Three major failings of the ICBL

Andy Smith

It was probably during a heavy session that a collection of idealistically rogue egos agreed that it would be a really good idea to ban the use of indiscriminate weapons. WOW, they thought, that really would be so cool (yes, they are that old). After dismissing nukes, barrel bombs and cruise missiles as being too big to get a handle on, they squabbled down to the one weapon that no one wanted to be killing their children after the war was over. Anti-personnel land mines were a good choice because many in uniform agreed that the expression “Time Elapse Collateral Damage” was a little ugly.

So the International Campaign to Ban Landmines was born. In those days, its drivers were idealistic enough to refuse a Nobel prize unless Kissinger returned his first. The buy out of an unsettling ideal is an old establishment strategy. It does not even have to be deliberate, just the way that campaigns evolve. In the end compromise, common sense and the promise of an unanticipated respect won the day. The idealists became professionals, haggling over salaries and career paths in a way that amused the establishment they had so wanted to oppose.

Happy children who can play in safety are one reason I have always supported the campaign. When I hear critics deride it because the major mine producing countries have yet to sign up, I point out that 80% of countries have signed up, so the market for this weapon has gone. Without the campaign, that would not have happened. This really is an unexpected achievement.

But in its preamble, the Ottawa Convention states that its aim is to put an end to the suffering and casualties caused by anti-personnel mines. The deminers are our means to do this, and I cannot understand why the campaign has neglected to show concern for the innocent deminers who are injured putting the idealism of the campaigners into practice.

The three Failings

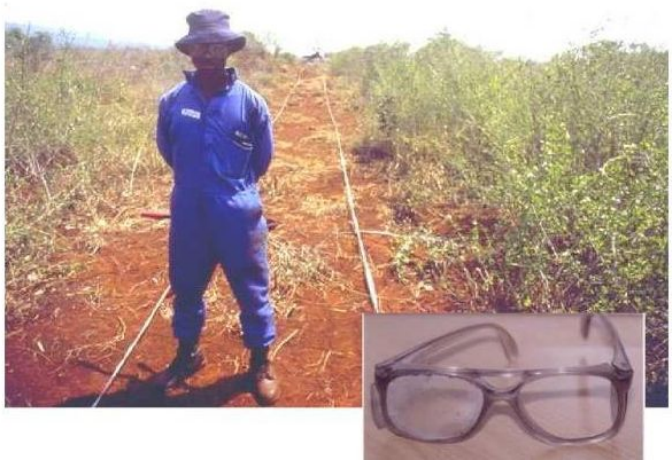
1) Failure to extend the humanitarian outcome to the essential process – so failure to insist on the obvious fact that humanitarian demining should be conducted in a humanitarian way.

2) Failure to campaign for disabled deminers to be provided with the means to live with dignity.

3) Complicity in the myth that each year “efficiency” can be increased without recognising that increased speed compromises the safety of both the agents we are employing to clear the explosive hazards and the end-users of the land that we “release”. Campaigners seem to have forgotten the primary goal that originally elicited widespread public support for the ICBL. That goal was not a country meeting an Ottawa Convention deadline. It was the prevention of civilian injury – and that includes injury to our deminers.

When the ICBL first started....

I had already had a go at demining and my main interest was in promoting the safety of the deminers. Methods of demining were being developed that differed greatly from military demining but the actual work was uncontrolled and quality was varied, so I became heavily involved in the development of standards, always with a concern for the safety and welfare of deminers.



This is what the UN Accelerated Demining Programme in Mozambique issued as protective equipment to deminers in 1996: a cotton overall and some $1 industrial safety glasses.

Their equipment included a detector that could not find the minimum-metal mines and hand-tools that broke up in an accident and caused severe injury.

… so severe injury and death were seen as unavoidable occupational hazards.

There is something fundamentally wrong with that view. Humanitarian deminers should be the safest people in a country – because they should always know the area they walk on has been searched, and because they should know how to expose and destroy mines safely.

Naïvely, I thought that if we knew what was going on when accidents occurred (and the injuries that resulted) and if we knew which mines and munitions were involved in the accidents, then we could select demining tools and procedures that avoided accidents or made injury less likely. This still seems obvious to me today. Where I was naïve was in not realising that the leaders of the evolving demining industry would quickly reach the point where they did not want to know their mistakes.

