Injury Prevention and Facility Safety

Lifeguards are essential for keeping aquatic facilities safe. Unlike most other professional rescuers, lifeguards are present to prevent emergencies from occurring. Lifeguards focus most of their time on injury prevention, which means preventing situations in which patrons can be harmed. Therefore, an understanding of how injuries occur and how they can be prevented is essential.

PREVENTING INJURIES: PATRON SAFETY

Aquatic injury prevention is a part of the facility's risk management program. *Risk management* involves identifying dangerous conditions or behaviors that can cause injuries and then taking steps to minimize or eliminate them. Even though lifeguarding requires performing emergency rescues, far more time will be spent on preventive lifeguarding—trying to make sure emergencies do not happen in the first place.

Although not all emergencies can be prevented, knowing what causes life-threatening injuries helps lifeguards prevent them. Injuries are either life threatening or nonlife-threatening. Examples of life-threatening injuries include—

- Submersion (nonfatal submersion or drowning).
- Injuries to the head, neck or back (spinal injuries).
- Unconsciousness.
- Breathing emergencies.
- Cardiac emergencies.
- Severe bleeding.

The two most serious aquatic emergencies to prevent are drowning and head, neck or back injuries. *Drowning* happens when a person suffocates in the water. Drowning may result when a nonswimmer enters water that is over his or her head, when a poor swimmer becomes exhausted or when a patron is incapacitated in the water due to a medical emergency, such as a seizure or cardiac emergency. Most head, neck or back injuries result from head-first entries into shallow water. If a victim's head strikes the bottom or the side of the pool, the spinal cord can be damaged and cause paralysis or death.

Nonlife-threatening injuries also occur in aquatic facilities. Examples of nonlife-threatening injuries include—

- Suspected fractures or dislocations.
- Abrasions (scrapes).
- Superficial burns (sunburns).
- Muscle cramps (caused by overexertion).
- Sprains and strains.

Understanding how injuries occur helps lifeguards know how to prevent them by—

- Increasing their awareness of risks and hazards.
- Helping patrons avoid risky behavior.
- Developing a safety-conscious attitude at their facility.

Lifeguards use the following three injury-prevention strategies:

- Communication with patrons
- Facility safety checks
- Patron surveillance (covered in Chapter 3)

COMMUNICATION WITH PATRONS

Communication as an injury-prevention strategy requires lifeguards to—

- Inform patrons about the potential for injury.
- Educate patrons about inappropriate behavior.
- Enforce rules and regulations.

Inform Patrons About the Potential for Injury

Patrons need to know about risks that could cause injury. Signs give them warnings, tell them how to use equipment and list rules and regulations to help prevent behaviors that can lead to injury. Lifeguards also help inform patrons about the potential for injuries. Therefore, lifeguards need to understand the rules and regulations of the facility where they work.

Common Rules and Regulations

Every facility should have rules and regulations posted **(Fig. 2-1)**. The lifeguard's job is to understand these rules and help patrons understand and comply with them. Lifeguards should use a positive approach to promote acceptable behavior. For example, if a patron is running on the deck, the lifeguard should tell the patron to "Please walk."

Pool Rules

- Swimming is permitted only when a University Lifeguard is on duty.
- Bathing suit required. Cut-off shorts are not permitted.
- Children under 16 years of age must be supervised by a parent/guardian/teacher/coach on the deck.
- Soap showers must be taken prior to entering pool.
- Water in closed, resealable plastic containers is allowed. All other drinks, food and glass are prohibited.
- When more than 2 swimmers are in a lane, laps must be "circle swum" counter clockwise.
- Individuals having skin lesions; mouth, nose or ear discharges; or any communicable disease may not use the pool without written permission from a medical professional.
- One person permitted on diving board at a time. A maximum of one bounce is permitted.

PROHIBITED:

- Street shoes on pool deck
- Running or rough play
- Hanging on lane ropes
- Swimming under bulkheads
- Diving into shallow water or areas marked "NO DIVING"
- Back dives or flips from the edge of pool
- Swimming in Diving Area while springboards are in use

Fig. 2-1

Rules do not keep patrons from having fun. They exist for everyone's health and safety, including facility staff. Posted rules help patrons enjoy their experience without endangering themselves or others. Rules should be posted in plain view for all patrons and staff to see. Facilities that attract large numbers of international guests or facilities that are located in multi-cultural communities may also post rules in other languages or use international signs or symbols. Rules posted at aquatic facilities may include—

- Swim only when a lifeguard is on duty.
- Obey lifeguard instructions at all times.
- No running, pushing or horseplay.
- Shower with soap and water before entering the water.
- Dive only in designated areas.
- Proper swimwear required.
- No glass containers in the pool area and locker rooms.
- No alcoholic beverages or other drug use allowed.
- No smoking.

The facility may also have other rules, such as—

- Only members and their guests allowed.
- Nonswimmers and children under a set age or height must be supervised by an adult.
- Children using flotation devices must be supervised by a parent or guardian within arm's reach.
- No personal flotation devices (PFDs) allowed except for U.S. Coast Guard-approved life jackets.
- Patrons may have to demonstrate their swimming ability before entering deep water.
- Extended breath-holding exercises prohibited.
- No weapons allowed.
- No pets allowed in the facility.

