Chapter 8

Civilian Radiation Hazards

The number of nations that have invested in nuclear power and nuclear research is extensive and increasing. With this increase, the potential for US forces to operate in or around areas that have these facilities also increases. Damage to one of these facilities will present unique challenges to US and allied armed forces and the citizens of the host nation (HN). Radiation hazards released into the environment may cause immediate casualties or casualties years later. To safeguard friendly forces and civilians from these potential hazards, peacetime and tactical nuclear contamination avoidance principles must be carefully blended.

If a nuclear facility (power plant, research facility, etc.) is damaged or destroyed, alpha and beta particulants are of the utmost concern. As discussed in Chapter 3, alpha radiation is not considered to be of tactical significance. However, alpha contamination is considered to be of prime importance in peacetime radiation safety. This is due to the alpha particles ability to cause ionization of cells within the body.

Alpha particles cannot be detected with normal tactical radiac instruments (AN/PDR27, IM174, or AN/VDR2). Alpha contamination can be detected only with the AN/PDR56 or AN/PDR60 radiac instruments. These instruments are generally assigned to special teams. These teams, called NAIRA teams (or nuclear accident/incidence response and assistance teams) have the mission to respond to the unwanted or unexpected release of radiological material into the environment.

Beta particles are also of concern. These particles may cause skin burns, similar to sunburn, or cause internal damage to the body. Furthermore, beta particles can cause damage to the eyes, normally manifesting itself as cataracts later in life.

To minimize the effects or hazards resulting from the damage or destruction of a nuclear facility, prior planning must occur. When friendly units are required to operate in an area where such a facility exists, the chemical staff must accomplish the following:

- Coordinate, through G5/S5, with emergency response teams. These teams may be from the host nation government, armed forces, or from the nuclear facility itself.
- Identify what radiological source material is present and what type of contamination it will emit (alpha, beta, gamma, xray, or neutron).
- Coordinate with the divisional radiation protection officer (RPO) for technical assistance.
- Coordinate with higher headquarters and the host nation to identify available NAIRA teams, technical escort units, or similar civilian agencies to assist if required,
- Establish evacuation procedures for noncombatants.
- Identify a chain-of-command for supervision and coordination of the clean-up effort.

The following steps should be taken immediately by the tactical unit within the area of a civilian radiation hazard:

- Notify higher, lower, and adjacent units.
- Start continuous monitoring. Although tactical units will not be able to detect alpha, continuous monitoring with an AN/PDR27 or AN/VDR2 with the beta shield open may provide a form of monitoring.
- Secure the area around the facility. Establish a security perimeter of 620 meter radius around the sight, until relieved by appropriate response team or military police.
- Attempt to evacuate casualties without endangering personnel to the needless exposure to ionizing radiation.
- Personnel operating in and around the site should wear protective masks to protect the respiratory tract from the inhalation of particulants and to protect the eyes from beta radiation.