So I innocently started to gather accident reports and record them in a database.

I started this database in 1998 and first published it in 1999, giving it away free of charge. It proved a very useful resource when we were drafting the first International Mine Action Standards (IMAS) and setting minimum standards for protective equipment, marking and search & clearance itself.

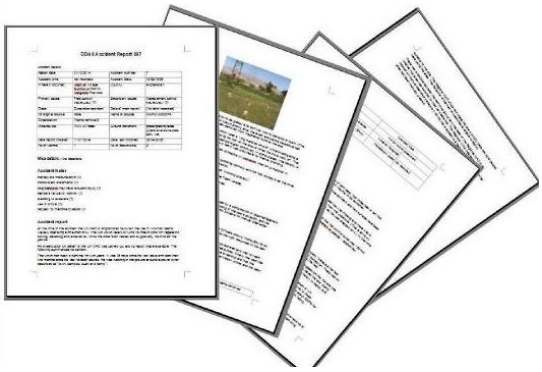
The database now contains records of about 1100 deminer victims. In most cases there is enough detail in the accident reports to have a clear idea of what was going on and so begin to understand what happened and why.

Demining groups with a good Quality Management system will investigate an accident and write a report that is honest and self critical so that they can avoid repetition. It is a requirement of the IMAS that these reports should be shared, but that does not often happen. Most reports in the database are only there because I went to someone's office, smiled benignly and asked for them.

In 2011, when I left the IMAS Review Board, GICHD began an alternative database of demining accidents named RAPID. GICHD took all of the detailed records in my database and reduced them to a few words, then UNMAS instructed UN Mine Action Centres not to let me have their accident data.

Accident ID	Cause	Date	Time	Device type	Device name	Ground	Soil compaction	Area type	Mine action activity type	Land class	Demining asset	Victim ID	PPE issued	PPE worn
7	Staff negligence, Procedure failure, Supervision failure, Equipment malfunction	Mar 10, 1998		AP	PMN AP blast	Unknown	A (soft)	Unknown	Unknown	Unknown	Manual excavation/ Raking	Victim 17	Half-Face Visor	Unknown

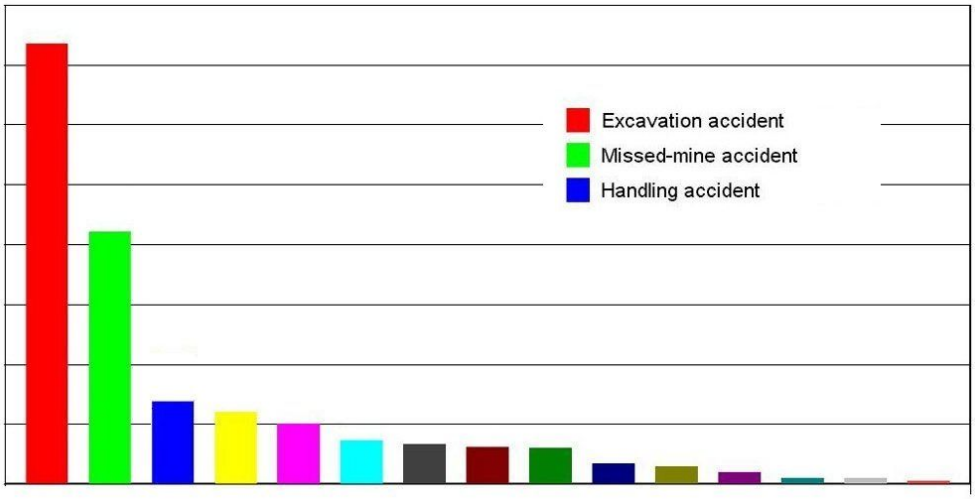
The above is a randomly selected RAPID database entry.



And this is the original record. The 2000 word report in my database has been reduced to 25 words, some of which are wrong. For example, a “half-face visor” was not used. This was a helmet mounted visor. Also, the data entry clerk does not discriminate between excavation and raking – despite the fact that a significant safety difference is demonstrable using the detailed database.

