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Introduction

by Richard L. Wilburn

You will be faced with emergencies – will you be ready?

Will you be ready in the event of an emergency? Will the needed personnel be trained and equipped to respond in a timely, professional manner? Will your personnel be unnecessarily exposed to physical and/or environmental hazards when it is necessary to respond to some life threatening emergency? Have you taken steps to educate the visiting public about potentially life threatening events or conditions so that they will be in a better position to care for themselves? Or are you waiting until you have "more personnel," "more money," "more time"?

This latter approach, sometimes referred to as "crisis management," is an inefficient, potentially dangerous and more costly way to run any operation and, of course, the crisis management approach to dealing with emergencies normally is not an effective way to serve the public.

Failure to plan and provide for personnel and equipment needs may have some serious long term repercussions. In one Western desert park, the safety of two employees was jeopardized, partly because of this lack of planning and control. A report was received that a flash flood in a narrow canyon had swept a car with an unknown number of persons off the road and into a gully. The two employees rushed to the scene in a jeep. They found no car, but their own vehicle was caught in the rushing flood waters and they lost control. Although



Identify and prepare for emergencies to avoid severe losses to persons or property.

the two employees were able to regain control, the incident could have, and nearly did, cost them their lives.

This kind of risk was not necessary. Floods in that park are relatively common and predictable when certain weather conditions develop. The road could have been closed and the threatened area cleared of visitors prior to the flood. Park managers seem reluctant to close any portions of their parks until a crisis has developed. It may be too late for some unfortunate person by that time.

In another incident, a crew of 40 firefighters, recruited from distant areas and unfamiliar with the site, were assigned to construct and hold a fire line along a very dusty dirt road. Only after spending a long day on this fire line did they discover that they had been working in an old asbestos quarry. The dust on the road was laden with asbestos fibers that filled the air as a variety of vehicles traveled along the road throughout the day. Every person on the fire line was exposed to the asbestos with all of its possible health hazards.

Lake Mead NRA



National Park Service

Extra weight on the rear causes a lack of front-wheel contact with the road. Steering and braking are jeopardized.

This exposure was unnecessary and should have been prevented. Managers from that area should have known, and in fact did know, of the presence of the asbestos. Perhaps the fire line could have been located somewhere else, proper personnel protective equipment could have been provided and used by the workers, or some other controls could have been found to protect the fire crews. There is now a need for a long-term medical surveillance of each exposed employee to provide for his or her protection in future years.

The concern for the health of those exposed extends to family, friends and park administrators. Credibility of fire management was lowered as was the employees' morale. None of this stress would have occurred if responsible managers had considered such emergencies in planning, training, equipping work crews and in carrying out the tasks.

Know Your Prospective Visitor

In most major park and recreation areas, visitors will come

from widely diverse geographical, social and economic backgrounds. However, studies have indicated that in most large parks a major percentage of the visitors will come from relatively nearby areas. The majority of the visitors to smaller municipal parks will be residents of the local vicinity. It is incumbent on park managers to know the general nature of their typical visitors.

Some factors of importance are: socio-economic groups, ethnic groups, predominant age groups, predominant sex and other related information. Sociological studies have indicated that some well-defined groups can be expected to be interested in specific activities. These groups tend to bring their expectations, customs, desires and emotional mannerisms with them and may not relate to the differences between the park and the environment back home.

What To Do About It

Identify possible sources of such emergencies. The old adage that one cannot properly solve a problem until the problem is fully identified and understood applies here. Park managers should establish, and annually review and update, specific emergency response plans for their areas.

First, one should ascertain the general types of events that could take place. This will vary considerably by location. Fire is always a possibility and will be considered in all government plans. Natural incidents such as flood, earthquake, tornado or hurricane have



Richard L. Wilburn

Personnel expected to respond to emergencies should be well trained.

a potential for serious losses in lives and property, and require in-depth analysis and preparedness planning by competent people.

Other types of considerations for your area should be conditions like the asbestos quarry. Throughout the country there are old quarries, mine sites, stamp mills or other synthetic, perhaps long abandoned, operations that may pose serious threats to health and/or safety.

In today's environment, one

must also give due consideration to chemical or other material spills, or discredited and/or illegal dumping practices. There are a multitude of materials that only a few years ago were not recognized as hazardous that we now know, or suspect, to be carcinogens or a threat to health in other ways.

It was once common practice to throw such things over a convenient cliff or into a ravine to dispose of them. We have instances of such dumps with PCB, mercury, various acids, asbestos and

other materials on what was then private land or perhaps on land adjacent to public parks. Another increasingly prevalent practice is the illegal dumping along a road or in some remote area of hazardous materials by private citizens.

Develop specific action plans and provide for practice drills where possible. Useful emergency action plans must be specific to the potential emergency if they are to be effective. A generalized plan intended to cover all types of emergencies seldom is workable.



Lake Mead NRA

Use a wide variety of means to provide necessary information to visitors.

Each plan should be developed by persons competent not only in handling the incident in question, but also in proper format and writing skills.

Pre-planning for emergencies such as structural fires and chemical spills should be subjected to practical drills by the response teams. Such drills should be conducted and critiqued by qualified instructors.

Hazardous locations such as an old uranium mine site that still

emits dangerous radiation should be identified on maps and other documents. The nature of the hazard must be clearly described along with necessary precautions for personnel who must enter the area.

Review and update all plans, important policies, regulations and laws at least once a year. This ensures completeness and suitability for current staffs and equipment.

Train all accountable personnel

to respond. Employees cannot be expected to properly react unless management has first assured that they know what is expected. The first important step is for top management to develop a clear and concise policy that clearly defines expectations, establishes responsibility and sets realistic goals for the organizations.

The next step is to provide training that is specific to the activity and practical exercises. The exercises should reflect the management policy and area objectives

as well as the specifics of the emergency action plan. Where applicable, the training should be interagency to include all groups that might be involved. For example, a hazardous spill may involve park personnel, local sheriffs' deputies and adjoining agencies, other state, county or federal agencies and technical clean-up people from the Environmental Protection Agency or similar state officials.

Provide necessary equipment and supplies. All necessary forms of equipment should be provided prior to the incident and, in some cases, placed in strategic locations to save time and personnel in critical periods. Permanent movable road barriers could be installed in pre-identified locations. Tool caches could be strategically located and rescue gear made quickly available. Assure that all personnel know where the equipment is located and who is to use it, when to use it, how to use it and who is responsible for replacement.

Inform the public. A well-informed visitor is less likely to run into trouble than persons who are not aware of potential hazards. Use all available means to inform visitors of the precise nature of the hazard or potential hazard, (e.g., the possibility of flash floods in low areas) and/or the possible consequences of failure to react properly.

Remember to put yourself in the place of the visitor when developing warnings. Many visitors are naive about conditions that may be common to park employ-

ees. Potential hazards from flash floods, high elevation sickness, heat and/or cold exposure, contacts with dangerous animals and/or plants or a host of other conditions must be emphasized for persons who are not familiar with the risks involved.

Summary

Tragic consequences do result from the failure of responsible officials to recognize and prepare for handling emergencies. Most types of emergencies that may occur in a given area are predictable and the end results of those things that are predictable can generally be controlled to some degree. Managers are responsible for identifying the potential sources of emergencies that could take place, prepare plans of action to control the situation, train and equip their personnel to respond and to provide adequate information to prepare the visitor who may be unfamiliar with the threat to his or her safety.

Richard L. Wilburn is the National Park Service's Chief, Branch of Safety.

Emergency Medical Services – Developing a Workable Program

by John L. Chew, Jr.

Emergency Medical Services (EMS) refers to the emergency prehospital care and transportation of sick and injured employees and visitors. This rather broad categorization covers activities ranging from band-aid cases through advanced life support services (paramedics) to physician-run clinics. Transportation includes resources as simple as patrol cars and basic ambulances to mobile intensive care units and sophisticated air ambulances. All these elements are part of the Emergency Medical Services Program of the National Park Service (NPS). Many land management agencies have similar responsibilities, particularly in the field of visitor services, and it is the intent of this article to share some of the experiences of the NPS in developing a six-level nationwide EMS program.

Until the early 1970s EMS, or first aid as we knew it then consisted of basic emergency care requiring a minimal amount of training. Red Cross first aid certification was the standard. This level of care was what the public expected both in their national parks and in the private sector. Ambulances transported victims to a medical facility where doctors provided medical treatment.

In 1969 the National Highway Traffic Safety Administration developed the Emergency Medical Technician program, and in 1973 Congress passed the Emergency Medical Services Act, a federal program which assists local governments in establishing com-

prehensive emergency medical services.

Because of these two initiatives, the "Big Bang" theory of EMS evolved. EMS systems developed at an explosive rate. Sophisticated field equipment, advanced training programs, trauma centers and federal grant monies all caused the EMS industry to expand rapidly, sometimes with little control.

Also, the quality of emergency care increased dramatically. Advanced life support programs, paramedic systems and mobile intensive care units became common around the country. With it, the reasonable level of expectancy also increased. The citizen now expects better care from local EMS services.

Generally, the National Park Service kept pace with EMS trends either by developing in-house advanced EMS programs or by using private sector rescue squads. Clearly the basic level of care in the NPS has risen from Red Cross standard first aid to Emergency Medical Technician, regardless of what external EMS services were available. The National Park Service's goal of providing appropriate prehospital emergency care was being met in most areas.

Approaching this goal, however, has not been without its price. The Service had failed to keep pace with the growth of EMS Systems Management and as a result there were no appropriate guidelines or standards for this activity. Implementation and

maintenance of programs had been very difficult. The program was administratively inefficient. Individual parks identified a need and developed a program. There was little continuity, little reciprocity and little sharing among park units. As a result the Service had developed as many EMS systems as we had programs. Each park unit had its own requirements, certification process and standards.

The shortcoming of this approach was demonstrated when employees, mostly rangers in this case, transferred from one park unit to the next. They had to seek the certification standard for that particular park. This might include a fee from the particular state, more training and an examination. This was all required because staff moved from one area to another, not because they allowed their certification to lapse or were in need of a recertification.

The NPS had no certification system and at that point had to rely on individual state certification and standards or the National Registry of Emergency Medical Technicians (NREMT). Most states do not have full reciprocity among themselves. Also, most states do not mandate the NREMT. As a result, there was no national certification/standards process that effectively served the National Park Service or any other agency that had national scope. Some rangers in the Service had as many as five different certifications which all required a fee, additional course study and an examination.



"Hi-tech" medical helicopter prepares to assist park medics who have treated and rescued an injured climber.

Also, there was a lack of Service-wide program coordination. Many parks duplicated work because there was no central coordination or standards to assist them. When working with local hospitals and physicians, it became necessary to start from the beginning. In many cases, advanced programs were started by those who participated in a program in another park. Many of the questions that were raised many times before were raised again. Managers did not have an appropriate guideline that facilitated the managing of a national EMS program.

To compound the problem even further, the Service did not have an effective way of retrieving needed information to make sound management decisions. It did not know, as an example, how many advanced programs existed, how many emergency medical technicians, park medics, paramedics were certified, how many ambulances were operating, how much was spent on medical supplies and training, and how much this service we call EMS cost the government.

In 1983 several informal surveys suggested that there were as many as 2000 NPS employees who were trained to the Emergency Medical Technician levels and above. Several parks such as Sequoia-Kings Canyon and Yosemite in California, Glen Canyon National Recreation Area in Arizona/Utah and Shenandoah in Virginia had extensive training and care agreements with major metropolitan centers. Some parks were involved in

major grant proposals to improve EMS care; Sequoia-Kings Canyon/Yosemite, \$250,000 and Glen Canyon, \$195,000. Emergency Medical Services in the National Park Service was definitely a major workload factor which required direction and control.

NPS-51

Once the Service recognized the need for standardization and control, the NPS's Office of Ranger Activities in Washington, D.C., utilizing extensive field input, developed the *Emergency Medical Services Policy and Guideline* (NPS-51). This policy and guideline was signed by the Director of the National Park Service on November 20, 1984, and distributed to the field for implementation in March of 1985, with full compliance required by December of 1987.