Additional rules for waterfront facilities may include—

- No playing or swimming under piers, rafts, platforms or play structures.
- No boats, sailboards, surfboards or personal water craft in swimming areas.
- Dive only in designated areas.
- No running or diving head-first into shallow water.
- No fishing near swimming areas.
- Stay off lifeguard stands (stands are for lifeguards only).
- Keep a clear path between the lifeguard stand and the water.
- No umbrellas at the waterline (umbrellas present a surveillance obstruction).
- No swimming in unauthorized areas.
- Rescue craft and rescue boards are for lifeguard use only.

At waterparks, rules and regulations may also be played as recorded messages. Rules may vary based on

Fig. 2-2

the type of facility and attractions available. Additional rule considerations at waterparks include—

- The minimum or maximum number of people allowed on an attraction or on a tube at a time.
- Patron height or weight restrictions to use an attraction **(Fig. 2-2)**. For example, on waterslides, typically, patrons must be at least 6 inches taller than the depth of a shallow catch pool. A *catch pool* is a small pool at the end of a slide where patrons enter water deep enough to cushion their landing.
- Child height or age restrictions in some areas designated for small children for safety reasons.
- Warning signs that state the water depth in a catch pool. Some catch pools are shallow and patrons can stand up, but others are very deep. Patrons may expect a shallow catch pool and be surprised in a deep catch pool.
- Common rules for winding rivers, such as—
  - Enter and exit the winding river only at designated places.
  - No jumping or diving into the water.
  - No people on shoulders.
  - Stay in tubes at all times.
  - No walking or swimming in the winding river if tubes are used.
  - Only one properly fitted life jacket per patron.
  - No stacking of tubes or life jackets.
  - No forming chains of tubes or life jackets.
  - Only one patron allowed per tube, except for an adult holding a small child. The child must be wearing a U.S. Coast Guard-approved life jacket in case the adult tips over.
- Common rules for waterslides include—
  - No running, stopping, standing, kneeling, rotating or tumbling on the slides.
  - No swimsuits or shorts with metal rivets, buttons or fasteners.

Life Jackets

Anyone who cannot swim well should wear a life jacket if they are going to be in or around the water at an aquatic facility. Facilities may have policies addressing the use of life jackets in a pool, waterfront or attraction—whether or not they can be worn. In some cases, life jackets may be available at a facility for rent or free of charge.

There are several types and many styles of life jackets, and they are rated for their buoyancy and purposes. Swimming ability, activity and water conditions help determine which type to use. For any type, it should be U.S. Coast Guard-approved and in good condition. The U.S. Coast Guard has categorized personal flotation devices (PFDs) into five types:

- Type I—Offshore life jacket

- Type II—Near shore buoyant vest

- Type III—Flotation aid

- Type IV—Throwable device

- Type V—Special use device

The common types of life jackets that are seen at aquatic facilities are the Type II and Type III life jackets. If the facility allows, rents or loans life jackets, the life jacket should be checked to ensure that it is in good condition (no broken buckles, missing straps or torn fabric) and is the right size for the intended user. Size is determined by the weight of the user. Patrons should observe fitting requirements, such as wearing the proper size life jacket and buckling all buckles, facing forward.

Inflatables, such as water wings, swim rings and other flotation devices, are **not** designed to be used as substitutes for U.S. Coast Guard-approved life jackets or adult supervision. Swimmers may go beyond their ability and fall off an inflatable, which may lead to a drowning situation. Inflatable materials deteriorate from sun and rough surfaces, leading to deflation and leaks.

- No eyeglasses, sunglasses or goggles.
- No life jackets allowed.
- No aqua socks or aqua shoes.

Facility Equipment and Structures

There are other rules for specific equipment and structures. These rules depend on the facility and may include the following:

- One person at a time on a ladder.
- Do not sit or hang on lifelines or lane lines.
- Do not climb on lifeguard stands or towers.
- Lap swimmers may use kickboards, hand paddles, pull buoys, masks, fins and snorkels only for swimming in assigned lanes.
- Starting blocks may be used only by swim team members in scheduled practices, competitions and instruction when supervised by a coach or instructor **(Fig. 2-3).**

Diving Areas

Rules for diving boards and towers should be posted in the diving area **(Fig. 2-4).** The rules may include the following:

- Only one person on the diving board at a time.
- Use the ladder to climb onto the diving board.

Fig. 2-3

Fig. 2-4   **DIVING BOARD RULES**
- One bounce on board.
- Jump straight off diving board, then swim to ladder.
- One person on the diving board at a time.
- Make sure area is clear under diving board before jumping.
- No back dives off edge.
- No swimming in the diving well.

REGLAS DEL TRAMPOLÍN
- Solamente un rebote en el trampolín.
- Brinque hacia enfrente del trampolín, luego nade hacia las escaleras.
- Solamente una persona a la vez en el trampolín.
- Asegurarse que no este nadie debajo del trampolín antes de brincar.
- No se permiten clavados hacia atrás.
- No nade en area   clavados

- Only one person on the ladder at a time.
- Look before diving or jumping to make sure the diving area is clear.
- Only one bounce allowed on the diving board.
- Dive or jump forward straight out from the diving board.
- Swim immediately to the closest ladder or wall.
- Dive only when supervised by a lifeguard, swimming instructor or coach.