During 2014, GICHD added 22 accident records to RAPID. In all of them, data about the PPE used, the tools used, and the circumstances surrounding the accident was not recorded. To keep a record of accidents without keeping a record of anything of value is unprofessional. Because you cannot derive any useful information from the RAPID database, researchers still ask me for details from what they call the Real Database (and yes, even people from GICHD have been obliged to ask me when they want detail).

A Real Database has many uses.



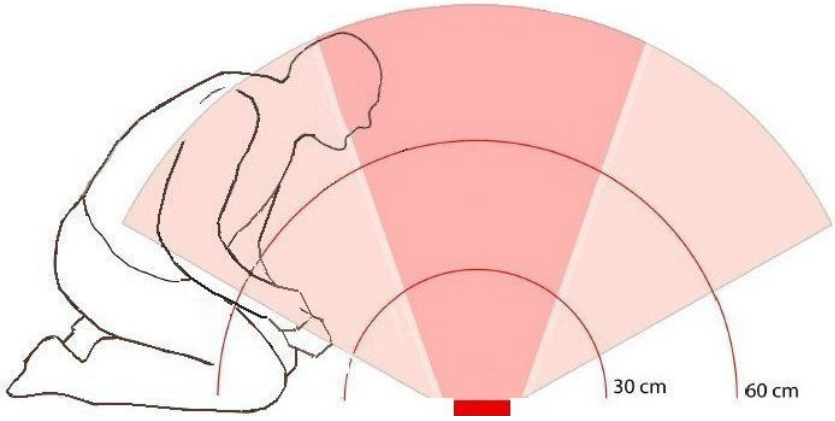
This shows the ratio of accident classifications during all recorded accidents in the Real Database. The most common activity by a long way is excavation. “Excavating” is either investigating a metal-

detector signal or conducting area-excavation by removing the ground surface, which is done in the rake clearance system which was first widely adopted in Sri Lanka.

The next most common accidents are missed-mine accidents when a deminer steps on a missed mine or pressure sensitive munition. Then, far below this are handing accidents which occur when moving, disarming or destroying a mine.

The bar chart covers all accidents in the database. If it only covered the last five years, the difference between excavation and missed-mine accidents would be even greater because there are fewer missed mine accidents these days. The database is detailed enough to show that this is because the metal-detectors have improved and because the deminers are better trained.

In most excavation accidents the deminer is kneeling or squatting when the mine explodes.



This picture shows the approximate distances at which there is a major risk. The shapes are estimates and vary according to the mine and its position in the ground. The effects also vary according to the hardness of the ground. But the accident data shows that this drawing is broadly accurate even for the larger anti-personnel blast mines like the PMN.

The darker red area is the area of greatest fragment risk. These are fragments of the plastic mine-casing or of the ground above and around the mine. The lighter area is an area of high blast-wave velocity. If the deminer's hands are closer that 30cm to the mine, there is a proven risk that the force of the blast wave will often destroy flesh or remove fingers.

Severely disabling injury

I define a severely disabling injury as one that results in permanent disability, such as loss of fingers or hands, or loss of eyesight.

When you know that most demining accidents occur with a deminer on his knees it is no surprise to find that the most common severely disabling injuries are in this order:

Fingers, hands and arms;
Eyes, face;
Lower leg and feet;
Upper legs;
Body.

A deminer who loses the use of his hands or eyes often has no future. I know of four cases when the deminer has committed suicide, and suspect that this is not infrequent. Every severely injured deminer is a drain on their family and on the medical and welfare resources in the country where they live. So there are many reasons to make it the highest priority that our deminers never suffer severely disabling injury.

Hand injury

In excavation accidents amputation of fingers and the complete destruction of the hand is common.

In many cases, part of the damage is caused by the hand-tool breaking up and slicing the man's hand. Traumatic hand and lower arm amputation also happens. Sometimes the whole arm is lost when parts of the deminer's tool hits the limb higher up. Because an upper arm wound is not close enough to the explosion to get a high temperature flash - upper arm injuries are not cauterised by heat and so bleed freely. Blood loss from upper arm injuries has led to the deaths of several deminers… From which one can reliably infer that the use of tools that do not break-up in a blast would reduce severely disabling injury and death.

