



Chet Nunley

Many of the armored vehicles used by the United States in Operation Desert Storm were equipped with first-aid dressings specifically designed for treating serious burns.

# Quick Response and Careful Treatment Critical for Victim of Serious Burn

*High-tech burn dressings help first responders safely take the heat out of the burn*

By OH&S Staff

**W**orkplace burns can range from a minor wound on the hand to extensive, third-degree burns that can require long-term hospitalization and cause permanent disability or even death. It is important for workers to understand how to respond to a burn victim, especially in work sites where flammable liquids are present or chemical burns are a possibility.

Victims of severe burn accidents are at risk of many of the same complications that affect other severe trauma victims, including shock, infection and dehydration. Immediate notification of an emergency medical response agency is critical. A related article on the opposite page explains how workers can respond to a variety of workplace burn incidents.

Nothing produces more diverse and terrible burns than war. Armed services medical personnel learn a great deal about burn treatment, and ultimately that knowledge becomes valuable during peace time.

One of the most devastating chemicals encountered in war time is white phosphorous, which is found in many types of ammunition and explosives, as well as many industrial

products. On the battlefield, it is used frequently for illumination, as well as for tracers.

"The problem with white phosphorous is that it continues to generate heat for a long time," said burn specialist Thomas C. Rutan, RN. "It will continue to burn into the skin and into the tissue structure."

Rutan, a senior research nurse at the Shriners Burn Institute in Galveston, Texas, said white phosphorous burns are most common in the military. Rutan served four years of active duty in the U.S. Army.

For a long time, the only acceptable treatment for a white phosphorous burn was to keep it covered with water until a physician extracted the phosphorous. When the water dried up or ran off, contact with air caused the burn to re-ignite. This is a serious problem, especially under battle conditions where water may be scarce or non-existent, and the ability to remove the victim quickly to a treatment facility is severely hampered.

But during Operation Desert Storm, first-response medical staff were able to take advantage of a burn dressing that

has been available to industry for several years.

The sterile burn dressing is made by Water-Jel Technologies Inc. of Carlstadt, N.J. It can be used for almost all types of burns, including burning metals such as white phosphorous.

In their assessment of the burn dressings, the U.S. Department of Defense states that Water-Jel "far exceeds current technologies" for white phosphorous burns. As a result of this, the dressing now is standard issue as part of the U.S. Navy's damage and fire control lockers on ships and submarines. U.S. Marine Corps assault vehicles and battlefield first-aid kits also contain the sterile burn dressings, as do the Army's vehicles and water craft. The product is used not only as a burn dressing, but as a means of escape from immediate fire danger.

**BURNING STOPS.** "The big thing with Water-Jel is that it stops the burning, containing the burn area until you can get them to the hospital," said Bob Harder. Harder is owner of H and H Associates Inc. in Alexandria, Va., which distributes the burn dressing to the Armed Services. "It removes the heat base, and it also keeps that bad area covered, because you still have that burned clothing and other things in that burn area. With a dry covering, by the time you get to the hospital, that stuff has stiffened and coagulated into the wound, and you've got a devil of a time getting it off. With Water-Jel, it covers the burn and keeps the atmosphere from attacking the wound, and keeps it soft and clean."

The basis of the specialized dressing is a combination of a scientifically formulated gel and a special carrier material, Harder said. When it is placed on a burn, it lowers and

stabilizes skin temperature, helping to ease the pain and calm the victim. Because it is bacteriostatic, the covered wound is also protected from further contamination.

Two traditional procedures exist for first-aid treatment of burns: wet protocol and dry protocol. Both techniques have disadvantages. Wet protocol may cause hypothermia and shock from over-cooling, and is not effective after the water has evaporated. Dry protocol does not cool the wound, the victim remains in pain, and the burn may continue to progress.

"Thermal shock is not a problem with Water-Jel, because it has a blanket carrier," Harder said. "It stabilizes the wound without causing thermal shock."

The gel-soaked product, which comes in a variety of sizes from an 8'x6' fire blanket to a 2"x6" sterile burn dressing, is easy to use, store and transport, and requires no special training, Harder said. It can also be used to shield a rescuer and

victim from heat and flames, or to extinguish flames on a fire victim.

One product available for less serious burns is 2ND SKIN, made by Spenco Medical in Waco, Texas. Primarily for first- and second-degree burns, 2ND SKIN Moist Burn Pads are worn like a Band-Aid over the burn, said Debbie Harris, marketing assistant for Spenco Medical. The sterile application is 96 percent water.

"You place it on a burn and it cools and soothes instantly," Harris said. "You can leave it on a burn to protect from re-injury."

For more information about products available for burn care, consult the 1991/92 *Occupational Health & Safety Purchasing Sourcebook*. **OHS**

## A most devastating chemical encountered in war is white phosphorous.

# Treating the Burn Victim

Because burns can be very painful and have far-reaching health effects, proper treatment of the burn victim is critical. The most intense care will come from medical technicians and hospital staff, but there are a few things first-responders can do to lessen the damage of a burn.

"The best advice for the occupational setting is to stop the burning process," said Richard Kagan, MD, associate director of the University of Cincinnati Burn Center. "Don't try to be a hero. Stop the burning, cover the patient and get them to the hospital."

"It depends a lot on the nature of the burn and the size of the burn," Kagan said. "If it's a chemical burn, you would want to dilute it with water so the chemicals lose their potency. You would want to use tepid water. Don't submerge the patient in ice."

"If it's your hand, you can put it in ice and it will probably feel pretty good," he said. "But if it's the entire body below the waist, you don't want to submerge the entire area."

Keep in mind that treatment will vary according to the type of burn and the extent of the burn. In the event of a serious burn, prompt medical treatment is critical.

The following information about burn classification and treatment of burns was supplied by the National Burn Victim Foundation in Orange, N.J.

Burns are classified as first, second or third degree, based on the depth of the burn, with first degree the least serious and third degree the most serious. A first-degree burn may appear light pink to dark pink, and swelling, weeping or peeling may occur. This type of burn can be very painful. Treat it by immersing the burn area in cool

water and soap for a short period. Then keep it clean and dry. Wash four times a day with soap and water.

A second-degree burn may be mottled pink or red to dull white or tan. Blisters may be present or the area may feel dry to the touch. The second-degree burn may also be very painful. This burn should also be treated by immersing it in cool water and soap for a short period. Cover the burn area with clean cloth and seek medical attention. **Do not break the blisters.**

The third-degree burn may appear white, tan, brown, black or deep cherry. Pain is usually not prominent immediately. Cover the burn area with a clean cloth and seek medical attention immediately.

### KNOWING WHAT TO DO MAY SAVE A LIFE

1. If clothing is on fire, drop to the floor and roll to smother the flames. **Do not run.** Cover the area with water. Remove clothing but be careful where material is stuck to the skin. Cut around this area. Seek medical attention.

2. If it is a chemical burn, flood with water. Remove all clothing and seek medical attention.

3. Using ice on burns can be dangerous (drastic lowering of body temperature and direct damage to burned tissue). People with large burns should be kept warm and dry while awaiting medical attention.

4. Treatment of small superficial burns: apply a bland ointment such as Vaseline® or Noxema®. Cover with a sterile gauze bandage.

5. Watch for swelling, redness, pain, heat or any sign of inflammation. Do not wait, call a physician at once or go to the nearest hospital room.