Spas, Hot Tubs and Therapy Pools

Spas, hot tubs and therapy pools are popular, but their hazards include drowning, hyperthermia (high body temperature) and disease transmission. State and local laws may regulate their operation. Ask a supervisor about regulations governing the facility's spas, hot tubs and therapy pools. Rules common to these areas include—

- Use only when a lifeguard is present.
- Shower with soap and water before using.
- Enter and exit slowly and cautiously.
- People with heart disease, diabetes, high or low blood pressure, seizures, epilepsy or other medical conditions are not allowed to use the spa or hot tub.
- Pregnant women and young children should seek their doctor's approval before using a spa or hot tub.
- No unsupervised use by children.
- Do not use the spa or hot tub while under the influence of alcohol or other drugs.
- No diving, jumping or horseplay in the spa or hot tub.
- Limit time in the spa to 10 minutes. Patrons may then shower, cool down and return again briefly. Prolonged use may result in nausea, dizziness, fainting or hyperthermia.
- No body lotions, oils or sunscreen in the spa or hot tub.
- No food or drink in the spa area or hot tub.
- No exercising in the spa or hot tub.
- Report any safety issues to the lifeguard.
- Remove swim caps before entering the spa or hot tub.

Play Structures

Play structures are common at many facilities and come in many shapes and sizes. Permanent play structures include tube and drop slides, rope swings, sprays, fountains and moving water **(Fig. 2-5).** Removable play structures include floating toys, large inflatables and water games. Follow manufacturer's guidelines for safe operation. Common rules for play structures include—

- Do not let a play structure become overcrowded.
- Only clean, soft toys are allowed in the water.
- No climbing on inflatable play structures on dry land.
- No swimming beneath structures.

Fig. 2-5

If the facility has play structures, extra precautions are needed. Careful observation helps patrons stay safe and keeps the play structures in good condition. Be alert for—

- Some nonswimmers or weak swimmers becoming careless over the excitement of using play structures. They might try things they would not otherwise do, or they might unexpectedly enter deep water.
- Swimmers may be surprised by the fall from a drop slide or rope swing, especially if they did not realize they are over deep water. Watch that they come up to the surface and swim to the side.
- Excited children, who may run, fall and be injured around sprays and fountains in shallow water. A very young child who falls may not be able to get back up without assistance.
- Moving water may cause patrons to lose their balance and fall over.
- Patrons who may jump into the water from floating toys and inflatables without noticing what is around them and land on other swimmers.

Guidelines for permanent slides include—
- Follow manufacturer's guidelines for all slides.
- Enforce age, height and weight guidelines.
- Only one rider allowed on the slide at a time.
- Enter, ride and exit the slide feet-first.
- Keep hands inside the slide.
- No standing or stopping.
- Keep slide entry and exit points clear.
- No metal objects, locker keys, jewelry, metal snaps/zippers, eyewear or watches.
- Station lifeguards at the top and bottom of slides.

Educate Patrons About Inappropriate Behavior

Patrons may be unfamiliar with a facility's features or get so excited that they do not read signs or pay attention to the rules. It is important to let them know what could happen because of an unsafe act. Explaining rules in a positive way encourages patrons to behave safely. The following steps can prevent a patron from engaging in risky behavior:

- Get the patron's attention, for example by blowing a whistle, and say, "Excuse me, but what you are doing is dangerous."
- Explain the hazard or danger, for example, "Diving into shallow water can cause you to hit your head on the bottom and be injured," or "You may slip and hurt yourself if you run." Simply telling them not to do something often does not work. People usually understand and cooperate when they know why something is dangerous.

Using a Whistle Wisely

A whistle is an important communication tool a lifeguard uses for activating emergency action plans and signaling other lifeguards and staff for backup. A whistle is often used to attract the attention of a patron involved in unsafe activity or a rule infraction. A lifeguard should never hesitate to use a whistle as necessary to intervene to prevent or respond to an emergency. However, sometimes a verbal or visual signal will suffice without the accompaniment of a loud blast. Sometimes young children will look at the lifeguard immediately before or after breaking a rule. A lifeguard can frequently correct minor infractions by simply making eye contact, nodding the head or giving an appropriate hand signal. If whistles are used too frequently, patrons may become conditioned to ignore them.
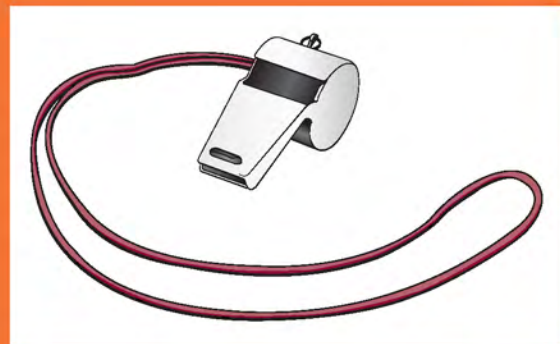
Interacting Positively with the Public When Not Conducting Patron Surveillance

Any time a lifeguard interacts with the public, his or her actions should promote an atmosphere of trust and goodwill. The following general guidelines help develop a positive relationship with patrons:

- Treat people as one would like to be treated. Make every patron feel welcome, important and respected.
- Be professional at all times. Be courteous, mature and responsible. Never insult or argue with a patron.
- Speak clearly and calmly, at a reasonable pace and volume.
- Use appropriate language, but do not patronize or speak down to anyone, including children.
- When interacting with patrons, make frequent and direct eye contact. Remove sunglasses, if necessary.
- Keep interactions brief, direct and firm but pleasant in tone and manner.
- Take all suggestions and complaints seriously, and follow up as necessary. Avoid blaming anyone. Direct complaints to facility management if they cannot be resolved, and follow the facility's procedures.
- It is helpful to repeat the concern expressed by the patron back to him or her. This helps to ensure an understanding of the concern.
- Do not make promises that cannot be kept.
- Enforce rules fairly and consistently. Be positive and non-judgmental. Reinforce correct behavior.
- Take a sincere interest in all patrons.