Eye injury

Eye and face injury go together but usually the deminer's face can be repaired with plastic surgery. Nothing can be done when an eye has been destroyed.

The eye is full of fluid and is easily penetrated. A hot fragment entering it will kill the tissue it passes through. The dead material is a liquid so it is hard to surgically remove because it can move around. After tiny and hot fragments have penetrated, infection is common. Unless the burned material can be removed, the deminer is likely to lose his sight and may lose the whole eye.

And blast can mangle the face. This man was excavating a PMN with his visor raised. Instead of protecting him, it is likely that the visor concentrated the blast onto his face.

This is what this 19 year old deminer looked like after surgery. Few deminers die because of facial wounds.

Most of his face has now healed but nothing could be done about his eyes.

In case you think these are historical images, this deminer suffered loss of fingers and the loss of his eyes in July this year.

Lower legs and feet

The next most common severely disabling injury occurs to lower legs and feet. Using the database records we can know that they occur for two main reasons. Either the deminer's metal-detector search failed (because the detector or the search method was inadequate), or there was inadequate marking in the minefield and the deminer stepped outside the safe area without knowing it.

Stepping on mines causes a wide range of injury – as you would expect with the explosive inside anti-personnel blast mines ranging from 28g to 300g. On the right is a surgical amputation taking place. Even though the damage to the foot may not look too bad, amputation is necessary because the shock wave from the explosion can turn bone to powder and disrupt the flesh, bursting cells. If the foot were left, it would be certain to die and poison the deminer's blood..

This deminer stepped on a PMN. He was leaning forward and lost the front of one foot, the blast destroyed the knee of the same leg and severely damaged his genitals. This man then fell forward onto a second mine and was killed. There was no marking at all in the minefield where this happened.

The larger anti-personnel blast mines can cause so much damage to the deminer's other leg that both feet must be amputated.

In all of the photographs used here, the victim was working for an internationally respected demining group. In all but one of these, the organisation is run by people who think that severely disabling injury is an occupational hazard that cannot be avoided.

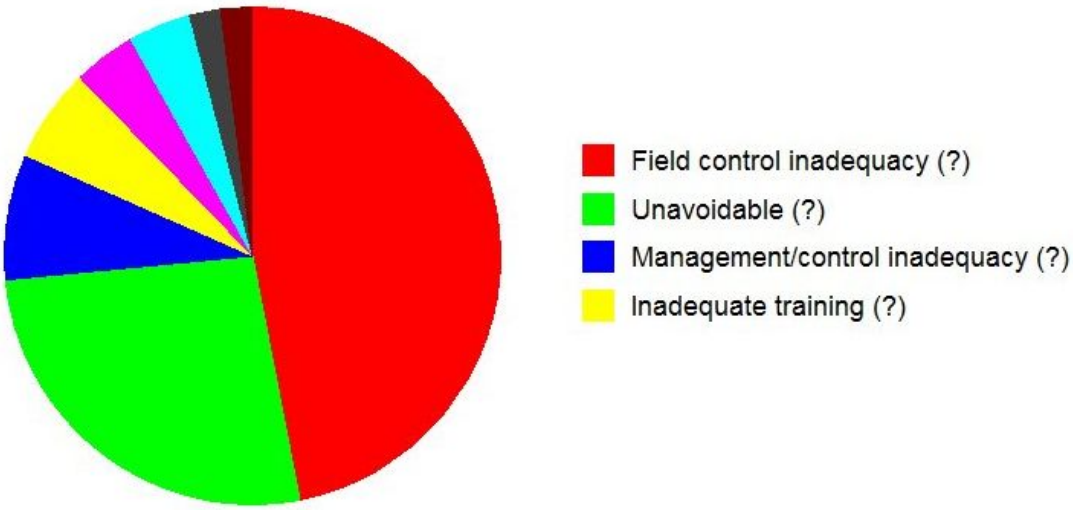
How to prevent severe injury...

