Princeton University Outdoor Action

OA Guide to
Outdoor Safety Management
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I. Outdoor activities and Risk

1. How do you define an accident? Definition - chance or what happens by chance; an event that happens when quite unlooked for; an unforeseen and undesigned injury to a person; an unexpected happening; a casualty; a mishap.
2. Read “Thanksgiving Death in the High Peaks” - Why did this occur? Separate answers into Environmental Hazards and Human Factor Hazards.
3. What are some of outdoor risk activities? What is the highest risk?

II. Theory Of Accidents - How Accidents Occur

1) Dynamics of Accidents Formula

Dynamics of Accidents Model

Environmental Hazards
- Terrain
- Weather
- Equipment

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Human Factor Hazards
- physical condition
- experience
- skills
- fear
- communication

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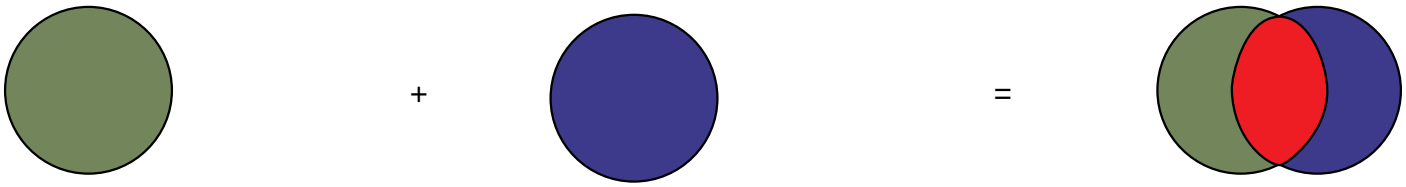
Accident Potential



These two factors can overlap to a greater or lesser extent. The greater the overlap the higher the Accident Potential. The effect of combining Environmental Hazards and Human Factor Hazards multiplies the Accident Potential rather than simply being additive. The greater the number of hazards, the more quickly the Accident Potential can rise. For example:

2 Environmental Hazards	+	2 Human Factor Hazards	=	4 times higher Accident Potential
3 Environmental Hazards	+	3 Human Factor Hazards	=	9 times higher Accident Potential

2) Examples of Hazards

When assessing the potential environmental hazards you need to look at three factors.

1. Activity

- Static - activities in which the environment is relatively unchanging (e.g. hiking)
- Dynamic - activities in which the environment changes very quickly in unpredictable ways (e.g. whitewater paddling, biking)

2. Location

In remote locations you need to exercise additional precautions. One common method of accomplishing this is to increase the rating of the rapid by one class if you are in a remote setting. For example, a Class III becomes a Class IV. This helps take into account the increase in Accident Potential (see below).

3. Season/Climate

Weather and the possibility of weather changes also have a significant impact on Accident Potential.

Environmental Hazards

A) Environment
rocky trail
exposed ledges
cold temperatures
rain
darkness
overexposure to sun
poison ivy
bees

B) Equipment
broken stove
boots not broken in
improper clothing
inoperative equipment

C) Driving/Transportation
bad road conditions
darkness
unfamiliar road
difficult road (CLASS I - VI)
other erratic drivers
pedestrians/cyclists

Human Factor Hazards

A) Participants
no awareness of hazards
no skills to avoid hazards
resistance to instructions
irresponsible/careless attitude towards self, others, equipment
need to "prove" self, macho attitude
poor physical strength, stamina
fear

B) Leaders
lack of knowledge of environmental hazards
inadequate skills to extricate group and self from hazards
poor safety judgement
poor teacher of necessary skills
instructions unclear
poor supervisor, does not correct problems
ineffectual under stress
lack of teaching plan

C) Drivers
poor driving skills
rushing to meet schedule
overly tired on long drives
not driving defensively

D) Group
group not yet formed, lacks cooperative structure
interpersonal frictions unresolved
poor communication patterns excessive competition
scapegoating or lack of concern for slow or different individuals
excessive pressure or stress to "perform" - macho
no practice in working harmoniously under stress
lack of leadership within group
splintering into sub-groups

3) Sample Accident Scenarios

Think of an accident situation you have been in whether on an outdoor trip or in some other setting. Analyze the situation and list the Environmental Hazards and the Human Factor Hazards that led to the Accident Potential.