Nonverbal Communication

Spoken words make up a surprisingly small part of the overall communication. A listener automatically tends to make judgments about the speaker's attitude based on voice volume, pace, tone and pitch. A listener reacts positively or negatively to visual cues or body language. A lifeguard can gauge a person's attitude as cooperative or confrontational by these cues. A lifeguard should be aware that the listener will also be doing the same.

To convey a positive message, even when correcting someone, a lifeguard should—

- Act professional.
- Make frequent eye contact. If possible, remove sunglasses to do so.
- Point to features, such as signs, as they are referred to.
- When speaking to small children, kneel down to be at eye level with them.

A lifeguard should not—

- Pace back and forth.
- Glare at the person.
- Frown, sneer or scowl.
- Point, jab or wag a finger at the person.
- Stand over the person with arms crossed.
- Stand too close to the person.

- Explain a safe alternative behavior or activity. For example, tell them, "If you want to dive, please go to the deep end of the pool, where it is safe." Or say, "Excuse me, diving into shallow water is dangerous and can cause a head injury. Please use the deep end." Or say, "Please walk."

This type of explanation—
- Gets the patron's attention.
- Clarifies the danger.
- Emphasizes the consequences of the risky behavior.
- Offers safe alternatives, if available and appropriate.

Dealing with Uncooperative Patrons and Violence

No matter how fairly lifeguards enforce the rules, they may encounter an uncooperative patron. Before assuming a patron is uncooperative, lifeguards should make sure that he or she hears and understands them.

Uncooperative behavior may occur for different reasons:

- Some patrons let their fun get out of hand.
- Some patrons do not understand instructions because of language barriers.
- Some patrons may be under the influence of alcohol and other drugs.
- Conflicts between some patrons keep them from paying attention to the rules.
- Some patrons do not like to be corrected and get angry and embarrassed.

If a patron breaks the rules and is uncooperative, a lifeguard should take action right away because breaking the rules is a danger to the uncooperative patron and others. Most facilities have procedures for handling uncooperative patrons. If the facility does not have established procedures, the lifeguard supervisor or facility manager should be called for help as soon as possible.

A patron may threaten or commit a violent act with a weapon, such as a knife or a gun, a bottle or another type of implement or even a fist or foot. Lifeguards must be realistic about what can be done in a violent situation. If violence is likely to erupt, the supervisor or facility manager should be called immediately. If violence does erupt, a lifeguard should not try to stop it. A lifeguard should never confront a violent patron physically or verbally nor approach a patron who has a weapon. In such a situation, retreating and following the facility's EAP for violence is the best approach. Safety is still the main goal: safety for patrons and facility staff.

ENFORCE RULES AND REGULATIONS

Enforcing rules helps prevent injuries and encourages safe patron behavior. When enforcing rules, lifeguards must always be consistent and fair. Sometimes the patron may not know the rules at the facility or just does not understand the rules. Enforcement methods that are age appropriate and are approved by the facility's policies should be used.

For example, if there are children who repeatedly break the rules, have them sit out of the water for a set time. Another lifeguard who is not engaged in patron surveillance or a supervisor can read and explain the rules to the children. If the parent or guardian seems uncooperative, the rules should be clearly explained to them as well. If a parent or guardian continues to be uncooperative, a lifeguard should not get into an argument, but rather ask a supervisor or facility manager for help.

Since most people want to be treated with respect, just explaining the rules is usually enough. If someone keeps breaking the rules, however, the patron may need to be asked to leave the facility for the safety of all patrons. This should be done as a last resort. If a patron repeatedly breaks the rules, a supervisor or facility manager may even have to call the police or security personnel. The pool may be temporarily cleared until the situation is over. Every facility needs a procedure for removing someone from the facility. This procedure should have specific steps and guidelines to follow. Any such action should be recorded in the facility's daily log or on the appropriate form or report.

SAFETY CHECKS

Safety checks are the primary method of facility surveillance. These checks may be performed by lifeguards, by others, such as those who are trained to handle facility operations and maintenance, or a combination of both **(Fig. 2-6).** A lifeguard supervisor or facility manager will instruct lifeguards about the procedures for a facility.

Safety checks are conducted before opening the facility, during daily operations and at closing. Several facility safety checks are done each day. These checks may also include a test ride of all attractions before opening the facility. If an unsafe condition is found, it should be corrected, if possible, before the facility opens. If the problem cannot be corrected, a supervisor should be informed immediately. If the condition is serious, the supervisor or facility manager may close or delay the opening of the facility, attraction or area until the condition is corrected. Signs, ropes or cones can keep patrons away from an area of the facility not open to the

Fig. 2-6

Fig. 2-7

public **(Fig. 2-7)**. Other lifeguards should be informed about the hazard so that they can direct patrons away from the area. All such incidents should be recorded in the daily log or on the appropriate form or report.