The aim is not to prevent every accidental detonation occurring. It is to prevent severe injury happening if there is an accidental explosion. This can be achieved by ensuring that we use safe demining tools and procedures. If the deminers are well trained and equipped, this should mean that a detonation does not happen. As a secondary measure, because we can all make mistakes, we provide appropriate Personal Protective Equipment (PPE).

But to know what is unsafe, the industry must keep a good and detailed database of accidents and use it effectively to identify causes and rectify shortcomings.

The Real Database provides help when assessing the causes of accidents.

Primary cause of accidents



The most common primary cause of accidents is a field control inadequacy. This means that the deminer was not working in the required way but the error was not corrected by the supervisors. Some demining organisations have sacked the supervisor when the deminer works in a way that is not approved, most blame the victim. That's easy and he is usually too befuddled to argue.

The second primary cause is listed as "unavoidable" because it seems that the deminer was working in the approved way with the approved tools and still an accident occurred. There are many excavation accidents in this category because excavating a mine in very hard ground is difficult to do safely, but in many of these accidents the tools and procedures being used were unnecessarily dangerous – and no correction was made – so they were only nominally 'unavoidable'.

The third greatest cause is a "Management control inadequacy". This cause is assigned when the management do not provide appropriate equipment, supervision, or Quality Management oversight. After that is "inadequate training", when the deminers do not know how they should be working or how to use the equipment they are given.

By investigating accidents thoroughly and honestly, those in charge of the demining could usually find ways to prevent the same accident happening again, but this rarely happens.

Protecting deminers

When everything possible has been done to ensure the use of safe procedures, the final protection is the Personal Protective Equipment (PPE) we give the deminer.

The International Mine Action Standards (IMAS) say that the minimum PPE shall be:

> "Ballistic body armour capable of protecting the chest, abdomen and groin area against the blast effects of 240 grams of TNT at 60 cm from the closest part of the body.
>
> Eye protection that is held over the eyes in a frame that prevents blast entry from beneath. The eye protection shall provide protection equivalent to 5 mm of untreated polycarbonate. It is recommended that eye protection should providing full frontal coverage of face and throat.
>
> Hand tools should be constructed in such a way that their separation or fragmentation resulting from the detonation of an AP blast-mine incident is reduced to a minimum. Hand tools should be designed to be used at a low angle to the ground and should provide adequate stand-off from an anticipated point of detonation."

When we remember that the most common severe injury is to the hands, it is strange that the IMAS require that eye and body protection are used but do not insist that deminers are given safe hand tools to use when excavating. The IMAS word 'shall' means that something must be done in order to be IMAS compliant. The IMAS word 'should' means that the IMAS recommends something but does not require it to be done. So no demining group must try to reduce severe hand injury by issuing appropriate tools in order to be IMAS compliant. Why is this? Fact is, most of the well known demining groups represented on the IMAS Board are unwilling to recognise any need to change. If they did, they would be admitting that they were less than perfect yesterday.

Protecting Eyes

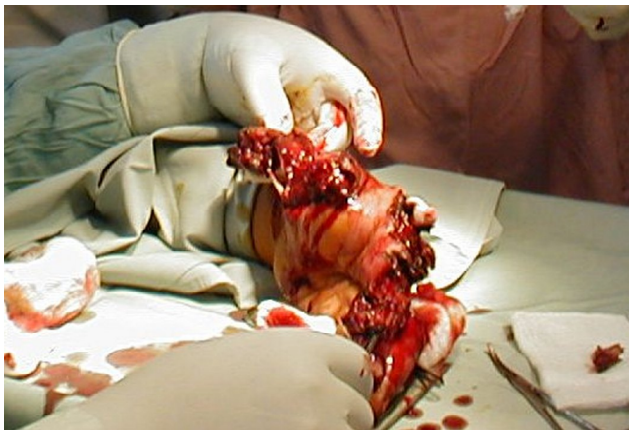
This deminer in Jordan is wearing goggles.

The minimum IMAS protection is 5mm polycarbonate goggles that sit tight against the deminers face. These can be comfortable to wear for long periods and are less expensive that blast visors, but the deminer's face is left exposed.