NPS-51 establishes six levels of care, from CPR up through the paramedic level; mandates the National Registry of Emergency Medical Technicians as its certifying body for all EMS personnel at the EMT level; requires each of the individual parks to analyze its needs for EMS, identify positions for training, enter into agreements with local private sector medical providers; and establishes administrative and reporting requirements.

Enabling Legislation

Prior to establishing a nationwide program it was necessary for the Service to determine what authority it had to manage such a system. The authority for any

agency to manage an EMS program with national scope is tied to its enabling legislation. In the case of the NPS, the National Park Service Act, 16 USC 12, authorizes the Service to undertake such a program. Each agency must investigate this enabling legislation prior to instituting a program which might require standards that do not conform to those of the state in which that agency provides that service.

Partnerships

By mandating the NREMT for all EMS personnel, we are eliminating the need for these employees to conform to individual state standards. As mentioned this 'local' certification was very expensive for NPS EMS personnel. In establishing this requirement for our technicians we also realized that the NPS must rely heavily on the private medical sector for its medical control. The NPS has no physicians and must rely on state licensed physicians to give orders to NPS EMS providers in the field. The Service cannot operate without this partnership.

Accordingly, the NPS requested that each state Emergency Medical Services Office approve NPS-51 for the purpose of permitting the private state-licensed medical sector to continue to provide medical control even though the NPS EMT's may not possess state certification. To date, more than half of the states and territories have approved NPS-51. Additionally, the National Association of State EMS Directors and the National Council of State EMS Training

Coordinators unanimously supported the approval of NPS-51 and have offered assistance in implementing the program. This we believe is an extraordinary effort in state/federal government cooperation.

One of the unique features of NPS-51 is that it standardizes a level of EMT known as park medic. This is a level of intermediate EMT that was specifically designed for remote applications. Some have referred to this curriculum as wilderness EMT. We believe this advanced life support level is very appropriate to all types of areas that may experience long delays in delivering patients to the nearest medical facility.

The NPS has entered into agreements with Valley Medical Center in Fresno, California; Samaritan Health Service in Phoenix, Arizona, and the University of Virginia in Charlottesville to teach this level of training. Currently, the Service utilizes the many fine state training programs for its basic and paramedic level EMT's and as a result does not provide centralized training for those levels.

In the early and mid '70s the NPS was able to utilize the services of the U.S. Navy at Camp Lejuene in training its EMT's but because of the availability of so many excellent local training programs we no longer need to send employees outside of their local area.

Although it was apparent that some park areas should provide EMS, there were many areas that

were on the fringe. What, then, were the criteria for providing this care? NPS-51 requires that all units complete a task analysis in order to identify what levels of care that particular unit should provide. It is the responsibility of the National Park Service to *ensure* that adequate EMS is available for employees and visitors. It does not require that the employees of that unit necessarily provide that service. It may be more efficient to enter into an agreement with a local medical ambulance service to provide those services.

In order to determine what level of prehospital care a unit will provide, NPS-51 requires that each unit consider three factors:

- The availability of local emergency medical services.
- The appropriateness of local emergency medical services.
- The emergency medical services workload within the Park Service unit.

Availability

Managers should consider the availability of local rescue squads and ambulance services surrounding the unit. The manager must determine if the local service is willing to respond to all incidents within the park, and within a reasonable time. The park manager must also consider the workload of the local service and determine if it is sufficiently staffed to respond to multiple incidents without jeopardizing the patients in either the local community or the park unit.

Appropriateness

The quality of emergency medical care in the U.S. is continually advancing. The level of care which the public expects is also advancing. Mere transportation without care is no longer an acceptable service to the public. Park managers must determine the extent and level of existing care regionally and the needs of the park.

In determining appropriateness, managers should consider:

- The cause and severity of injury or illness, i.e., motor vehicle accidents, falls, cardiac chest pain, etc.
- Visitor profile — the age and conditioning of the typical visitor combined with the activity.
- Level of care provided by the local service, i.e., basic first aid, basic life support, advanced life support, etc.

Workload Factors

In determining workload factors, managers must consider the frequency and severity of emergency medical occurrences in the park unit. Managers should consider the following:

- The frequency of calls that require some sort of definitive care, i.e., once a day, once a year, multiple incidents, etc.
- The severity of the calls, i.e., general first aid, basic life support, advanced life support, etc.
- Event duration, i.e., transportation distance, remoteness, evacuation complexity, etc.



National Park Service

While en route to the local hospital, an NPS EMT treats a victim of a fall.

An assessment by management of the availability, appropriateness and workload factors of the individual park unit and the surrounding community will determine the level of EMS that a unit should provide. For example, an urban park located in a community served by an available full-service advanced life support team, which is willing to provide the service to the park area, need only provide the essential levels of care required for visitor safety, CPR and standard first aid. A remote park, on the other hand, that has a signifi-

cant EMS workload caused by falls and motor vehicle accidents, and whose nearest advance life support provider's response time is unacceptable, is a candidate for an advanced program.

Summary

Agencies that have a significant Emergency Medical Service responsibility might well benefit from a standardized policy and guideline that focuses on the coordinated application of all appropriate resources to turn victims

into patients as quickly as possible and deliver them safely and efficiently to definitive care.

John L. Chew, Jr., is an Emergency Medical Services Coordinator for the National Park Service at Shenandoah National Park, Va.

Mountain Medicine

by James N. Wurgler, M.D.

Although mountain medicine is not considered a distinct or separate entity of medicine, an increasing amount of interest and effort has been spent in recent years studying and developing information about the peculiarities of the problems that develop in individuals who are working or playing in wilderness or outdoor environments.

Park and recreation area managers are well aware of the increasing numbers of individuals who are visiting their areas and seeking a broad variety of "rewarding experiences." For the most part, people survive these experiences with the usual assortment of minor ailments and discomforts — sunburn, insect bites, poison oak or ivy reactions, bruises, strains and hangovers.

A certain small percentage of these people, though, are going to experience situations that may become life-threatening or at least a danger that requires some sort of immediate intervention. This article will not attempt to deal with identification or management of the usual ailments that are discussed and dealt with in advanced first aid, EMT and advanced EMT courses. Rather, some of the conditions peculiar to high altitude, wilderness and outdoor exposures will be identified and briefly discussed.

If asked, most people would probably mention altitude problems as being most characteristic of disorders seen in mountain environments. Numerically, this is probably an appropriate percep-



Beautiful to look upon but exposure to cold without adequate protection can lead to hypothermia, frostbite.

tion. Virtually everyone will experience symptoms associated with increasing elevation, starting at somewhere between 4,000 and 6,000 feet.

Basically, the problem is a decreasing amount of oxygen in the air. At those elevations the symptoms are quite mild and may consist of a day or two of mild sleepiness and some lethargy and decreased energy. Serious problems can occur from 8,000 feet on up. Most of us are willing to believe that problems are likely to occur above 15,000 feet or more, but it sometimes comes as a shock to realize that certain individuals — even those in good physical condition — can get into serious trouble between 8,000 and 11,000 feet.

When one considers that there may be 25,000 skiers on Mammoth Mountain in California on a busy weekend, and the elevation is between 8,000 and 11,000 feet, it becomes apparent that this issue can become more than just an academic problem. Most of those people on Mammoth Mountain have driven directly from Los Angeles at sea level and have not had an opportunity to acclimatize to the higher elevation.

There are several conditions associated with increased elevation including acute mountain sickness (AMS), high altitude cerebral edema (HACE) and high altitude pulmonary edema (HAPE).

Richard L. Wilburn

Acute Mountain Sickness

Acute mountain sickness is a relatively benign, but uncomfortable condition that is usually characterized by symptoms such as headache, dizziness, fatigue, nausea, vomiting, malaise and just generally feeling rotten. These symptoms may persist for one to three days, but usually subside with mild activity and time. Surprisingly enough, this condition may be more likely to occur in relatively young individuals rather than older persons. In addition, complete rest is not necessarily the best treatment, especially not prolonged sleep. During sleep, the respiratory rate decreases and there is even less oxygen available to the tissues.

High Altitude Cerebral Edema

It can be difficult at times to discriminate between acute mountain sickness and acute cerebral edema in the early phases. Cerebral edema is an accumulation of fluid in the brain causing swelling. It is characterized by many of the same symptoms as AMS including headache, dizziness, nausea, vomiting — but then progressing to increasing confusion, disorientation, memory loss and decreased mental function. As the condition worsens, a person will become less responsive and ultimately lapse into a coma. At this point, death may not be too far away and it is extremely important that this condition be recognized and the patient moved to a lower elevation. Oxygen should be given if available but the key to reversing

the situation is to move the patient to a lower elevation as soon as possible. Even a 2,000 - 3,000 feet decrease in elevation can make the difference between life and death.

High Altitude Pulmonary Edema

High altitude pulmonary edema is associated with an accumulation of fluid in the air sacs of the lungs. The condition tends to come on several days after arriving at a high elevation without prior acclimatization. It is usually also associated with considerable physical activity and people will complain of an undue sensation of shortness of breath and reduced physical stamina.

Probably the most important early symptom is coughing which then may be followed by bubbling and crackling sounds with breathing and production of a frothy, white sputum with coughing. Medication is not particularly helpful for this condition and it is frequently confused with pneumonia. The only adequate treatment is to move the individual to a lower elevation and, once again, a difference of only 2,000 - 3,000 feet can usually produce marked improvement.

The key to preventing these disorders is to gradually ascend to higher elevations. Most travelers and recreationists do not have or do not take the time to achieve acclimatization and therefore, may be susceptible to these conditions.

Heat Disorders

Disorders of heat and cold are problems that can be encountered either in rural or urban wildernesses. Heat disorders are identified as heat cramps, heat exhaustion and heat stroke progressing from mild to most severe. Heat stroke is one of the rare, true medical emergencies. Untreated, it is virtually inevitably fatal and immediate action is important to prevent permanent injury.

The most immediately recognizable feature is that the skin feels extremely hot to the touch, associated with extreme dryness of the skin in an individual who is stuporous or comatose and in a hot environment. If a thermometer is available, the individual's temperature will be over 105 degrees Fahrenheit and may be as high as 108-109 degrees.

It is more likely to occur in aged or debilitated individuals, but also occurs in healthy, well-conditioned individuals who are participating in strenuous physical activities such as football and long distance running. These victims need to be cooled as quickly as possible and this may best be accomplished by immersing them in cool water. Medical assistance should be sought as soon as possible, but it is much more important to begin the cooling immediately than to spend time waiting for an ambulance or other medical assistance.

This problem is much more likely to occur in areas of the country where it tends to be very warm and where the humidity is very

high. Persons with heat exhaustion and heat cramps will be alert and their skin will invariably be moist and relatively cool. They need only be treated with fluids and rest.

Cold-related Injuries

Injuries associated with cold are also likely to occur in a multitude of environments, rural and urban. A great deal of interest has been displayed in these conditions in the past few years, particularly in hypothermia, or reduced body temperature.

Until a few years ago, a person found in a cold environment without pulse or breathing was assumed to be dead and no efforts at resuscitation were made. We now know that a person can have a very low temperature — even into the 70s or 60s — and may still be resuscitable. The current wisdom is that if a person is found in a cold environment who appears to be "cold and dead," they should not be pronounced dead until they are "warm and dead." There are an increasing number of reports of individuals being found apparently dead from "exposure," and from so-called drowning in cold water who are being resuscitated and are surviving even with little or no permanent damage.

Frostbite

A frostbitten individual needs to be rewarmed and there is no place for rubbing with snow or ice. To do so will not improve the circulation, but will only serve to further damage the skin and the



National Park Service

Persons suffering from severe cold temperature afflictions must be transported to proper medical care quickly.

tissues beneath the skin. Rewarming is best done in warm water at a temperature of 100 - 104 degrees Fahrenheit. The water will need to be warmed frequently and it is amazing how rapidly the water is cooled off when cold feet are immersed in the water.

Rewarming in front of an open fire or open heat source is not recommended, but if it is the only method available, then it should be done with extreme caution because the individual with the frostbitten extremities will not be able to tell if the extremities are becoming too warm. One practice is to have a companion sit beside the victim with similar exposure to the heat source to determine when there needs to be a change in position to avoid overheating.