LIFEGUARDING TIP: Lifeguards should never perform safety checks while also performing patron surveillance. If problems with equipment are observed during surveillance, notify the lifeguard supervisor or another lifeguard not performing patron surveillance immediately so that the problem can be corrected.

Specific Areas to Inspect for Safety

The facility's safety checklist form is the guide for performing a safety check. The general areas and equipment to inspect include—

- Communication equipment and safety equipment.
- Pool decks or waterfront shorelines.
- Pools, waterfront swimming areas or waterpark attractions.
- Locker rooms (dressing areas, shower areas and restrooms).
- Recreational equipment and play structures.

Hazards at Waterfront Facilities

It is important to know the potential hazards at waterfront facilities, such as—

- Underwater hazards.
- Pier formations.
- Changing water conditions.

Dangerous conditions may change with the wind, tides and weather. On some days, the water may be totally calm and flat. Other days, there may be large waves. Potentially hazardous conditions specific to a facility should be covered during orientation. If not, lifeguards should ask facility management to cover any situations for which the lifeguards feel ill-at-ease or not adequately prepared.

Underwater Hazards

Common underwater hazards include—

- Holes in the swimming area.
- Sudden drop-offs.
- Submerged objects, such as rocks, tree stumps and underwater plants **(Fig. 2-8).**
- Bottom conditions (sand, rock, silt, weeds and mud).
- Slope of the bottom and water depth.
- Shells and barnacles.
- Broken glass or other sharp objects.
- Marine life.

If possible, underwater hazards should be removed. If hazards cannot be removed, swimming areas should be positioned away from them. Floating buoys may mark underwater hazards to warn patrons of their danger.
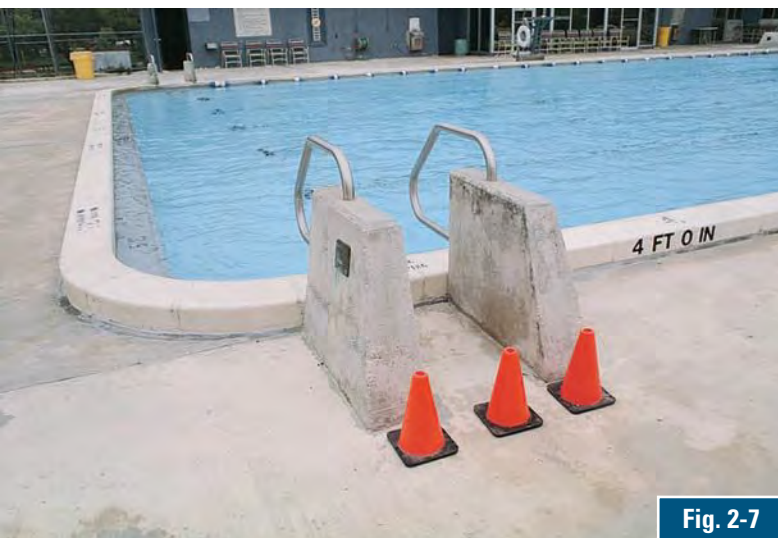
Fig. 2-8

Typical Items Found on a Safety Checklist

All Environments
- Walkways are free of slipping or tripping hazards.
- Sharp objects or objects sticking out are eliminated or isolated.
- Handrails or guardrails are tight and stable.
- Fire exits are clear and accessible.
- Walkways or paths are clear and accessible.
- Doors to nonpublic areas are locked.
- Equipment or chemicals are stored in locked areas.
- All first aid supplies are present.
- First aid station is clean.
- Restroom and public facilities are clean.
- Signs are in good condition and properly displayed.
- Play structures are in good condition.
  - Nonmoving parts on play structures are secured.
  - Removable play structures are tethered properly.
  - Water flows properly on slides.
- Communication equipment, such as whistles, telephones and two-way radios, are in good working order.
- Safety equipment is in proper operating condition and location, including—
  - Rescue tubes.
  - Resuscitation masks.
  - First aid kit.
  - AEDs.
  - Emergency oxygen delivery system.
  - Backboards (including head immobilizers and straps).
  - Life jackets.
  - Lifeguard stands.

Pools, Multi-Attraction Facilities and Waterparks
- Ladders are secured properly.
- Drain covers are secured properly and are undamaged.

- Water clarity is satisfactory. The bottom of the pool, attraction or the main drains can be clearly seen.
- Water temperature is satisfactory.
- Pool is free of debris and algae.
- Water quality is satisfactory.
- Water level is satisfactory.

Waterpark Attractions
For each attraction, visually check or test that—
- Rafts, tubes or sleds are properly inflated and handles are secure.
- Communication equipment, such as light signals, public address systems, telephones and two-way radios, is in good working order.
- Water quality is satisfactory.
- Water flow is satisfactory.
- Water level is satisfactory.
- Water temperature is satisfactory.
- Emergency shut-off systems (E-stops) are working properly.