Blast visors are commonly used when the deminer is in a kneeling or squatting position. But deminers complain that they distort vision, steam up, and are too heavy to wear for long periods. In more than 40% of accidents when the deminer was issued a visor, the visor was not worn, or was worn raised when the accident happened.

We have the protection necessary to protect eyes, but something is wrong when the deminer will not wear it. Generally, a new visor is easy to see through but the polycarbonate material is soft, so quickly becomes scratched. A scratched visor will always be raised when you need to see clearly – which is just when it should not be raised. Every demining group should have a system for looking after eye protection and replacing it regularly. Obvious? Well, yes, but…

Protecting hands and arms



Is it even possible to protect arms and hands?

Yes, with distance and purpose designed tools.

The rake system uses distance.... keeping the deminer almost two metres away from an accidental initiation. When PPE is used, no injuries result from an accidental detonation of anti-personnel blast mines. I like to use rakes for investigating metal-detector readings whenever possible.

These are deminers in Sri Lanka using the Rake Excavation and Detection System (REDS) which is very thorough and safer than any other demining method I know, but it can be slow.

Even with rakes, there are always times when deminers must conduct excavation on their knees. The only protection then is the hand-tools they are using... and there are some design rules for safer tools.

> The user's hand should be as far as possible from any accidental initiation – at least 30cm from the point of any tool.
>
> The material used to make the tool must be ductile so that it distorts and bends rather than breaks.
>
> The tool must be made so that it does not easily separate into component parts.
>
> The tool should be designed so that it is easiest to use at a low angle to the ground, so encouraging the user to keep his hand below the fragment cone.

These rules have been around for fifteen years, but they are usually ignored.

This is a garden trowel issued to a deminer. The metal part was recovered from inside his thigh after an accident.

Some receptive demining groups use long prodders and scrapers that they make themselves or improvise from ancient bayonets.

Alternatively, very effective long and blast resistant tools are commercially available.

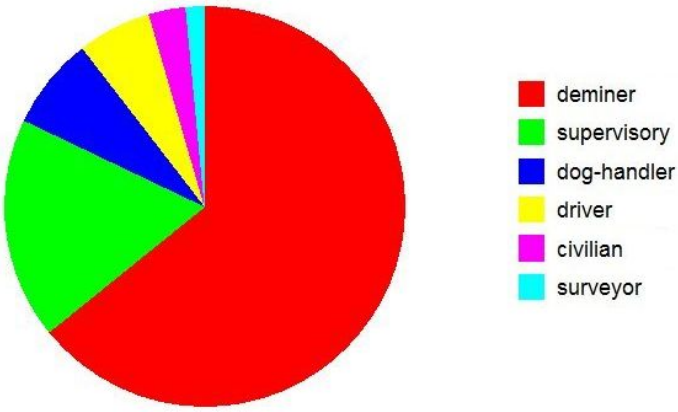
This is what the prodders look like after detonating a PMD6 with the tip. They keep the deminer's hands away from a blast and they do not break up and cause other injuries.

Detonating a mine during excavation should not happen, as long as the right excavation method is used. The deminer must excavate so that they expose the side of the mine and do not press on the top, but this is a slow process….

The correct tool to use may depend on the mine you are looking for. The top mines, the GYATA-64 and the PMN, have pressure plates extending right across the top and it is very easy to press on the edge of the pressure plate accidentally while trying to uncover them.

The lower mines have smaller pressure plates and it may not matter if the deminer presses on the edge of the mine while exposing them.

Victim's work status



The results in this category often surprise people. Almost a quarter of victims are supervisors. And what are drivers and civilians doing in the minefield?

In many cases, the supervisors were breaking the organisation's own rules when their accidents happened.

The supervisor is responsible for the safety of all staff – including themselves – and must always set an excellent safety example and insist that the safety rules are followed. If they do not, every accident that happens is their fault.

Yet the most senior international supervisors break the rules frequently and with no consequences. Even if they have an accident, their failings are usually concealed. The photograph alongside shows someone "at the top" of HMA. He is investigating the site of an accident without wearing any PPE in a live area.... and he then proudly included the photograph in the accident report.