Once rewarming has occurred, the victim should not be re-exposed to the freezing environment, particularly if the victim must do some walking in order to be evacuated from the wilderness area. More damage is said to be done by having the victim walk on rewarmed tissues than by having them walk on cold extremities. Of course, all efforts should be made — including helicopter evacuation — to avoid walking on cold, injured feet even if the situation may not be life threatening.

Several days after rewarming, frostbitten areas may well become gangrenous and will appear absolutely unsalvageable, but this appearance may be very misleading. The victim should be under

the care of a physician or surgeon who is experienced in the treatment of these conditions, or one who is willing to consult with physicians who have a great deal of experience. This caveat does not apply to simple, first degree frostbite, which is similar to a first or second degree burn and is treated in much the same manner.

Sunburn

The adverse effects of solar irradiation (sunburn) are considered by many people to be nothing much more than a nuisance. Unfortunately, it is probably associated with the most common type of cancer in this country — skin cancer. Fortunately, most skin cancer is not the type that tends to grow rapidly and spread to distant sites before it can be recognized and treated.

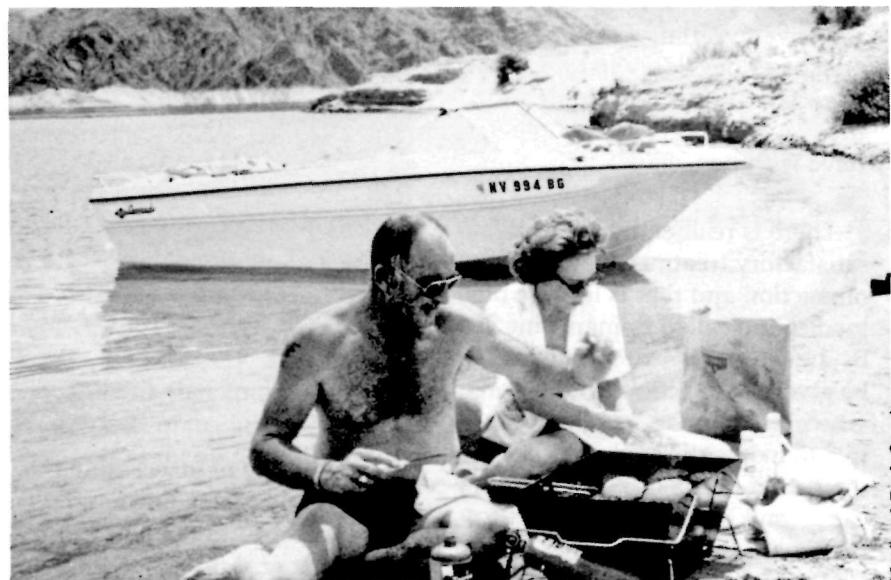
The exception to that is the increasing incidence of a form of skin cancer known as malignant melanoma which is a particularly unpleasant and lethal form of cancer if it is not found and treated aggressively in its very earliest stages. This form of cancer is becoming an increasing problem in areas of this country and the world where there are a large number of fair skinned, susceptible individuals living in areas of very high exposures to sunlight, including the desert southwest and Australia.

Managers should be aware that exposure to the harmful rays in solar irradiation are greater at higher elevations than at lower elevations where the atmosphere



If your car breaks down in the desert during the hot summer - stay with it. Protect yourself from the direct sun.

Lake Mead NRA



Care should be taken to avoid overexposure to the direct rays of the sun.

National Park Service

filters out a substantial portion of the worst of the rays. Employees working out-of-doors and particularly at higher elevations should be advised to wear protective

clothing and apply a sunscreen material with a high SPF (sun protection factor) to areas that will be exposed for prolonged periods. It might be appropriate, too, to

provide some information to visitors who may be unfamiliar with the increased solar irradiation at higher elevations, advising them to provide additional protection for themselves and particularly for their children.

Insect Bites

Finally, there is the question of exposure to the bites of insects and other creatures in the wilderness. It is widely quoted, and presumably true, that more people die in this country from insect bites than from the bites of poisonous snakes. The reason for this is that a lot more people get bitten by insects than by poisonous snakes, of course, but also because some individuals are extremely sensitive to certain insect stings or bites, and develop what is called anaphylactic reaction similar to the reaction that some people have with penicillin.

There is really only one truly satisfactory treatment for this type of reaction and that is the use of a medication called Epinephrine. To be most effective, this drug must be given by injection. Individuals who are known to be hypersensitive to insect stings should be instructed in the use of this medication and provided with a kit to carry with them at all times.

An employee who has this problem and is required to work where insect stings (by bees, wasps, hornets and yellow jackets) are likely to occur should consider having a series of injections to attempt to desensitize them. Areas that have high visitor exposure to



The sting from a variety of insects such as the yellow jacket can have serious health effects on many people.

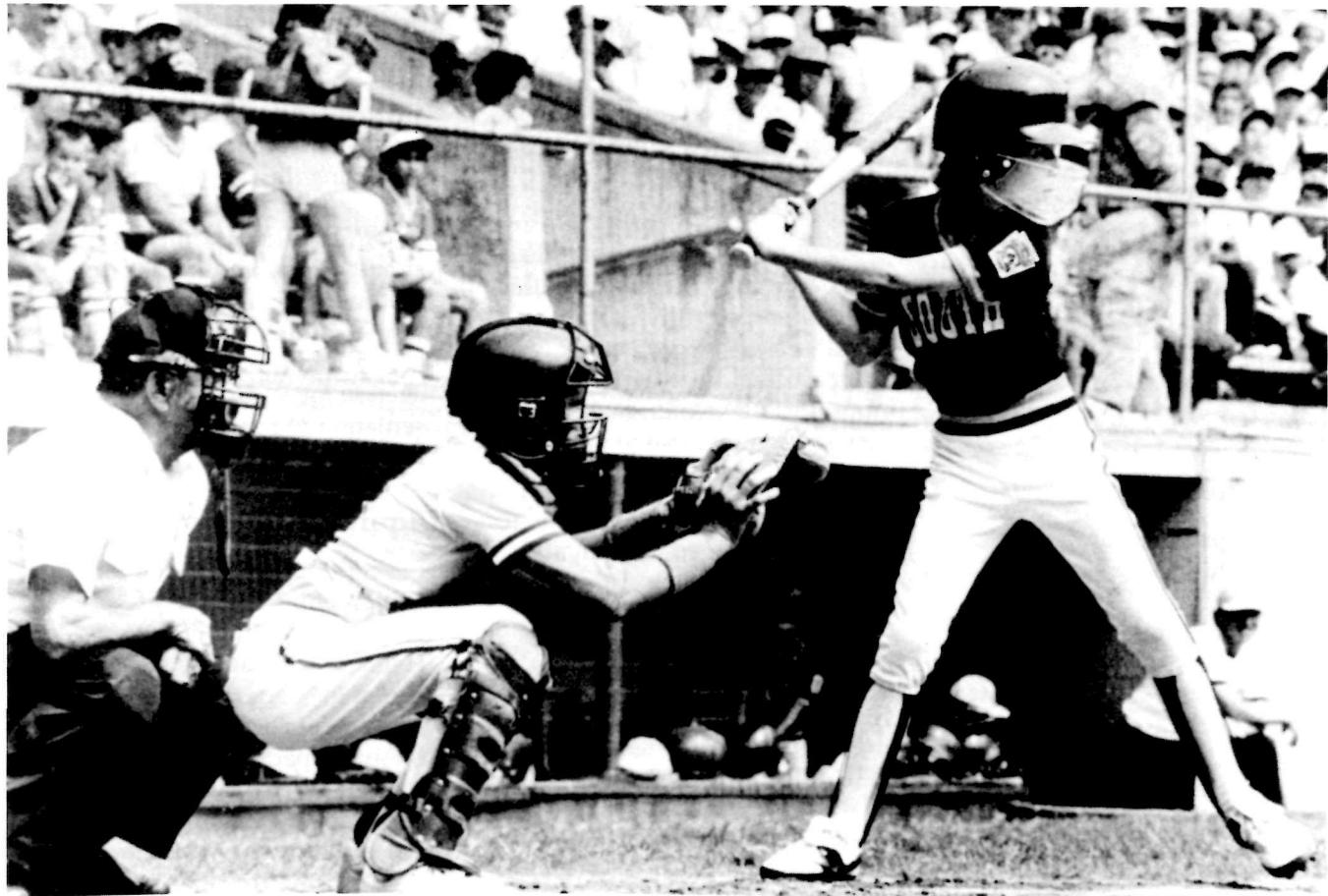
the possibility of insect stings should consider having employees trained and authorized to administer this drug. Treatment within minutes is essential in truly allergic individuals, and can be life saving.

James N. Wurgler, M.D., is the Medical Director for Emergency Medical Services and EMT instructor at Yosemite National Park, Calif.

James Sherald, NPS

Prevent Emergencies With Protective Equipment

by Allen Hager



Properly selected, fitted and maintained protective equipment can substantially reduce the risks involved in a sports program.

Rawlings Sporting Goods Co.

Safety is a prime concern for any park and recreation professional when planning a sports program that includes contact sports such as baseball and football. Promoting safety in a program can be compared to forging links in a chain - a safety chain with each link equally important. Providing safe playing and practice environments, securing competent coaches and leaders, screening and conditioning the participants and providing adequate emergency support are

all links in the safety chain. However, the link that completes the chain is that of using quality protective equipment. Because of the nature of contact sports there are no guarantees of safety when participating. *But protective equipment when properly selected, properly fitted and properly maintained can substantially reduce the risks involved.*

Protective equipment is a necessary part of contact sports. Data from the third year of the National Collegiate Athletic Association

(NCAA) injury surveillance system indicates that football injuries were down in 1984 and 1985. In an annual survey prepared by Frederick O. Mueller and Richard D. Schindler for the NCAA, the American Football Coaches Association and the National Federation of State High School Association, the authors state "An important effort continues to be the improvement of football equipment under the *National Operating Committee for Safety in Athletic Equipment (NOCSAE)*," an organi-

zation dedicated to developing safe standards for equipment. Another safety organization, the U.S. Consumer Product Safety Commission, reports that 37.4 percent of injuries in organized play of youths 5 - 14 years of age involve the head and face. The report did not say that equipment use or non-use was the responsible cause, but *it does follow that protection of the head and face of participants should be a high priority in this age group.*

Equipment Selection

A program manager should examine his or her equipment to see that it meets basic requirements established by NOCSAE (as with football and batter's helmets) or with standards dictated by the sport's association or league (as with Little League or youth league baseball).

The age and body structure of the participant (size) and the intensity of play (use) dictate the equipment selection. This information is listed in manufacturer's catalogues and sales manuals with illustrated charts available from sporting goods representatives. For instance, a foam-lined suspension helmet fitted with a plastic face mask will normally cover (less intense) youth league football requirements. A Cyclocac (ABS) plastic shell will generally out perform a polyethylene shell in load spreading and durability. The strongest shells are made from a polycarbonate material with an energy absorption system within the helmet. Helmet performance data in the form of severity

index scores are available from the Rawlings Sporting Goods Company upon request, but generally speaking, size and use determine the equipment needed.

Equipment Use

Safer use of equipment means proper fitting. Dealers, manufacturers representatives, trainers and coaches should be involved in this process. Poor fit, as with a loose-fitting helmet, make participants vulnerable to injury.

Once properly fitted it is important that each player continue to wear the same equipment and then coaches, along with others, are responsible for proper training in the use of that protective equipment.

As Ms. L. Caveness, president of Face Guards, Inc., states, "If the 1970s were years of testing and endorsements, the 1980s will see more energy directed to educating the game participants and retailers." This statement addresses the issue of proper education in the use of protective equipment after the selection has been made.

For example, **head-first contact in football is strictly prohibited.** Dr. V. R. Hodgson and Dr. L. M. Thomas writing in the June 1985 *National Federation of High School News* advise "**All the advantage in football rests with the heads-up player**" and that "a dangerous increase in neck loads occurs when hitting with the head down as opposed to the head up."