Waterfronts
- Bottom is free of hazards.
- Shoreline is free of sharp objects, broken glass, rocks and litter.
- Sand in front of and around lifeguard stands is clear of objects that could injure lifeguards when they jump off the stand to make a rescue.
- Piers are stable—no protruding nails, rotting wood and weak or frayed anchor lines.
- Rescue craft, such as rescue boards, rowboats and kayaks, are in proper operating condition.
- Air horns and megaphones are in good working order.

Fig. 2-9

"F" dock formation.
A

"H" dock formation.
B

"A" dock formation.
C

"T" dock formation.
D
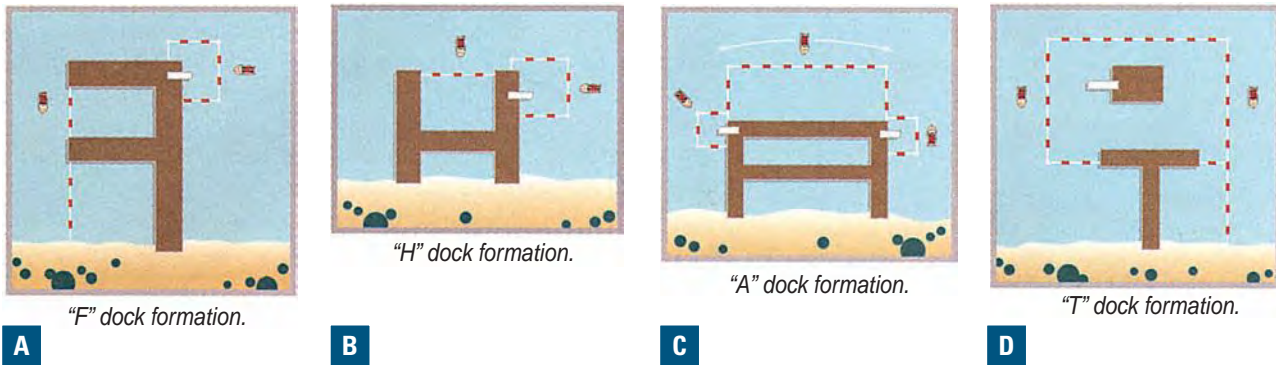
Pier Formations

Piers in the water are often used for different activities **(Fig. 2-9, A-D)**. The following precautions should be taken with piers:

- Ensure that floating piers and rafts are anchored securely.
- Be aware of *blind spots* (obstructed views) caused by piers.
- Ensure that patrons dive from piers only in designated areas. Check the water depth daily. Be aware of bottom and tidal changes before allowing head-first entries.
- Prohibit swimming in fishing areas around piers.

Changing Water Conditions

There are many factors that can influence water conditions, which can also affect patron safety, such as—

- Water depth and currents. Examples include—
  - When a dam releases water, the water depth above the dam drops and the river depth below the dam rises.
  - Heavy rainfall that makes a lake or river rise, or a long, dry period that makes it too shallow for diving.
  - Tidal changes.
- Debris in the water or cloudiness.
- Water temperature, which is usually colder early in the summer and after rain. Although surface water may be warm and comfortable, water at a depth of several feet can be much colder. This condition, called a *thermocline*, can cause *hypothermia* (low body temperature).

When dealing with changing water conditions, lifeguards should—

- Warn patrons of hazards by using signs, buoys and safety announcements.
- Check for objects that may have washed into the area.
- Check for changes in bottom conditions and water depth.
- Alert patrons to cold water, and watch for signs of hypothermia.
- Check and document scheduled high and low tides in the daily log each morning before opening, and plan for depth changes.

WEATHER CONDITIONS

Weather affects the safety of swimmers both outdoors and indoors. Lifeguards should be aware of the weather conditions in their area and know how to act when severe weather occurs. The NOAA Weather Radio All Hazards is a nationwide radio network that provides detailed weather information 24 hours a day to most areas. A special radio receiver is needed to receive the signal and can be set to sound an alarm when a warning is issued for a specific area. These radios have battery back-up in case of power failure. Local up-to-date forecasts and weather warnings are also available from the National Weather Service at *www* . In addition, local radio stations, television channels and cable services also provide forecasts and emergency weather warnings. The facility's emergency action plan (EAP) for severe weather conditions should be followed. EAPs are discussed in detail in Chapter 4.

Lightning and Thunderstorms

Lightning and thunderstorms happen more often in the summer. The facility's procedures for clearing patrons from the water should be followed before an impending storm. Patron safety should never be at risk. If a storm or other bad weather is predicted, stay alert for signs of the coming storm, such as thunder and lightning or high winds.

In the event of thunder or lightning, lifeguards should—

- Clear everyone from the water at the first sound of thunder or first sight of lightning. Lifeguards in an elevated station should get down immediately. Move everyone to a safe area. For outdoor facilities, move everyone inside. Large buildings are safer than smaller or open structures, such as picnic shelters or gazebos.
- Keep patrons and staff out of showers and locker rooms during a thunderstorm. Water and metal can conduct electricity.
- Refrain from using a telephone connected to a land-line except in an emergency.
- Keep everyone away from windows and metal objects (e.g., doorframes, lockers).
- Keep watching for more storms and monitor weather reports on a broadcast radio or weather radio.

Lightning

What Is Lightning?