4) Teaching the Formula = Reducing the Accident Potential

It is essential to teach the Dynamics of Accidents Formula at the very beginning of any trip (or prior to leaving campus) so that all participants are aware of how their behavior is directly related to reducing the possibility of accidents. Participants then can take some responsibility for their own safety. The formula gives you five basic things:

- a technique for evaluating risk potential in the field
- a tool for analyzing how accident potential can be reduced
- a decision making tool
- a rationale for why OA has particular things we teach, particular rules and policies
- a rationale for why you make particular decisions

5) Environmental Briefing

A comprehensive Safety Program allows one to intervene to prevent Human Factor Hazards from overlapping with Environmental Hazards and thereby reducing the Accident Potential. In order to do this it is necessary to rethink from Day 1 of the trip ***what is an environment?*** In planning a trip the leaders must examine the environment and the activities of the trip in order to ascertain what the possible environment hazards of that trip are. This information must be communicated to the group in the form of an Environmental Briefing at the beginning of the trip with subsequent briefings when there is a change in environment or activity (e.g if a hiking group changes to canoeing the environment and activity have changed and there are different environmental hazards). The first Environmental Briefing should follow the leaders' presentation of the Dynamics of Accidents formula. On longer trips it may be useful to have the participants do some of the Environmental Briefings once they are familiar with the formula. This can be done with the help of the leaders. The Environmental Briefings set a tone for safety and help inculcate the idea that the participant is responsible for his/her own behavior.

6) What If?

It is important to analyze the possible accident potentials from a what if perspective. Ask yourself what is the worst case scenario. Then ask yourself what you can do to reduce the accident potential.

7) Prepare a sample Environmental Briefing

You will be leading a hiking trip on the Appalachian Trail in the Delaware Water Gap in the first week of May. Write a sample Environmental Briefing for this trip.

III. Record Keeping

Record keeping is an important part of any safety program. Keeping records and reports allows OA to find trends in situations that may lead to changes in training for leaders, equipment, activities, and routes.

1) Accident Reports - These are to be filled out whenever there is an accident on a trip. It documents how the accident occurred, where, when and what treatment was given to the injured person(s). These forms are to be filled out under the following circumstances:

- If there is an injury or illness which requires treatment for more than one day of the trip.
- If an injury or illness causes the person to miss some part of the trip (e.g. group has to wait 1/2 day for person to recover).
- If the person needs to be transported to a medical facility for examination and/or treatment.

2) Field Information Reports - These forms are filled out whenever there is a "near miss" accident - a situation in which no one was injured but which could have resulted in injury. It is also used to communicate any other useful information that someone traveling in that area would need.

3) Emergency Report Form - This form is filled out whenever there is an injury which requires outside medical assistance. The form is designed to be quickly filled out and to make sure that all necessary information is transmitted to authorities.

IV. Pre-trip Planning

The essence of any safety program lies with pre-planning. It is essential to cover a wide variety of areas before the trip, during, and after in order to maintain maximum safety.

1) Pre-trip Planning

A) Route Planning
- i. Trail conditions
- ii. Water availability and quality
- iii. Rangers
- iv. Emergency phone numbers
- v. Weather forecasts
- vi. Daily evacuation plan
- vii. File overall trip plan with program director

B) Application forms from all group members - informs leaders of previous experience, any medical problems, disabilities, allergies, food issues etc.

C) Teaching Plan - a teaching plan should be developed for each major activity that will occur on the trip. This plan should present a well thought-out and step-by-step plan for safely teaching skills. This should also be shown to the program director prior to the trip.

D) Equipment -
- i. What to bring - Leaders should examine what the equipment needs of the trip are on activities, location, and weather (see OA Personal and Group Equipment Lists).
- ii. Check it out - Leaders then need to make sure that all participants have the necessary equipment. If people are bringing their own equipment, it must be examined to make sure that it is in good shape. Also all OA equipment should be checked to make sure it is in good working condition.
- iii. How to use it - Participants must be instructed on the safe and appropriate use of all equipment.

2) During the Trip

A) Teach the Dynamics of Accidents Formula
B) Give Environmental Briefing
C) Teaching Skills - (see OA Handout - Teaching a Skill)
D) Accident Response - In case of an accident react calmly and thoughtfully so as not to further injure or exacerbate the situation. *Specific details of accident response are covered in CPR and first aid training.*
E) Multiplication of Errors - through poor judgement/ overreaction - Give rappelling example.

3) Post-trip Activities

A) Record and write up any accidents, near-misses or information to be transmitted. Report this information directly to the program director.

V. Implementing Program Change

1) Improving the safety of a program involves a combination of all the items discussed above. The basic model for change is as follows:

VI. SAFETY = JUDGEMENT

1. Know your limits and groups limits. Be conservative.
2. Be flexible - (e.g. change route if needed) camp early if group tired.