Manufacturers use warning

labels on their products regarding illegal playing techniques and the risks involved in contact sports. Coaches and program directors must share responsibility for educating the participants and their parents of those risks, prior to participation. **All involved should be aware that certain risks are involved.** The Athletic Institute in Florida maintains a film library and can provide a sample agenda for a warning-of-risk presentation to parents and participants.

Equipment Maintenance

Proper care and maintenance of equipment is necessary to preserve the integrity of the product. Helmets and pads should be stored in cool, dry, well-ventilated areas on racks or on hangers. Shoulder pads should never be stacked on top of one another as the weight of the top one may spread the arches of the bottom one, causing the pads to lose their conformity. Periodically during the season, the padding covering the equipment should be cleaned with mild soap and soft brush, then rinsed lightly with clear water and allowed to air dry.

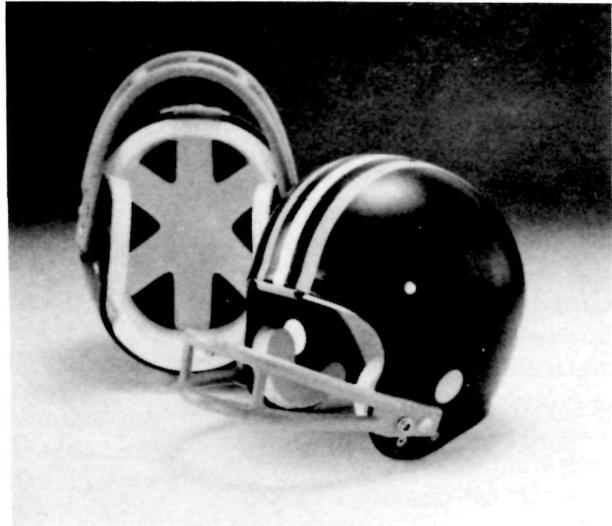
After each game, the interior helmet padding should be cleaned with a mild soap applied with a damp cloth. After the padding has dried, additional care should be taken to inspect the padding in each helmet for alignment and excessive wear. Manufacturer's instructions that accompany the product should be followed. Periodic, thorough inspection of equipment should be a routine

procedure, with repair, if needed, done by qualified reconditioning companies. The addresses of these companies are available through athletic goods distributors.

Proper selection, proper fitting, instruction in the use and maintenance of protective equipment does not eliminate, but does reduce the risks involved in contact sports. For this reason, all contact sports should evaluate the availability of any piece of protective equipment that may prevent or minimize injury whether it is required by the rules or not. Programs that fail to do so may find themselves facing severe legal complications. Recent legal rulings have shown an increasing tendency on the part of courts and juries to find liability in cases where available safety equipment was not properly used. And, **failure to warn** of risks has also provided grounds for liability.

Both liability and emergency prevention in sports lie in the realm of program managers and are concerns that can only be addressed with the careful forging of a strong safety chain.

*Allen Hager is Vice President,
Protective Equipment for Rawlings
Sporting Goods Company.*



Rawlings Sporting Goods Co.

SAMPLE STATEMENT BY PARENT FOR ATHLETIC PARTICIPATION

Parent or Guardian Permit

WARNING: BY ITS NATURE, PARTICIPATION IN SUPERVISED ATHLETICS INCLUDES A RISK OF INJURY WHICH MAY RANGE IN SEVERITY FROM MINOR TO LONG-TERM CATASTROPHIC INCLUDING PERMANENT PARALYSIS FROM THE NECK DOWN OR DEATH. Although serious injuries are not common in supervised athletic programs, it is possible only to minimize, not eliminate this risk.

Participants can and have the responsibility to help reduce the chance of injury. PLAYERS MUST OBEY ALL SAFETY RULES, REPORT ALL PHYSICAL PROBLEMS TO THEIR COACHES, FOLLOW A PROPER CONDITIONING PROGRAM, AND INSPECT THEIR OWN EQUIPMENT DAILY.

By signing this Permission Form, we acknowledge that we have read and understood this warning.

I hereby give my consent for _____
to compete in athletics for _____
Activities Association Approved Sports except those crossed out
below. Baseball, basketball, cross country, football, golf, gymnastics,
skiing, swimming, tennis, track and field, wrestling, volleyball,
soccer, ice hockey.

All-Risk Emergency Management

by Bill Pierce

A six-year-old is missing from the campground, a fire is reported in the laundry room of the lodge, Senator Snodgrass is going to speak at your park, a snowstorm has blocked all roads and stranded visitors, a wildfire has crossed your park boundary, a plane crash is reported, a two-car accident has occurred, the annual "fun run" is next week. If these or other incidents have happened in your area you probably have used some system to manage them based on the type of incident that occurred. This article will describe a management system that you can use for all types of incidents of any size and at any location, urban to wilderness.

The principles of emergency management are not new but with decreased budgets and fewer people to handle the visitor and the resource, park personnel are looking for ways to do the job better with less. The all-risk approach to managing emergencies does just that by reducing the amount of training required, allowing other agencies to respond with you to incidents, reducing equipment requirements and reducing the amount of time needed to manage an emergency.

So what is this all-risk management system? In a nutshell it is a management-by-objectives system that uses a common language, coordinated communications, a unified command structure with positions established by function and a planning process. The system has worked well in actual emergencies in incidents as diverse as the Queen of England's

visit to Yosemite National Park, a one-car accident with injuries, large and small searches, floods, hurricanes and law enforcement incidents.

Just one example is the search for a plane crash that occurred in Virginia this past fall. A commercial aircraft with 14 people on board was reported overdue from a small airport in the Shenandoah Valley in the vicinity of Shenandoah National Park. Twenty-three agencies responded to the incident and all efforts were managed utilizing the all-risk management system. These agencies were as diverse as the Federal Aviation Agency, local rescue squads, U.S. Marine Corps, local fire departments, Virginia State Police, volunteer search and rescue outfits and many more but they all worked together to accomplish the objectives that were established by the incident commander.

The plane was located after an extensive air-and-ground search, the crash site was investigated and the bodies were removed in a quick and professional manner with no one agency having to drain its resources to respond. Media briefings, communications and logistical requirements such as food, water and shelter were also handled using this system.

Hazard Analysis

How does one develop an all-risk emergency management system? The first thing an area needs to do is look at the potential incidents that might occur and their relative frequencies. This "hazard

analysis" should include any type of incident that past history of the area shows could occur, including V.I.P. visits, law enforcement situations, natural disasters, man-made disasters and any other incidents that your review shows might occur in your area with some frequency. A good rule of thumb is that any incident that has occurred once or more in a five-year period that required more than your normal resources should be addressed as well as any major incident such as an earthquake or flood that has occurred regardless of time span. This analysis should also include mitigating measures that could reduce your risk; if historical incidents can be prevented in the future by measures you can take or coordinate with other agencies, this will prove to be the most cost effective and lifesaving way to go.

Agency Coordination

This analysis will become the first part of your emergency operations plan (E.O.P.) and will identify the values at risk in your area. The plan should be short, no more than ten pages and to the point. The most important part of the plan is the meeting and greeting you should do in developing it. This coordination with the agencies and volunteers around you to get their input is more important than the written document. Therefore, the plan should be a constantly reviewed and updated program with continued input from all groups in your area. The major components of the plan should be as follows:



National Park Service



National Park Service

Effecting a rescue at Shenandoah National Park.

1. Purpose – a listing of the objectives of the plan, any legal requirements, mandates and limitations, and your hazard analysis.

2. Organization – spells out the transition from normal operations to emergency operations and the delegation of authority from the area manager to the incident commander.

3. Direction and Control – identifies chain of command during an incident and area procedures for emergency management.

4. Administration, Logistics and Financial – establishes any procedures to be followed in these areas, especially in communications.

5. Annexes – any cooperative agreements with other groups involving emergency operations.

6. Appendix – This should be a resource list of all the available resources you might need to manage the various types of emergencies you identified in your analysis. If you discover that you do not have the resources in your area or in the adjacent agencies to handle one or more of the types of incidents you identified, you should develop them through training and organization to meet this need. This resource list should be updated at least every six months so that call-out numbers and procedures are current.

Training

Positively the best way to keep your plan alive and current is to use it both in real emergencies and in training. This training should be with the other groups

that helped develop the plan and whom you work with on the emergencies. Remember this should be an all-risk plan that spells out organization, direction and control for all incidents. Many parks have found that implementing their plan for even the very small incidents is an excellent way to keep their staffs familiar with the plan and its implementation.

Shenandoah National Park, for instance, uses the E.O.P. for every incident in or adjacent to the park, no matter what the size. A single car-deer accident occurs, the park dispatcher notifies the closest ranger who responds to the scene, he or she is designated as the incident commander for that incident. Once the ranger arrives he or she conducts an initial size-up and communicates the incident status to dispatch. If the ranger can handle the situation there is no further call-out of resources or delegation of responsibilities.

However, if the size-up shows multiple injuries, blocked traffic, spilled fuel and trapped victims the E.O.P. will be utilized to appoint a qualified incident commander and to dispatch the resources needed to handle the emergency. This way everyone is used to operating under the plan and knows what to do when a major incident occurs.

Standard Operating Procedures

The next step in emergency operations planning for some areas is to develop Standard Operating Procedures (S.O.P.'s)

for specific types of incidents. Not all areas need to do this, only those that have a number of incidents per year of the type that requires immediate specific actions to implement the E.O.P. Examples of this would be incidents like structural fires, search and rescue, and hazardous materials spills. These fast-breaking, life-threatening incidents may require specific S.O.P.'s to handle the initial response and actions until the incident command team can be formed which will develop a plan to handle the incident.

The S.O.P. should contain specific steps and instructions on how to manage the initial phases of a specific type of incident so that the initial incident commander does not lose valuable time in trying to decide what needs to be done. This can be done with checklists, drawings and initial attack procedures. An example would be a structural fire S.O.P. that had maps and plans of attack for all the structures in your area, specifying hydrant locations, access points and methods of attack for each building. These plans would be located in all initial attack vehicles and practiced by the crews.

Implementation

Now you are ready for the next phase which is implementing the E.O.P. to manage an actual incident, no matter what the situation. If your planning, training and coordinating have been done well to this point the actual incident management will be easy. There are three primary factors that will

govern whether an incident will be resolved successfully or not: resources, communications and management. All of these should have been addressed in your planning and now you must deal with them at the incident. Let's look at key elements of this incident management: On-Scene Management, Incident Action Plan development and Incident Action Plan implementation.

On-Scene Management

The on-scene all-risk incident management system that is being utilized throughout the United States is the Incident Command System (I.C.S.). This system was developed by federal, state and local agencies as part of the National Interagency Incident Management System to better manage incidents, especially those incidents that crossed jurisdictional boundaries. It accomplishes this by using tested management concepts to unite individual agency efforts to solve the overall incident. These concepts are:

1. Common terminology – All participating agencies use clear text on all radio transmissions and all resources, facilities and organizational positions are pre-defined so that everyone knows what they mean.

2. Functional Management – The incident is managed by delegating responsibility from the incident commander to functional positions as the incident requires. This delegation is from the top down and modular in nature so that you only activate those mod-



Incident Command System planning.

National Park Service

ules that you need for the specific incident. The five major functions are command, planning, operations, logistics and finance.

Once the Incident Commander (I.C.) establishes a position, that individual is responsible for carrying out all the responsibilities of that function. If the workload increases he or she will further delegate portions of the function to individuals who will report to him or her. This allows for smooth and rapid mobilization and demobilization of functions to meet the incident requirements and prevents overstaffing by not filling positions if they are not needed.

3. Management by Objective – Written objectives for the incident developed by the unified command so that all involved on the incident know and understand the objectives of the operation.

4. Unified Command – All agencies or individuals who have jurisdictional or functional responsibility for a portion of the incident form a unified command team that sets objectives, determines priorities and selects strategies to accomplish the objectives. Each agency should be represented by a qualified individual capable of making decisions for his/her agency. The team should sign off on the written objectives so that there is no confusion as to their commitment.

5. Consolidated Action Plan – One action plan per shift that spells out the operations for that shift so that everyone knows what is to be done.