Lightning is the result of the build-up and discharge of electrical energy. The air in a lightning strike is heated to 50,000° F. It is this rapid heating of the air that produces the shock wave that results in thunder.

A cloud-to-ground lightning strike begins as an invisible channel of negatively charged particles moving from the cloud toward the ground. When one channel nears a positively charged object on the ground, a powerful surge of electricity from the ground moves upward to the clouds and produces the visible lightning strike.

- Lightning can heat its path five times hotter than the surface of the sun.
- One ground lightning strike can generate between 100 million and 1 billion volts of electricity.
- Lightning often strikes as far as 10 miles away from any rainfall. Even when the sky looks blue and clear, be cautious.
- Lightning injuries can lead to permanent disabilities or death. On average, 20 percent of strike victims die; 70 percent of survivors suffer serious, long-term effects.

Lightning Facts

- 25 million cloud-to-ground lightning strikes occur in the United States each year.

Source and excerpts taken from the National Weather Service Web site: *www.lightningsafety.noaa.gov/index.htm.*

The National Lightning Safety Institute recommends waiting 30 minutes after the sound of thunder is heard before resuming activities.

If caught outside in a thunderstorm and there is not enough time to reach a safe building, lifeguards should take the following steps:

- Keep everyone away from structures in open areas, such as picnic shelters.
- Keep away from tall trees standing alone and any tall structures.
- Keep away from water and metal objects, such as metal fences, tanks, rails and pipes.
- Keep as low to the ground as possible: squat or crouch with the knees drawn up, both feet together and hands off the ground.
- Do not lie flat on the ground; minimize ground contact.

Heavy Rain and Hail

Heavy rain and hail can be dangerous. Rain can make it difficult to see the bottom of the pool or beneath the surface. In addition, hail can cause serious physical injury. Patrons should be cleared from the water and directed to shelter.

Tornadoes

If the aquatic facility's area is prone to tornadoes, lifeguards or facility staff should monitor weather forecasts. A *tornado watch* means that tornadoes are possible. A *tornado warning* means that a tornado has been sighted and that everyone should take shelter immediately.

In the event of a tornado, lifeguards should—

- Clear the water and surrounding area.
- Move everyone to the location specified in the facility's EAP, such as a basement or an inside area on the lowest level of a building.
- Keep everyone away from windows, doors and outside walls.
- Have everyone lie flat in a ditch or on a low section of ground, if adequate shelter is unavailable at or near the facility.
- Keep patrons in the safe location until the all-clear signal is sounded, if a tornado siren warning is heard.

High Wind

High wind may cause waves or turbulence that make it hard to see patrons in the water. Wind also increases the risk of hypothermia, especially for small children and the elderly.

Safety guidelines for high wind include—

- Clearing the pool or waterfront if visibility is impaired by waves or increased turbidity.
- Moving all patrons and staff indoors.
- Securing all facility equipment that could be blown and become dangerous, but only if it is possible and safe to do so.

Fog

In some areas, fog can occur at any time of the day or night with changing weather conditions. If the fog limits visibility, the facility may need to be closed.

Weather Conditions and Indoor Facilities

Indoor facilities are safe from most weather problems but still may be affected. Severe weather can cause a power failure; therefore, the facility should have some type of portable or emergency lighting. In cases of power failure, clear the pool and deck immediately. The facility's EAP for severe weather conditions should be followed.

MANAGEMENT AND SAFETY

Just as lifeguards have a responsibility to protect patrons, management has an obligation to protect lifeguards, as well as the patrons they are guarding. Management is responsible for—

- Creating, reviewing and revising a facility's policies and procedures, rules and regulations and EAPs as needed.
- Warning patrons and staff about actual and potential dangers.
- Addressing unsafe or dangerous conditions.
- Complying with local, state and federal regulations for facility operations and employment.
- Maintaining records on the facility and its employees.
- Assisting after an emergency.

Warning Patrons and Staff

Management can help prevent injuries by posting signs, markings and warnings to inform patrons about dangers **(Fig 2-10).** Management must also protect staff members from dangers at the facility by giving specific written and spoken information, as well as protective equipment.

Fig. 2-10

CAUTION SHALLOW WATER
NO DIVING ALLOWED

Addressing Unsafe Conditions

Lifeguards work with management to address unsafe conditions at a facility. Management tells the lifeguards what to check during safety checks. Management relies on the lifeguards to find and report dangers. When an unsafe condition is found and reported, management is responsible for correcting it.

Complying with Regulations

Government regulations protect people. The facility and staff must comply with all regulations. The following sections describe some federal regulations that affect lifeguards.

Age Limitations

Federal and state departments of labor set conditions on the number of hours and the types of tasks that employees under the age of 18 are allowed to perform. The requirements are typically more stringent for 15 year olds than for those 16 and 17 years of age. A facility's policy and procedures manual should cover how these regulations affect a lifeguard's duties relative to those of other lifeguards at the facility.

