

# Mine-risk Education and the Amateur Scrap-metal Hunter

In many countries where landmines and unexploded ordnance threaten populations, people ignore warnings about these hazardous explosives to collect explosive remnants of war for the valuable scrap metal they contain. The author discusses a program proposed by the Golden West Humanitarian Foundation to manage this dangerous practice.

by Allan R. Vosburgh [ Golden West Humanitarian Foundation ]

Much money, time and effort have been invested in conventional mine-risk education. UNICEF defines mine-risk education as “a process that promotes the adoption of safer behaviors by at-risk groups and links affected communities and other mine-action components.”<sup>1</sup> The problem is this “process” doesn’t always work as well as we hope. The Cambodian Mine/UXO Victim Information System reports that in August 2006, 35 new landmine/UXO victims were recorded in Cambodia.<sup>2</sup> Out of these 35 casualties only one victim had not previously received MRE. <sup>2</sup> This data is consistent with previous reports as well.<sup>3</sup> That means 97 percent of victims had received some sort of conventional MRE prior to being killed or injured by landmines or unexploded munitions. If 97 percent of drivers involved in crashes had recently completed drivers’ training, we might begin to question the overall effectiveness of that training. In Southeast Asia, despite some reductions in casualties overall, the fastest growing at-risk groups are those involved in scrap-metal collection.



These numbers certainly do not mean we should abandon efforts to educate the population about avoiding death and injury from mines and UXO. On the contrary, what it may suggest is new ideas are needed to address specific types of hazards and categories of potential victims, particularly amateur scrap-metal collectors.

According to reports by the Cambodian Mine/UXO Victim Information System, 353 people were injured or killed between January and August 2006 in Cambodia.<sup>2</sup> Of these casualties, 62 percent were men, 8 percent were women, and 30 percent were children under 18 years of age.<sup>2</sup> Fifty-eight percent of the casualties were people injured or killed by UXO and 42 percent by landmines.<sup>2</sup> These numbers indicate a disturbing trend in which casualties are increasing despite greater efforts to eliminate threats. This trend also exists in Vietnam, Laos and other areas. We think it points to an underlying problem—collecting scrap metal is the new growth industry in these countries.

The Golden West Humanitarian Foundation has taken a pragmatic approach to MRE, generalizing it to become ERW threat-indicators education.<sup>4</sup> We strongly support education but believe the best way to prevent deaths and injuries is to use education as one element in a program designed to eliminate the ERW threats as quickly as possible.

## Sneaky Devices

In central Vietnam and Laos, many deaths or injuries are caused in particular by unexploded cluster submunitions or 40-mm grenades. These unstable, long-lasting munitions are a widespread hazard, frequently concealed by tall grass or shallow dirt. Not only are they hit by farmers’ hoes or plows, exploded when fires are built on top of them and irresistible to children, but these dangerous munitions are often the very devices scrap-metal collectors intentionally gather, disarm and sell.

In addition, unexploded mortar projectiles can be a threat. Mortar projectiles come in a huge variety of sizes and contain a number of different fillers. In Vietnam, mortars can be found from 60-mm to 160-mm. Fillers may include different types of high explosives, white phosphorus and other smokes and flares. Fuzes may incorporate proximity devices, or use impact, powder-train or timing mechanisms for initiation. Unfortunately, once the paint and markings are weathered away, it is often very difficult to positively identify the type of filler and, therefore, the explosive threat. Mortars can be small, easy to move and less intimidating than artillery projectiles and bombs. They can also be deadly.

These munitions, submunitions and grenades share a single deceptive characteristic that can lull victims into a false sense of security: inconsistency. They often fail to fully arm and detonate due to a critical and permanent mechanical fault in their arming or firing mechanism. However, at other times, the fault may be minimal, allowing arming but preventing firing. In these cases, items of UXO may require only heat, shock or friction to detonate—sometimes years later. Firing mechanisms are complex and designed to accept input from almost any direction. Because these munitions are so often damaged and prevented from functioning, people come to believe they are harmless. When a civilian picks one up and it doesn’t kill him or her, that person is more likely to pick up the next one. However, the next munition or the one after that may detonate without warning, killing or seriously injuring both the person who picked it up and anyone nearby.