6. Span of Control – Maintains a supervisory control of three to seven with five as optimum. No

one should supervise more than seven resources.

7. Integrated Incident Communications – Participating agencies agree on common frequencies for command, tactical, logistical and other functional operations.

8. Designated Incident Facilities – Pre-identified facilities to manage the incident such as a command post, incident base and staging areas, so that everyone knows where to report and what is available at those sites.

9. Management of resources – Efficient use of resources to manage the incident.

10. Standards for Qualifications, Certification and Training – All positions within the command structure are required to meet standards of training and experience.

The incident command system is an excellent all-risk management system but it will only work if you train and work with it. Filling the functional positions with untrained individuals will only create more problems for the incident. Remember that this system is a management tool just like any other tool and it is available to work for you, not the other way around. By working with the other agencies you will be more efficient and effective, and "turf problems" can be settled so that you can gain mutual understanding and support. Once you try it you'll be sold! Events like the Los Angeles '84 Olympics, Presidential visits and dedications have all been



The start of an I.C.S. mission.

handled under I.C.S. and worked beautifully.

An example that was closer to home was the nine-day search for a 66-year-old woman in Warren County, Virginia, last spring. Thirty agencies ranging from the Red Cross to the Virginia Department of Emergency Services along with many volunteers searched under the incident command system for that entire period and found the subject alive on the ninth day due in no small part to I.C.S. All the agencies involved were amazed at how well the system worked since for most of them it was their first exposure to it. However, they are all believers now.

Incident Action Plan Development

Developing an incident action

plan (I.A.P.) is the next step in all-risk management. Every incident requires a plan, the small ones may be unwritten but large incidents must have a written plan to make sure everyone understands how the objectives will be accomplished. Any incident that you predict will go beyond the first operational period (shift). Any incident that crosses jurisdictional boundaries or any incident that involves more than one agency needs a written plan.

Each shift on an emergency is normally 12 hours, with two shifts per day. Each shift needs a plan and only one plan. The plan should contain the objectives in priority order for that shift. These should be developed by the incident commander or the unified command if that is the command structure. It should also contain an organizational chart that dia-



An Incident Command System in action.

grams all the supervisory positions on the incident and detailed division assignment lists. These divisional assignments explain the tactical assignments for each division on the incident and ensure coordination between them.

Incident maps and other attachments should be included as needed such as a communications plan, a medical plan or a transportation plan.

The responsibility for actually developing the plan resides in the planning section of the incident

organization. The I.C. sets the objectives and establishes information requirements and reporting schedules for the general staff. The general staff (planning section chief, finance section chief, logistics chief, I.C. and operations section chief) then discuss the objectives along with the situation status and the resources that are available. The planning section then develops the written plan with alternatives and presents it to the I.C. and general staff for approval.

Once the I.C. has selected the

desired alternative and any necessary adjustments are made, the plan is signed by the I.C. and duplicated for distribution to all supervisors on the incident that will be involved in that shift. The plan is distributed and discussed with the supervisors at a briefing conducted by the planning section before the shift begins. All of this needs to be done for each shift and therefore must be on a schedule and have sufficient general staff to allow two shifts of personnel a day.

Sample Time Table for I.A.P.

6:00	Shift change (field personnel come off duty).
6:00-7:00	Debrief personnel coming in from field.
7:30	Brief new planning section shift.
8:00	Planning section shift change.
8:00-11:00	Collect and evaluate data, document situation and resource locations, develop predictions for next shift.
11:00	Planning section meeting: Develop alternatives for next shift plan and make assignments for overhead briefing.
12:00-2:00	Prepare overhead briefing/strategy meeting.
2:00-3:00	Conduct Command and General Staff Briefing (overhead).
3:00-5:00	Prepare Incident Action Plan: Develop, assemble, duplicate.
5:00-6:00	Present I.A.P. and brief supervisors for next shift.
6:00	Shift change (field personnel) start cycle over for the next shift, normally two shifts and two plans a day.

Incident Action Plan Implementation

The implementation of the Incident Action Plan should go smoothly if a complete and thorough briefing is conducted before each shift and a debriefing is conducted after the shift. Written briefing statements and task assignments reduce confusion and improve communications — the incident action plan is your ready-made briefing statement! These briefings should take no more than a half hour but they should be well organized and convey the essential information to the team leaders so that they can inform their strike team.

The operations section will then be able to implement the plan and hopefully accomplish the objectives that were established at the start of this process. Once the incident is completed an evaluation of the incident should be held and any recommendations that are made for improvement should be incorporated in your preplan.

Every incident, regardless of cause, has three essential factors that govern the success or failure of the mission. They are the resources that are available to respond to the incident, the communications that are put in place at the incident and the management of the incident. The "all-risk" management system will give you the tools to meet all three of these essential factors. Use these tools and others that you have developed to handle your

incidents and you will find that they can be solved more quickly, safely and cheaply. Most of all, you will save lives!

Bill Pierce is the Chief Park Ranger at Wrangell-St. Elias National Park and Preserve, Alaska. Formerly with Shenandoah National Park, Pierce is an 18-year NPS veteran and currently serves on the Board of Directors for the National Association for Search and Rescue.

Poisonous Plants

by Charles E. (Chuck) Martin, Sr.

"Don't put that leaf in your mouth! It's poisonous!" Every day hundreds of thousands of parents are so warning their children. And how did these parents become such experts on poisonous plant identification? First of all, they say a plant is poisonous because they don't want to take any chances with their children. Then, too, there are some plants that they "know for certain" to be poisonous because under similar circumstances their parents had told them each plant was poisonous. Like DDT, concentrating as it rises through the food chain, fear of poisonous plants has concentrated as each succeeding generation of children has grown into the next generation of cautioning parents.

For five years it was instructive to observe the teenagers of the Youth Conservation Corps (YCC) at Catoctin Mountain Park, Maryland (near the President's retreat at Camp David). Terror is not too strong a word for what they felt on their first day in the woods. Many had never been outside of the city; they had never been away from street lights or sidewalks and they felt that Nature was "out to get them." Part of the emotional baggage they carried was an irrational fear that every plant part was poisonous to eat. Most were totally unable to recognize the most common contact-poisonous plants — poison ivy, poison sumac, stinging nettle, trumpet vine, primrose and mayweed.

The fears and ignorance of these city-bred youth are extreme



The buttercup. A popular wildflower that few realize is poisonous.

but serve to illustrate the attitudes many members of the public bring with them on their first visits to parks and public lands. The naturalist, scout leader, ranger and park manager who gently and unobtrusively dispel needless fears on one hand and provide useful information on the other serves the public well. On their first day, the YCC members received a half-day of instruction on edible wild plants, poison ivy and poisonous plants with a wild food dish served at lunch, and a half day of instruction in wilderness survival. Both instruction programs had generally good results, but the programs were not unanimously successful, as some of the youth quit the program within a few days and returned to Baltimore.

Some park managers indicate that they deliberately leave large masses of poison ivy near trails in order to keep visitors on the trails. For uninformed members of the public who do not recognize poison ivy, this might be viewed as the moral equivalent of a land-owner blasting a shotgun at innocent and unknowing trespassers on unposted land.

The citizen, voter and taxpayer who take away from our lands the same fears and ignorance they bring thereto — plus a vicious case of poison ivy — are unlikely to be found among that segment of the public which supports the expenditure of public funds for the conservation of natural resources and for the continuation of outdoor recreation. (Green-

briar and blackberry or raspberry would appear to be far more suitable as barrier plants.) Education about poisonous plants through signs, cartoons, flyers, live presentations, film presentations and posters are all approaches that naturalists use as dictated by budget, manpower and need.

As hypothetical examples of differing needs — an area in the San Juan Mountains at 12,000 feet elevation that can be reached only by experienced outdoorsmen after a two-day backpack trip might require at most a mention in a brochure of an adventitious plant with poisonous berries that could be mistaken for a somewhat similar harmless berry.

On the other hand, an area of disturbed ground, near high-density population, recently acquired for public use and overgrown in water hemlock, poison hemlock, mountain laurel, poison sumac, poison ivy, chinaberry trees, oleander, baneberry and euphorbic spp may require being closed off until plant succession plus cultivation, thinning, selective cutting, physical removal or chemical control has lessened the density of poisonous plants.

Opinion is divided as to the best way to deal with deadly poisonous plants. The finding of water hemlock at a regional library, whose grounds included trees, shrubs, wildflowers and a stream on five acres horrified the librarian. (Water hemlock has a mild, pleasant-tasting root, similar to a parsnip, and one bite can lead to a most horrible death within

half an hour.) This librarian wanted these deadly plants ripped out immediately but decided to leave a small patch for use as an education aid. The most effective means of educating groups of mixed ages is with a knowledgeable tour guide who points out plants in their natural homes, and presents material that can hold the interest of all age groups.

Some of the material which follows has been abstracted from talks which have been used to present the topic of poisonous plants to groups as widely varied as a class of blind fourth graders, second graders on field trips, an adult education class from the University of Virginia, wild-food enthusiasts and mixed groups of Cub Scouts, Boy Scouts, their parents, their scoutmasters and their little brothers and sisters.

Don't be afraid of poisonous plants. Yes, there are plants out here that can kill you. There are also medicines in your bathroom and cleaners under your sink that can kill you, too. But you know what they are because there are labels on them. They are marked "poison" with a skull and cross-bones or "Mr. Yuk" symbol. You don't try to take grease off your skin with lye nor would you gulp an Envoid pill for a headache. There is a place for these items if they are not misused and there is a place for poisonous plants in nature. Even poison ivy berries are eaten by many birds and rabbits nibble on deadly night-shade. Nature is not out to get you. Nature has certain rules and



The poisonous water hemlock should perhaps be removed from children's play areas.

if you learn what she has to offer and go by her rules, you will make out nicely.

Every day of your life you eat food that comes from poisonous plants — tomato, potato, green pepper, eggplant, rhubarb and cherries. You may, however, be poisoned by foods not considered poisonous. Some boys ate fruit they found growing on an old farm and became violently ill by nightfall. At the end of two days they were still weak and pale, but they gradually recovered. There is little doubt that they were poisoned. But the poison may seem a bit less fearsome when we

learn what they had eaten — green apples!

Some kinds of beans have enough cyanide compound that 12 ounces of raw beans could prove fatal. Some poisonous plants (such as loco weed) can be mistaken by novices for peas or beans. There is enough of a cyanide precursor (amygdalin—sold as the alleged "cancer cure" Laetrile) in some kinds of cherry pits, and, to varying degrees in plum, peach and—the source of Laetrile—apricot pits, that two pits cracked and swallowed can prove fatal.

Little girls have died by having "pretend tea parties" using wilting cherry leaves in hot water for "tea." Owners of livestock often remove cherry trees from around their cattle pastures and, in any event, are careful to remove windfalls from peach, plum, apricot and especially cherry trees after storms. Cattle are most likely to eat leaves from genus *Prunus*, but managers with any livestock need to be aware of this problem and either remove windfalls promptly or keep cattle fenced away from the fruit trees listed above.

Suppose you go to the home of friends who are wild-food enthusiasts. What should you do if you find that you have been served and have eaten a bowl of CHERRY PIT SOUP! Gag? Grasp your throat and stagger to a phone to ask the operator to call an ambulance? The police? The District Attorney? Of course not! Although the amygdalin in cherry pits hydrolyzes into hydrocyanic acid (the same substance in gas chambers used to execute criminals), cyanide is destroyed by the heat of cooking. The rest of the compound forms glucose and oil of almond which is the "why" of anyone making cherry pit soup. (Although the author has eaten and enjoyed soup denoted as "cherry pit soup," its use and preparation is not recommended for the novice.) The above noted instance represents an extreme example of a dangerous plant poison that is potentially lethal in the hands of the uninformed but safe and usable by those with knowledge.

