <ul style="list-style-type: none"> <li>• Evacuate the injured individual(s) from the cave to a designated assembly area or pre-determined safe location within the cave, if possible.</li> </ul> <ul style="list-style-type: none"> <li>• Follow instructions provided by emergency services or designated personnel outside the cave.</li> </ul>
	Reference and Additional Resources	<ul style="list-style-type: none"> <li>• <a href="#">U.S. Department of Agriculture Forrester Service</a></li> <li>• <a href="#">Indiana University</a> Cave Safety</li> </ul>
	Questions	Contact Environmental Health and Radiation Safety (EHRS) at (215) 707-2520