Hazard Communication Standard

Federal regulations protect people from chemical hazards in and around a facility. For example, the Hazard Communication Standard has rules regarding hazardous chemicals to prevent injury and illness caused by an exposure. Management is required to provide lifeguards and other employees with information and training about the chemicals stored and used at their workplace if their jobs involve handling such items. Each chemical has an information sheet called a Material Safety Data Sheet (MSDS). The MSDS for each hazardous chemical must be easy to find and use. Be sure to know where MSDSs are kept and how to find the information **(Fig. 2-11)**. Employees have a right to know—

- Which hazardous chemicals are in the facility.
- Where those chemicals are stored in the facility.
- The specific dangers of those chemicals.
- How to identify chemical hazards in their facility.
- How to protect themselves and others from being exposed to hazardous chemicals.
- What to do if they or others are exposed to such hazards.

Hazardous chemicals must be handled and stored properly, as specified in the Hazard Communication Standard. Keep unauthorized personnel away from chemical storage areas. Consider all chemical products as dangerous and treat them carefully.

Fig. 2-11

Bloodborne Pathogens Standard

The federal Occupational Safety and Health Administration (OSHA) developed the Bloodborne Pathogens Standard to reduce the risk of disease spreading from one person to another. This standard helps protect employees from contact with body fluids that may contain bacteria and viruses called *bloodborne pathogens*. The facility's management should help protect employees from being exposed to bacteria and viruses that can cause disease and let employees know what to do if an exposure occurs. Chapter 6 provides detailed information on bloodborne pathogens and prevention of disease transmission.

Local and State Regulations

Many local and state regulations also affect the operation of aquatic facilities, such as—

- Lifeguard certification requirements.
- Facility design and safety features.
- Pool capacities.
- Staff training requirements.
- Ratio of lifeguards to patrons.
- Water sanitation procedures.
- First aid equipment and supplies.
- Lifeguarding equipment.
- Diving depths.

Local and state regulations are specific to individual areas. Lifeguards need to learn about those that affect

Recreational Water Illness

When people use pools, waterparks, spas, hot tubs, lakes, rivers and the ocean, they share the same water. If someone is ill, he or she can contaminate the water for everyone who is in it. Contaminated recreational water can cause a variety of illnesses, such as diarrhea or skin, ear, eye and upper respiratory infections. Young children who wear diapers are just learning to control their bowels and are more prone to contaminate the water. These children are more likely to have fecal accidents and, if they are ill with diarrhea, the germs in their stool can contaminate the pool. Once the pool is contaminated, patrons may accidentally swallow the fecally contaminated water, which could make them ill. In addition, some germs, such as *cryptosporidium*, may take days to be killed by chlorine, increasing the risk of spreading illness.

Pool and Attraction Closures

When a fecal accident happens, lifeguards should follow their facility's procedures on how to handle and document such an accident. The facility's procedures should have been developed based on state and local health regulations or the Centers for Disease Control and Prevention's recommendations.

Fecal accidents are a concern and an inconvenience to lifeguards, pool operators and patrons. Carefully explain to swimmers the need to close the pool or attraction in response to a fecal accident for their own health and safety. Understanding that pool or attraction closure is necessary for proper disinfection and protection of the health of swimmers is likely to promote public support rather than frustration. Pool closures allow chlorine to inactivate harmful pathogens and protect swimmers from recreational water illnesses.

Excerpts taken from the Centers for Disease Control and Prevention's *Healthy Swimming*. Available at *www.cdc.gov/healthyswimming*

their facilities. Facility management should provide this information during orientation or in-service training.

Maintaining Records and Reports

Facility management uses a variety of records and reports. They are important for the facility's daily operation. Records and reports at a facility may include—

- Employee schedules.
- Lifeguard rotations.
- A safety checklist.
- Health, sanitation and maintenance records.
- Daily attendance or facility use logs.
- Training records (orientation, preseason and in-service training).
- Water conditions (pool temperature, clarity, chlorine and pH levels).
- Incident and injury reports.
- Time sheets.

Management will help the lifeguards complete the records and reports and will give instructions for how and when to complete them, as well as show examples. It is important that lifeguards fill out the forms on time, accurately and thoroughly. Management then maintains the records and reports, which are used to—

- Give information about equipment, personnel, procedures and improvements.
- Give information about the cause and prevention of injuries.
- Comply with federal, state and local laws requiring information about facility sanitation and maintenance.
- Document incidents.
- Protect the facility and its employees from possible legal actions.

Lifeguards must know what records and reports need to be completed. This will be covered during orientation

or in-service trainings, or they will be located in the facility's policies and procedures manual.

Assisting After an Emergency

Management also has responsibilities after an emergency at a facility. Chapter 4 describes these responsibilities and the support management can provide to lifeguards involved in the incident. After an emergency, management is generally responsible for—

- Closing and reopening the pool.
- Interacting with the media.
- Reporting procedures.
- Helping lifeguards with problems related to the incident.
- Reviewing the incident and addressing any needed changes in operations or in the facility's EAP.

Lifeguards should be comfortable knowing that management is there to support them on the job whenever an emergency occurs.

PUTTING IT ALL TOGETHER

The more a lifeguard understands how injuries occur, the more he or she is able to prevent them. Good communication with patrons is important to help prevent injuries. Patrons should be informed about the potential for injury and educated about the consequences of risky behavior. Rules and regulations should be for safety. These actions will help patrons have an enjoyable experience. To prevent injuries, as many hazards as possible should be eliminated or reduced. Frequent safety checks help to control hazards. Facility surveillance, injury prevention, communication and patron surveillance add up to a good overall approach for safety at a facility.