Fairfax County Park Authority

Poison Ivy

Many youth and adults are unable to identify poison ivy. No one outside of southern Florida recognizes the vicious euphorbia manchmeel (*hippomane mancinella*). Very few can identify the less commonly encountered poison sumac. The compound leaf of poison ivy lends itself to the familiar rule that "three of anything means danger" — three fires, three smokes, three scoutmasters in red jackets frozen in the ice. These are all signs that someone is in danger and needs help. The three leaflets of poison ivy key the old and familiar warning, suitable for presentation by trail leaders and on posters and signs: Leaflets three — let it be (often phrased: Leaves of three — quickly flee). This mnemonic rhyme is easily taught, quickly learned and retained well, especially by young people.

Some listeners point to blackberry as "poison ivy." This provides an opportunity for the anthropomorphic (viewing non-human things as having human characteristics) corollary that: "Plants that protect themselves by being poisonous, do not also protect themselves by being poisonous unless they are particularly mean and vicious." Pointing out the thorns and the five-sided stems of blackberry cones piggybacks an identification of a potentially useful barrier plant. Further, it provides a lead-in for an exception. A "particularly mean and vicious plant" is horse nettle (*solanum carolinense*) with



Poison ivy in the summer,



fall

Fairfax County Park Authority

its glassily brittle spines covering every part of leaf and stem and its small, yellow, tomato-like fruit reported in some jurisdictions to be the cause of as much as 90% of the plant poisoning in children.

Dogs that romp through poison ivy and are petted or climb on furniture before their next bath can spread poison ivy to a family. Individuals who personally are immune to poison ivy similarly may spread poison ivy to others. People who are allergic to poison ivy are overcautious and tend to panic if a few leaves lightly brush their bare skin. Poison ivy is most likely to release its irritating oil, uricohol, if it has been bruised, crushed and roughly treated. Often, intact poison ivy leaves, when brushed against, will produce none of the usual symptoms

of redness, itching, blistering, burning or swelling.

Birds may eat the white poison ivy berries and then sit on utility wires over the windshields of parked cars and be very naughty. The motorist who may never have been near the woods comes out to clean his windshield and thus, indirectly and unknowingly, becomes a victim of ivy poisoning. Certainly, the most dangerous to campers, workers and innocent passers-by is the smoke from burning poison ivy which may attack skin, eyes and the linings of the lungs.

Poison ivy stems or trunks bear reddish-brown rootlets or holdfasts (sometimes bleached to the same greyish-white as the bark in the dead plant). The description "hairy, red rope" fits



and winter.

Fairfax County Park Authority

poison ivy in winter. Thus, the second rule for recognizing poison ivy is "don't climb hairy, red ropes."

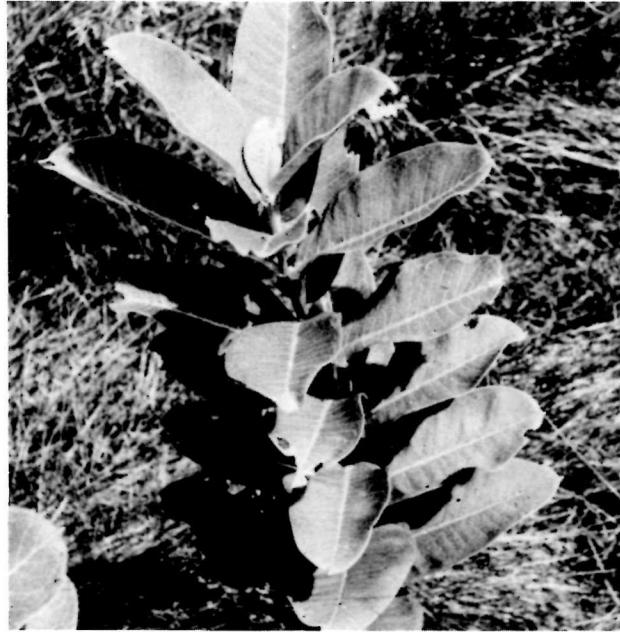
People often ask how to tell poison sumac from the harmless sumacs such as staghorn sumac, smooth sumac and dwarf or winged sumac. The mnemonic is "berries white, a poisonous sight." The harmless sumacs hold their fruiting heads up proudly like little red Christmas trees while poison sumac, like poison ivy, hangs its head of white berries "because it is so ashamed that it is poisonous." A useful and harmless training aid can be prepared by removing the wings between the leaflets of a compound leaf of dwarf sumac which then will resemble poison sumac. The red berries of the harmless sumacs are sometimes stirred into warm

water, strained and sweetened as a folk food resembling pink lemonade. (As a general rule in the preparation of teas from wild leaves, use fresh leaves or dried leaves but never use wilting leaves which will contain the highest proportions of undesirable substances.)

A particularly dangerous plant is mountain laurel, a popular and beautiful wild shrub which is sometimes called "lamb kill," reminding us of how poisonous it is. Its glossy, evergreen leaves give warning. Dead mountain laurel leaves blowing into streams can kill fish that nibble at the fragments of these leaves. One question must be asked of any plant that remains green in winter: How does it avoid being eaten by deer or other browsers? Plants fall into

one of three categories if they stay green in winter: they are either prickly and unpleasant like pine and holly, or they hide under the leaves like partridge berry or pipsissewa, or they are poisonous like mountain laurel. The most instances of internal poisoning arise when campers or picnickers use mountain laurel twigs as cooking skewers. Meats, in particular, are easily contaminated in this way.

Whether we are leading horse trips into backcountry or hosting a Cub Scout day camp we have an obligation to give our visitors at least a minimum knowledge of the most obvious hazards. Total protection is neither possible nor desirable. Accepting the definition of conservation as the wise use of our natural resources, poisonous



The common milkweed. Assume that any plant with a milky sap be poisonous unless and until you know otherwise.

Chuck Martin, Sr.



The bittersweet or deadly night shade. The bright, translucent, red berries initially taste sweet but quickly turn bitter, hence the name bittersweet.

Chuck Martin, Sr.

plants are not being used as a resource if they are destroyed, removed or fenced off from people. To educate and teach the public to be aware of poisonous plants requires training the trainers. Poisonous plants are a part of nature; we may not love all of them. An antipathy to poison ivy is understandable but it has its place and we have the opportunity to know and show others just what that place is.

scouts and the general public, served as a volunteer guide for the Fairfax County Park Authority and other organizations. He retired from the U.S. Coast Guard in 1972.

Charles E. (Chuck) Martin, Sr., is a noted attorney and lecturer on botany and toxic plants. He studied edible wild plants with the late Euell Gibbons. As a boy and adult scout leader Martin has 30 years' experience with the Boy Scouts of America. He has participated in and/or directed 25 wilderness survival programs for

Are You Liable? A Case Study

by James C. Kozlowski, J.D.

Descriptions of recent recreational injury court decisions are made available through the National Recreation and Park Association's Recreation and Parks Law Reporter (RPLR), a quarterly publication reviewing recent recreational injury court decisions similar to the *Coates* decision described herein. The following report is taken from Volume II, No. 4 of the RPLR.

No Emergency Plan in Rocky Mountain National Park Dam Break

In the case of *Coates v. United States*, 612 F.Supp. 592 (D.C. 111. 1985), plaintiff's husband, 36-year-old Terry Coates, drowned while on a family camping trip to the Rocky Mountain National Park in Colorado. Coates, his wife (plaintiff Rosemary Coates), and their two children had paid a fee and were assigned a campsite in Aspenglen Campground. The incident occurred on the morning of July 15, 1982.

The Lawn Lake Dam is situated on a steep, mountainous incline above the campground. On the other side of the dam, a water channel proceeds down the side into a large meadow area known as Horseshoe Park. Horseshoe Park, although relatively flat, is sloped downward in the direction of the Aspenglen campground. Another dam (Cascade Dam) is located at the lower end of Horseshoe Park about one-half mile from the campground. The

campground itself consists of two areas — a "mainland" with parking lot and campsites and an island portion. This island is at a lower elevation and is connected to the mainland by a footbridge. The circumstances which surrounded the incident were as follows.

Sometime before 6:30 a.m. that morning, the Lawn Lake Dam had failed and a garbage man, observing the rushing water, notified the ranger station which served that portion of the park. The following events all occurred within a period of slightly more than one hour. Park rangers were alerted to the potentially dangerous situation and, within approximately 20 minutes of the report of the dam's failure, Ranger Schultz was dispatched to warn the "walk-in" (mainland) campsites. At 6:50, he entered the campsite and, within 15 minutes, had warned several of the campers, but not all of them assigned to that area. He did not, however, tell them that the dam had failed or that a flood was approaching. Rather, he suggested, apparently without urgency, that it might be wise for campers to evacuate the area.

Neither Terry nor Rosemary Coates received any warning from Ranger Schultz, although they did have second-hand information that campers were being warned to leave the area. At that time they could see what Rosemary Coates described as a "little water," but nothing to warn them of the actual situation. This was approximately 7:15. The Coateses had planned to

leave the Aspenglen Campground that day anyway. While Rosemary Coates woke the children and prepared to leave, Terry Coates went to the parking area, got his camera from the car, and began taking pictures. After she had packed up, Mrs. Coates heard a loud noise, saw a rush of water, and began to move to high ground with the children. She had no knowledge at that point where her husband was. It is, however, apparent that he had returned to the car because his camera was later found there. The testimony shows that witnesses saw Terry Coates and Bridget Dorris, who also died in the flood, crossing the footbridge to the island portion of the campground.

While the decision to warn was being made and the subsequent events were unfolding, the water, freed from Lawn Lake Dam, was moving down the Roaring River Drainage [channel] and entering the west end of Horseshoe Park. This situation was known to the park rangers by approximately 6:45. As more and more water entered the park, it inevitably flowed to the lower end, putting increasing pressure on Cascade Dam. At about 7:40 a.m., Cascade Dam failed, sending a flood of water into the Aspenglen Campground. Terry Coates was drowned by those flood waters as they passed through the campground.

As described by the federal district [i.e., trial] court, "a land-owner in the State of Colorado is charged with the obligation to

discover dangers and take relevant precautions and to warn of those dangers which he knows or should know exist." This duty to warn and/or take necessary precautions is to "the same extent that any reasonable man in view of the probability or foreseeability of injury to persons on the land would be required to do."

While noting "a good deal of ranger activity during these events," the court in this instance found that the defendant United States was negligent on the following points: "(1) The defendant failed to post an observer at the Cascade Dam to monitor the flood waters and their impact on the dam; (2) they failed to have a ranger in Aspenglen Campground at all times during the flood; (3) they failed to give adequate warning to Terry Coates of the danger resulting from the failure of the dam; (4) they failed to maintain or implement a plan for dealing with emergencies, such as the one involved here."

The court found further that Coates's widow and her two minor children had sustained damages in the amount of \$800,000. This amount, however, was reduced by 40% to \$480,000 because Coates was found to be 40% negligent.

Terry Coates was sufficiently impressed with the awesomeness of the rising waters to take pictures. The pictures which he had taken establish clearly that, by reason of

his observation, Terry Coates had knowledge that the water was rushing in and that the water level was rising. He did not have much information, but the Court believes that it was enough to require him to take some reasonable steps for his own safety. . . . The Court finds that Terry Coates had notice (albeit inadequate), had time to remove himself safely from the endangered area, and took inadequate steps to protect himself.

As described by the court, the Colorado version of comparative negligence "permits recovery by a plaintiff whose negligence is less than that of the defendant, but requires that his damages be reduced by the percentage of negligence attributable to him." Recovery was available to plaintiff Coates because the court concluded "the negligence attributable to the United States government is 60% of the total negligence which occurred in this case."

According to the court, national parks are subject to "extreme and sometimes unexpected weather changes, structural failures such as the one at issue here, other flash floods. . . which. . . may be sudden and dramatic." By charging a fee to enter the national parks, the court found further that the federal government had created "a specific legal relationship between itself and those who have paid for this special privilege." Specifically, the court found that the federal government had created a duty "to develop orderly procedures for dealing with emergencies."

It is imperative to have a plan in place because in such situations there is little time for reflection. Priorities should be established before an emergency arises; otherwise personnel are unprepared to deal with them. Such appears to be the case here. Many well-intentioned and otherwise well-trained rangers were inadequately prepared to cope with the breach in Lawn Lake Dam. It appears, for example, that the rangers did not even know how much water was being held back by the dam. Elementary lapses, obvious with the clarity of hindsight, could have been avoided through the development of orderly procedures for warning and evacuating people in the park in the event a crisis arose.