## Challenges to Conventional Mine-risk Education Practices

So what might the problem be? Why would anyone who has received training pointing out the dangers of interacting with munitions intentionally do it anyway? Is there something about the training that makes it ineffective? Are there other factors at work that overcome the warnings? Are there ways to enhance the training to make it more effective? The answers to these questions are complex and there are no easy solutions.<sup>5</sup>

Most programs engaged in MRE recognize that people are frequently injured by

dentally trigger explosions in the process of their daily work, but those most resistant to behavioral change are scrap-metal collectors.

Scrap-metal trading has become a well-entrenched part of many local economies throughout Southeast Asia. Scrap-metal collectors engage in their dangerous trade for a variety of reasons, but most say they simply need the money they earn from its sale. Studies have shown people are generally well-aware of the dangers they face, but feel compelled to continue the dangerous activity due to the pressures of poverty.<sup>6</sup> They often report feeling they have no choice.

## The Solution

The apparent failure of various kinds of education to change this risky behavior signals a need for a change in our MRE approach. Perhaps instead of spending all our energies trying to eliminate risky behavior, we should be trying to find new ways to make this inevitable behavior safer. This proposed approach will undoubtedly find many opponents who feel we are simply encouraging more risky behavior; however, at Golden West we believe in taking a pragmatic approach to behavior that we think will continue with or without our intervention.

Golden West believes we can successfully combine our experience with Explosive Remnants of War Indicators Programs and our popular Explosive Harvesting System into a concept that addresses the growing number of scrap-metal-related casualties. Educating people and providing a more robust explosive ordnance disposal response to ERW reports will hopefully encourage the public to make more reports. Rather

to use training to eliminate threats from the most dangerous items (primarily submunitions, grenades and mortars), there might be ways to develop an exchange system for the less hazardous ones.

## A New Response to Scrap-metal Collection

In this concept, expanded explosive ordnance-disposal teams respond to UXO reports from civilians, assess the threat and return harmless items to be sold as scrap. For questionable items that cannot be safely turned over, a fee equal to the weight of the useable metal would be paid by the team to the finder. These items would be transported to a small explosives-processing facility for treatment (when feasible) and the metal parts sold to reimburse the program. UXO deemed too dangerous for movement would be destroyed in place by the safest method possible. Recovered items deemed unsuitable, too dangerous for processing or lost during treatment would be considered a program cost.

A blow-in-place procedure for small items (like individual submunitions or grenades) can use field-expedient<sup>7</sup> damage-mitigation methods such as Mr. BIP.<sup>8</sup> Larger items may be controlled by ditching, sandbags or water. Whenever possible, items will be moved away from occupied areas prior to any procedures being initiated.

Under this concept only simple render-safe procedures will be applied; no complex procedures will be attempted and absolutely no procedures that include any degree of risk to operators will be conducted. Safety will never be compromised in the interest of scrap metal. Only items the senior EOD

Status*	Action	Reimbursement	Disposition
No hazard: contains no explosive	None	None	Turn over to finder for sale
Extreme hazard: fused and contains explosive (do not move)	Blow in place or move remotely and BIP	Market price	Destroy on site
Dangerous: fused and contains high explosive (transportation hazard)	Attempt render-safe procedures (when feasible)	Market price	Treatment facility or BIP
Dangerous: no fuze and contains high explosive (no transportation hazard)	Transport to safe holding area	Market price	Treatment facility

\* As determined by EOD only.

Table 1: Examples of options for different threats.

UXO they **knew was there**. As the numbers from Cambodia show, successful completion of an MRE program is no assurance one will not fall victim to a mine or item of UXO. Many victims are children who play with munitions or dangerous munitions components (e.g., fuzes) near their homes or schools. Farmers or woodcutters often acci-

than spend resources trying to discourage behavior we know is happening, why not try a new approach that may make the process a little safer?

