

Quick Response and Careful Treatment

Critical for Victims of Serious Burns

High-tech burn dressings help first-responders safely take the heat out of the burn
By OH&S Staff



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

Workplace burns can range from a minor wound on the hand to extensive, third-degree burns that can require long-term hospitalisation 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 possible.

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 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 peacetime.

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 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.

These sterile burn dressings, are 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 Defence states that Water-Jel "far exceeds current technologies" for white phosphorous burns. As a result of this, the dressings are now 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 Water-Jel sterile burn dressings, so do the Army's vehicles and watercraft. 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 & H Associates Inc. in Alexandria, V.A. It removes the heat base and it also keeps the 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 have 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' x 6' fire blanket to a 2" x 6" 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.