Given the duty to plan for emergencies, the court concluded that, under the circumstances of this case, the federal government's failure to have a plan in place was a proximate [i.e., legal] cause of the death of Terry Coates.

In the opinion of the court, the circumstances in this case "were not atypical of emergencies" wherein the "situation was an evolving one and, particularly in the absence of a plan" there was "a need to assimilate, correlate and synthesize occurrences so as to make decisions in a reasonable fashion." According to the court, "the exercise of reasonable care" in this instance also "mandated, at a minimum, the issuance of careful and complete warnings to all of the people who were camped in or otherwise using areas of the

park which were downstream from Lawn Lake Dam."

There had been attempts earlier that morning to warn persons in the walk-in sites. Ranger Schultz had been dispatched to warn campers of the possibility of a flash flood. He was apparently given no indication of who was to be warned and with what sense of urgency the message was to be conveyed. It appears that, on his own, he also notified people in the island camp sites. The evidence shows that he told some that they had one-to-one-and-one-half hours to leave. It is clear that his tone was not one of urgency and that the information he conveyed was insufficient to alert them to the potential magnitude of the emergency. It seems obvious to the Court that the ranger's desire not to cause panic had to be balanced against the need to motivate the campers to clear the area in an expeditious manner. Moreover, Schultz did not warn those campers who were not presently in the immediate area, nor did he consider that others might have been hiking or exploring in these areas even though they did not actually have tents there.

The court, therefore, found that the failure to issue these warnings constituted negligence which was a proximate cause in the death of Terry Coates.

The court further rejected the argument that any statutory exceptions to the Federal Tort Claims Act (FTCA), 28 U.S.C.A. § 2680(a)(h), were applicable in this

case. "The government's failure to develop an adequate warning to all campers is not comprehended in the conduct which Congress intended to protect through enactment of that section of the Tort Claims Act." Under the discretionary function exception to the FTCA, planning/policy decisions involving an exercise of judgment, even if negligently performed, are immune from liability.

On the other hand, operational or ministerial functions are not immune. In other words, the deciding is immune, while the doing is not. Once the agency decides to do something, it must do it right. As a result, once the National Park Service decided the threat posed by the dam required warnings, this warning procedure had to be performed in a non-negligent fashion to avoid liability. Having found the federal government negligent under the circumstances of this case, the court entered judgment on behalf of plaintiff Coates in the amount of \$480,000.

Mr. Kozlowski is an attorney in Springfield, Virginia. He is the author of the Recreation and Parks Law Reporter and the monthly "NRPA Law Review" column in Parks & Recreation magazine, the official publication of the National Recreation and Park Association.

Survival Themes for Park Management

by Guy D. Whitmer

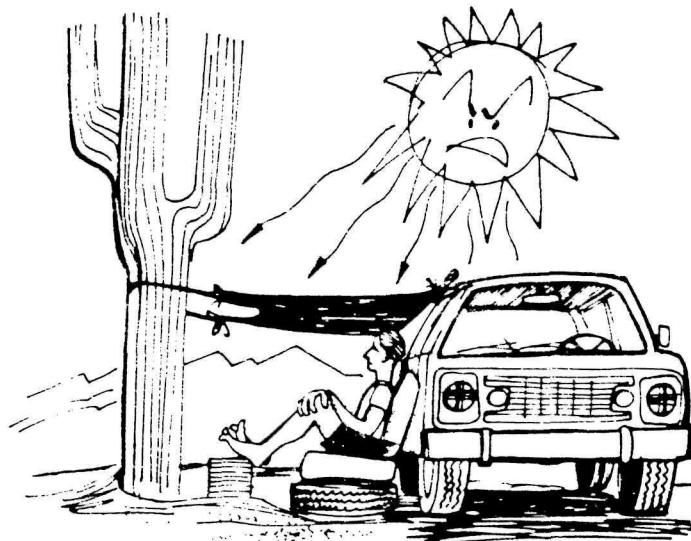
Along with the popular "nature" movement in this country the term **survival**, one of man's oldest skills, has become a popular topic in recent years. Numerous survival schools are being operated around the country. New and revised publications have hit the market and the survivalist movement is receiving considerable media attention. The extremes run from *Rambo* to *The Wilderness Family* movies.

Those of us involved with parks, recreation and land management cannot help but be interested, if not involved, in the directions this movement is taking. Park and recreation areas provide settings for individuals to pit themselves against nature, to test fate or prove "what they are made of." The back-to-nature segment of the population is involved in traditional park activities including hiking, swimming and camping. The impact of increased participation in activities promoted by park and recreation management has threatened the existence and scope of many traditional park uses.

The Rambo survivalists sometimes tax park and recreation area capabilities to the limit. Their goal is to find their own personal limit and push that limit one step further. Personal failure is sometimes the result. Subsequent search, rescue and medical system demands are always straining on a park operation.

Management attempts at controlling the problem have involved limiting access, increasing enforce-

illustration by Gene Fear



ment of regulations and promulgating new, more restrictive area use regulations. All of these actions carry a high price tag, and sometimes appear to be in conflict with the mission and goals of park and recreation areas that were established to manage the delicate balance of public use versus resource protection. Managers need an understanding of the goals and direction of contemporary survival training, and to consider these when formulating policies affecting access, use and education.

Survival Themes

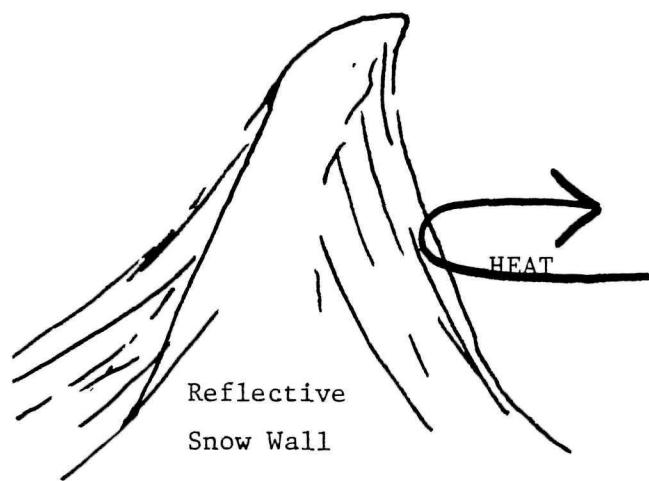
Survival courses can be grouped into three thematic groups which demonstrate the spectrum of contemporary survival education.

1. *Rescue Survival:* Skill-based, the goal is to stay alive until you are rescued, and help affect that rescue. Example — Military survival training.

2. *Accomplishment Survival:* Heavily skill-based, the goal is to teach self accomplishment, personal strength and group interaction. Many programs based on this idea have been successful in youth rehabilitation. Example — Outward Bound Schools.

3. *Caveman Survival:* Physical skills emphasize learning to live and become comfortable in the wilderness, utilizing what is naturally found in the wild. Rescue is not a goal, and the programs emphasize inner self and environ-

illustration by Guy D. Whitmer



Reflective
Snow Wall



Fire over snow built
on thick Ponderosa Pine
bark, or green logs.

mental awareness. Example — B.Y.U. Wilderness Survival Schools.

Ranger Attitudes

Our mental image of the park ranger is one who cannot only survive in most hostile environments, but can be looked to by the visitor for help in any situation. Field rangers do little to counter this view and the personal image of ourselves as "danger rangers" is what draws so many into the ranger field. With increased visitor impacts, and possibly learning brought on by experience, our image of ourselves is changing. Educating vs. rescuing is taking a higher priority in our park areas and is a trend park and recreation

management should be embracing.

Planning for Survival in a Wilderness Area: Personal Preparedness

Personal preparedness may be the oldest human idea around, yet it is re-emerging today with new packaging and is being directed toward a broad spectrum of urban, rural and wilderness life. All of us are survival experts in the environments and situations we are familiar with. Survival training is intended to make us familiar with new environments and situations. In a nutshell personal preparedness is the three P's: PREPLANNING, PREPARATION, PRACTICE.

A proper application of the three P's is intended to eliminate the need for emergency skills. If it's planned and prepared for, then it's not an emergency.

Being realistic, no amount of "P's" can eliminate the possibility of emergencies occurring, or the need for emergency services if park and recreation areas are to provide the visitor experiences they were intended. Some areas need to remain wild, and visitors will need the opportunity to test themselves in these environments.

As the diversity of visitor uses increases, our actions in directing and educating the visitor toward safe and fulfilling activities must also increase.



Hikers carrying personal survival kits in their backpacks entering the Supai Reservation Area, Grand Canyon National Park.

Tom Bean

Preplanning

The key to safe and fulfilling wilderness adventures is preplanning. If this initial, key step is missed you may already be in trouble. At the least you may have a miserable trip and may find yourself in a deadly situation with no way to save yourself.

The secret to preplanning is anticipating the possible problems before your trip. Assess the environments you will travel in. Consider not only your destination environment, but the ones you

must enter along the way. You may have packed everything needed for the hiking trip in your backpack, yet fail to make it to the trailhead because your car did not have a spare tire.

Consider being an aircraft pilot. On a short flight of less than two hours you may need to plan for survival in a hot desert, on a snow covered mountain and in the middle of a lake, all possible crash sites. That amounts to a formidable preplanning exercise.

Each environment must be

compared against the four basic needs for living and how you will provide for them. These are: air, water, shelter, food.

A good game to play for preplanning is to set up a table top exercise. Take one of your anticipated problems and make a scenario out of it. Now figure out two things:

1. What could you have done to avoid the problem?
2. Once the problem has

occurred, how could you solve the problem?

I used this as an exercise with an aircraft pilot's class. The class was divided into groups. One group was given the assignment of preplanning for a flight over a described area. Another group was given a scenario where they had crashed in that area and had to decide what to do. The groups were kept separated until they had completed their tasks, then they compared notes. The survival group decided to use some things that the preplanners had not provided, and the preplanners provided some tools that the survival group had not considered. When the information from each group was combined it made for a very complete planning package.

Preparation

Preplanning is of no value if not put into action. If in your preplanning you decided you need to start a physical exercise program prior to your trip, it's of no value unless you do so. Sounds simple? Ask yourself how often you have made good plans but failed to carry them out. All of us have and too often. In a survival situation it could be your last time.

Preparation is a physical and mental exercise. Do you have a CAN DO attitude, or are you prone to quitting? Do you think you can conquer anything, or can you make a reasonable assessment of yourself and your capabilities? This is important if you are to plan and prepare within your capabilities.



U.S. Forest Service employees participating in winter survival training in Kaibab National Forest, Arizona.

Guy D. Whitmer

Who are you traveling with? If you are on a winter trip and might be forced to spend three days and nights with these people in a small tent during a raging storm, could you survive or would you go nuts? Good expedition behavior dictates that everyone be able to take care of him or herself, and share with each other. The group should operate within the capabilities of the least experienced or weakest individual. Proper preparation must include everyone in the group.

Practice

Preplanning and preparation may provide you with a lot of knowledge and equipment, but do you have the skills necessary to utilize them? The only real way to

know is to try it, and try it ahead of time, when possible. Put up the tent and test the stove before you leave. Seven p.m. in a raging storm is a lousy time to learn you do not know how to set up the tent.

The process of preplanning, preparation and practice does not stop once you are on your trip. Environments and conditions change constantly and you may have to change with them. Always reassess situations and use changing conditions to learn and practice. You may have read about using a candle to start a fire with wet wood. Don't wait until an emergency to try it. Build a fire utilizing wet firewood when you're safe and don't need it. Then, should the occasion arise, it won't be an emergency, it will be a practiced skill.

An Educational Goal

If we can instill the idea of personal preparedness in the majority of park visitors and employees, many of our emergency service calls may be eliminated. The difficulty is getting everyone to take simple precautions. Education is our best avenue, and much can be done within the scope of our current operating practices.

First consider our most common education source: posters, brochures and other handouts. By simply reviewing what we currently give out, trying to view it as the visitor views it, we can identify needed information that is missing. Providing brochures and handouts is an excellent way to

start educating, but these publications have two shortcomings.