Furthermore, might we do even more in an effort to reduce casualties and actually establish training and procedures facilitating safer scrap collection? If there was a way

Team Leader considers safe to transport will be moved off the site. These items will then be independently inspected by EOD personnel prior to being brought into any safe holding area.

Reimbursements will be established as a reward system for reporting and leaving items undisturbed, and as a safe means for

people to obtain needed money in exchange for suspect items. There will no longer be an excuse that they had no choice because we are providing a choice. People do not need to endanger their families, neighbors or themselves to make a little extra money.

The senior EOD Team Leader will be provided with small amounts of cash to do on-the-spot reimbursements for dangerous items removed by the team. Scrap resulting from processing of munitions will be sold and any profits reinvested in the program. Any recovered explosives will be used to support disposal of other unusable munitions. There will be a strict system of accounting for funds. The physical inventory of munitions in the program's safe holding area validates the expenditure of funds. Despite the closed-loop character of the concept, there is no expectation that this will be a balanced system; that is, the investments will never equal the profits from sale of metal.

A munitions-treatment facility should be located in a remote area with plenty of buffer zone in all directions. Barricades will be field-expedient: locally produced and using rubber tires filled with sand or sand-filled concrete pipes; no permanent facilities will be constructed. Disposal tools will be remotely operated and procedures monitored via closed-circuit TV. With some modification, many of the tools and procedures used by the Golden West Explosives Harvesting System may be appropriate for use in the demilitarization facility. When fuzes cannot be safely removed, projectiles can be cut behind the

booster or fuze well. Once the forward part of the projectile is removed, the explosive can be steamed out and the forward, fuzed portion burned in a portable demilitarization furnace. Once the explosive charge is removed, the metal is added to the scrap to be sold. No fuzes containing primary explosives will be held and all will be treated with heat or destroyed by detonation.

The key to this program will be well-trained, competent EOD and demilitarization personnel. They must be willing to submit to a stringent training and quality-assurance/quality-control program and concentrate on safety at all times. All the skills needed to make an EOD team effective can be taught or reinforced by this program. Large areas of land can be cleared of the most dangerous items in fairly short order by these teams. While the teams will do no subsurface clearance past shallow-buried bomblets or projectiles, the surface clearance will pay big dividends.

### Conclusion

Despite repeated warnings and dedicated MRE programs, casualties from scrap-metal collection continue to increase. It seems warnings aren't enough and high-risk behaviors like collecting scrap metal must be addressed by either technical or economic solutions. This proposed program combines these two elements and helps address root economic issues through the application of new technologies and incentives. The concept includes provisions for assisting scrap dealers who currently traffic in dangerous munitions. The program may also help eliminate the illegal collection and use of explosives for fishing or other illicit purposes. It certainly is not a total solution, but it may begin to reverse the climbing rates of injuries and deaths resulting from the scrap-metal business. Costs of this program could easily be offset by real reductions in the fiscal and societal costs resulting from scrap-collection-related deaths and injuries. Golden West will develop and implement this program when funding is secured. ♦

*See Endnotes, page 110*

## News Brief

### Finding More than Honey with Bees

Buried within the US\$468 billion appropriations bill for the U.S. Department of Defense's fiscal 2007 budget is \$5 million for a new military tracking system—honey bees. The project would train honey bees for a variety of military and commercial uses, including finding landmines and other buried explosives.

Researchers at the University of Montana and Montana State University claim the bees can be monitored via a laser-tracking system. With further development, the bees may be able to detect more than just landmines and buried explosives—researchers believe the bees may also be capable of finding methamphetamine labs, dead bodies and other hard-to-detect items.

Still, the primary focus of the honey-bee experimentation is on the discovery of explosives because bees are very attuned to the scent of TNT and similar material. Recognizing the acute sensitivity of bees' antennae to different molecular compounds, scientists have studied the bees' reaction to the scent of food and, through a Pavlovian technique, trained the bees to react positively toward the scent of dangerous materials. Funding for honey-bee programs is difficult to secure, and the technology still is not in a marketable form.



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