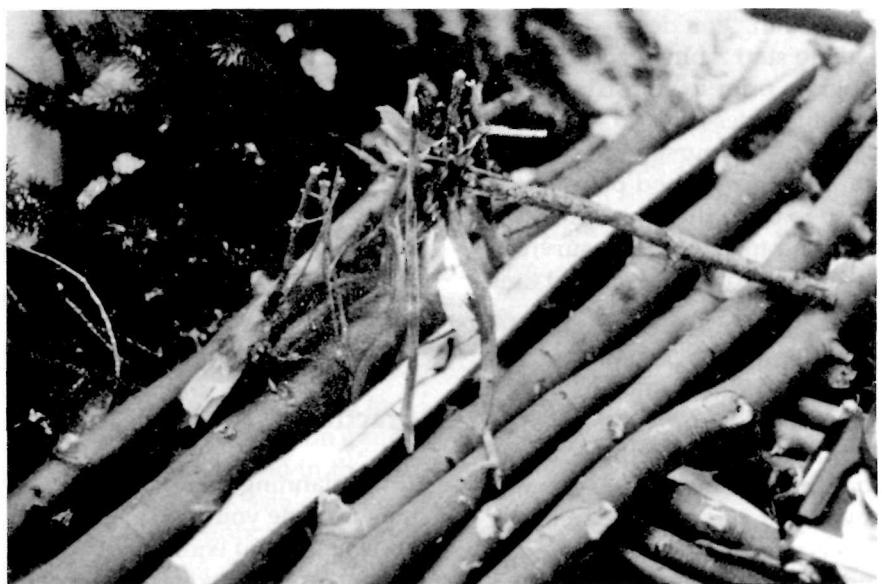
1. We all receive and read too many of them, and visual saturation causes us to ignore most of them.
2. Reading is not necessarily learning — learning requires personal involvement. So, how do we get people personally involved?

The primary survival message in the snowmobile program was that since we routinely operated in a remote and isolated area, we could expect to eventually become stranded. If we were prepared, then it was not an emergency. Assistance could wait for a safe time to help us. No one had to come out in a storm and risk injury to themselves to find us.

That is personal preparedness.



Guy D. Whitmer



Guy D. Whitmer

Guy D. Whitmer is the Assistant North Rim District Ranger in the Grand Canyon National Park, Ariz.

Checklist

The list of what belongs in a personal survival kit can be endless. Depending on what it is to be used for it may consist of a pocket-size metal tin to a full backpack with a tent, sleeping bag, cooking gear and a stove. On my snowmobile, along with numerous smaller items, I carry a snow shovel, snowshoes, a bow saw and two-days' rations. You might want to keep a kit for day hiking down to pocket size, while an emergency kit for your automobile could fill a one gallon metal container. Whatever your kit contains, the items should address the following: water, food and temperature control.

A minimal pocket field kit might contain:

1. Waterproof Matches. Should be wooden, strike-anywhere type. Can be sealed in a thick, zip-top baggie.

2. Plastic Garbage Bag. Minimum 30-gallon size, not odor-treated. Can be used for a rain poncho, solar still or shelter roof. Carry several, both clear and black in color.

3. Food. Minimally can be bulion cubes, tea bags, sugar packets, candy bars. Larger kits can contain military-style ration kits.

4. Tape. Cloth medical tape, duct tape or nylon strapping tape are best.

5. One or more candles. For fire-making in wet or extreme cold conditions, and for light at night.

6. Signal Equipment. Whistle, mirror, smoke flares, pocket size aircraft strobe.

7. Knife and/or Razor Blade.

8. Rope, Wire or Twine. 25'-50' of parachute cord is excellent.

9. Dime and Quarter. For a phone call.

10. All should be contained in a sealed metal container, suitable for melting and holding water. Size can range from a one-pint can, a three-pound coffee can, to a large ammunition box.

Several volunteer search and rescue organizations have begun selling small, personal survival kits similar to the one outlined above. They can be purchased professionally with the organization's name printed on the cover, or home made. Either way the cost is not expensive, and they can be sold for a profit. This helps advertise the organization, can raise funds and could save a life.

ADP Technology Helps Prevent Emergencies

by Richard L. Wilburn



Richard L. Wilburn

Don't wait for an emergency to develop - plan ahead. Have people and equipment strategically located.

Visitors to parks often arrive with a limited knowledge of how to deal with the natural environment. Others arrive in a festive holiday mood and may not recognize or perhaps will ignore conditions that could lead to an emergency. Many visitors will have past experience and assume that they are quite capable of handling any situation that may arise, and of course, some can.

However, there are many visitors who cannot deal realistically with new and threatening conditions, and may find themselves in highly dangerous situations beyond their control. In times of such emergency, these visitors

will look to park managers for guidance and assistance.

There are three basic ways in which we have observed how managers approach the question of handling emergencies. One approach is to train personnel thoroughly in the general skills and knowledge needed to adequately perform in a wide spectrum of situations. Using this concept, we would conduct practice drills in such activities as search and rescue, fire fighting, rock climbing and rescue, river rescues and SCUBA. Our personnel would now be highly capable of responding if a situation occurs.

However, if our preparation

stops here, the approach is nothing more than crisis management. It contributes little to prevention or lessening the impact of the emergency after it is underway.

A second approach may involve training of personnel in a manner similar to the first method - but it does not stop there. Attempts are made to identify high risk locations or potential conditions based on past experience, inspections or visitor reports.

For example: (1) A colored pin is placed on a map of the road system to identify where an accident has occurred. Different colors may be used to specify severity or cause of the accident; e.g., speed.

(2) Inspections are conducted of all structures used for overnight accommodation. Hazards or code violations are identified for each building. Those locations with the highest risk are made known to all persons who may be asked to respond to a fire or other emergency, and practice drills may be held there.

This second approach is an improvement, but it lacks adequate analysis and may fall short in providing management with the key to prevention. Managers need to know not only how many incidents occurred, but also why. What conditions exist that require engineering correction? What alternative means of effecting changes are available that would provide for maximum protection with optimum use of resources?

These first two approaches each have some positive elements. Both reflect management's concern for preparing their personnel and the second reflects some attempts to analyze and preplan for emergencies. However, neither will result in the maximum effort we should seek for efficiency and quality. Neither approach goes far enough in reducing the potential liability levels in the event something goes awry. However, using information from the second approach to locate resources, such as rescue caches or road barricades, may lower liabilities to a degree.

A third and more positive approach to planning for emergencies uses stored data for an in-



Stored accident data is primarily useful for problem analysis.

depth analysis of potential crises. This approach requires a more thorough and controlled inspection and reporting system to ensure that adequate and accurate data is available to managers. It is necessary to clearly identify standard violations and engineering deficiencies in addition to location and cost of incidents. We refer, of course, to the proper use of computers as a management tool to isolate sources of hazards and to assist in identifying proper corrections before the crisis occurs.

Do not fall into the trap of believing that your computer or data information system will make your hard decisions for you. These

information systems that have proliferated in recent years are just what the title implies. Information! The decision is still management's responsibility. However, the proper use of an information system will make your decision-making process easier, faster and will help to assure that you have covered all the basics before acting.

The first basic requirement is to enter the needed data into your system. This will require gathering data, training personnel and setting up forms that are compatible with the need. That is really not difficult to accomplish. You are no



A tree limb within easy reach from the top of the slide is tempting to children to swing from.



Fallen trees should be removed before rolling onto roadway and creating a traffic hazard.

doubt already conducting inspections and preparing written reports, or you certainly should be. You are investigating accidents and preparing reports that identify causes. Many managers have developed systems for collecting employee and/or visitor reports of potential hazards or of near-miss incidents. Information is currently available from a variety of commonly used sources.

Unfortunately, only a relatively few managers make use of the information that is so readily available. In many instances the information is obtained by an inspector or investigator, reviewed by middle management officials and filed. Such information is not made available to top management to be considered in the decision-making process. In other cases, top managers do receive the information, but for a variety of reasons do not consider it of real value and ignore it.

We need to develop an internal communication system that encourages important information to reach the top. Then we should use the information to plan and upgrade efficiency, to prevent losses from accidents, to reduce the potential for liabilities and to be prepared before the emergency arises.

Let us examine some possible applications of this concept for illustration. Most park and recreation managers must deal with trees in the park environment. We all recognize that under certain conditions trees or limbs may fall and endanger people or property. Obviously some locations such as

Kathleen A. Pleasant, NPS

Kathleen A. Pleasant, NPS



Impediment to walkways should be immediately removed.

these over buildings, over campgrounds or playgrounds, adjacent to roads or other facilities are more critical in terms of endangering people. A major issue in determining liability has been the demonstrated use of an adequate program to identify hazard trees and to remove those with a high risk potential. Resource experts can identify the major characteristics of hazardous trees including factors such as the type of tree, types of road system, the potential for hazards to develop, the location, etc. These factors can be value weighted to isolate more pertinent information that can be related to other factors. Regular surveys of the critical locations by

qualified personnel can provide needed data on potential problem trees. The data is fed into the information system from which inquiries can be made for management analysis.

Your information system can provide in ranking order, by location or other factors, comparison data on all the trees entered into the system. Using the pre-established value weighting system, managers can develop an action program to remove limbs or trees in a planned, orderly fashion. This is more efficient and cost effective than to sort the data manually or to use some hit or miss approach and trust to luck

that you find the right ones. Yes, you will miss some, but the demonstrated use of an information system, especially in large areas, is a good defense against claims of negligence. This approach allows for better allocation of funds, personnel and equipment to your overall advantage.

SOHMIS

Another example of the use of data information systems is the National Park Service Safety and Occupational Health Management Information System (SOHMIS). The information from all accidents reported in the parks throughout the country, both visitor and em-

ployee, are entered into the system. Regular analysis of the information is used to isolate any patterns or trends in accidents. It is possible to identify critical accident types, equipment types, work processes - even individuals in which there is an increase in accidents or occurrences of repetition. By using this system it is possible to develop special emphasis correction programs, change processes, re-evaluate work standards, etc., to reduce losses and prevent more serious accidents.

FSES

The Fire Safety Equivalence System (FSES) was developed with the assistance of the National Bureau of Standards to expedite decision making relative to fire safety in buildings. Fire safety inspections frequently isolate several code deficiencies that would normally call for correction. Often these corrections are expensive, time-consuming and may threaten the historical integrity of the structure.

It is also recognized that it is possible to provide adequate safety standards by identifying and correcting key deficiencies rather than attempt to rehabilitate the entire structure. Inspection data is entered onto a form designed to comply with basic elements in the National Fire Protection Association Life Safety Code (NFPA No. 101). Each element is value weighted and given a point score. These scores are entered into a second table with built-in correction factors to obtain a gen-



Attractive nuisances - invitations to adventurous visitors to cross with high potential for falling into stream.

Kathleen A. Pleasant, NPS

Kathleen A. Pleasant, NPS



Kathleen A. Pleasant, NPS



Kathleen A. Pleasant, NPS

Exit directions should be prominently displayed in building corridors.

eral fire safety equivalency per each element. Add to this information the mandatory requirements for minimum safety and enter the scores in an equivalency evaluation form. The resulting scores define if the structure meets minimum standards.

The manager can then examine possible corrections one-at-a-time to see if such correction would bring the score above the minimum safety levels. Often by enclosing a stairwell, providing appropriate fire doors along the egress corridor or installing a partial sprinkler system will override several other less critical deficiencies. This system assists the manager in setting priorities in seriously deficient structures. It assists managers in evaluating alternative means to determine cost effective correction that will provide adequate safety, protect historical values and make the best use of available resources.

The proper use of such information for analysis can be valuable in preventing serious conditions from developing or reduce their impact. Action taken to correct known hazards may keep the emergency from developing. Management has taken control. The end result may be to upgrade efficiency and provide a quality experience for your visitor as well as your employees.

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NRPA Membership
3101 Park Center Drive
Alexandria, Va. 22302
(703) 820-4940

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Protective Equipment

Rawlings Sporting Goods Company
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National Federation of State High School Association
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National Athletic Equipment Reconditioners Assoc.
166 Chandler Street
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