Lessons learned from accidents

Tha Real Database of Accidents allows many lessons to be learned. Some conclusions are conjecture based on incomplete evidence, but others are compelling. Examples are:

> Most accidents in demining happen when excavating.
>
> Hands and eyes are most at risk.
>
> 5mm polycarbonate eye protection works well.
>
> Purpose designed blast resistant hand-tools can reduce the risk of severe hand injury.
>
> Injury prevention – by using processes that are as safe as possible – provides the main protection.
>
> Poor supervision is the reason that most accidents happen. This is a controversial statement – amongst supervisors – but can be proven with extensive evidence.

Prevention by using processes that are as safe as possible – provides the main protection. And to know what is safe and unsafe, the collection and study of detailed accident reports is essential.

Compensation?

If you think that deminers get medical treatment and compensation you would usually be right... A UN Quality Assurance man who stepped on a missed mine in Sudan lost his lower leg. With UN assistance, he took the American commercial demining group to court and reportedly received more than ten million dollars in compensation, and his wife was also compensated in the millions. But what can the local deminer expect?

Demining groups are coy about their compensation schedules. Some self-insure, not using an external insurance company. Others use insurance schedules based on road traffic Injuries with reduced maximum payouts. In brief, a blind national deminer today who received $40,000 would be doing very well. His family would not be compensated at all.

The best demining organisation I know pays $50k for death, but $100k for complete disability, so acknowledging that a lifetime without hands or eyes is likely to be expensive. No one offers a pension. Even $100,000 in a country without the medical and social provision that the deminer may need will soon be gone. It always is after families buy land and a pickup truck or perhaps a single trip to a Western medical facility. Within a few years the disabled person is just a liability to the family and the community. Can I be alone in thinking that a smaller lump-sum augmented by a small pension would allow them to retain dignity and purpose?

The Real Database of Demining Accidents

http://www.ddasonline.com/

A lot of the Real Database of demining accidents is available online, but what is online is not searchable and not up to date. This is partly because whenever I add accident records GICHD takes them and trivialises them. I try not to care about this but it does reduce my inclination to keep the online version up to date.

The most visited page is the one giving examples to use during deminer training – which many humanitarian demining organisations use. There is also a much-visited page on medic training.

The Real Database is not as good as it should be because I cannot keep a good accident record on my own and unfunded. It needs an organisation with international credibility to take it over, then maintain and improve it.

Three ICBL corrections

I have accused the campaign of some failings....

> 1) Failure to extend the humanitarian outcome to the essential process – so failure to insist on the obvious fact that humanitarian demining should be conducted in a humanitarian way.
>
> 2) Failure to campaign for disabled deminers to be provided with the means to live with dignity.
>
> 3) Complicity in the myth that each year “efficiency” can be increased without recognising that increased speed compromises the safety of the both the agents we are employing to clear the explosive hazards and the end-users of the land that we “release”.

I have suggested ways of addressing the first by gathering information that can prevent future injuries.

I made this argument in a formal request to the ICBL to take the Real Database of Demining Accidents and make it better. I explained how they could use it to improve safety and suggested that they might put pressure on demining donors to insist that those they fund both share data and work to improve safety.

I asked them whether it would be possible to raise money to pay for a small disability pension for injured deminers? It would be quite easy to administer – I worked that out long ago – and would do something to redress the imbalance between the compensation given to injured Westerners and national deminers. I suggest that failure to address this implies tacit agreement that a Western life is worth several orders of magnitude more than that of a post-conflict national. I am stubbornly and naively idealistic, I know, but the difference is shockingly racist…

Like the first, the third falling influences safety – as much for the people who use the released land as for the deminer. It really is a fact that you cannot have ‘good, cheap and fast’ in demining. Anyone who insists on all three is causing the very injuries that ICBL set out to prevent. Meeting the deadline for compliance with the Mine Ban Treaty should never be as important as preventing injury. So, I pleaded with the ICBL to start making it very clear that being thorough and safe matters more than being fast.

Having read the above paper, the then ICBL Director finally responded as follows.

1. The Database of Demining Accidents as maintained by Andy Smith up until 2011 was a useful resource that was consulted by the Monitor previously. And, while the ICBL recognizes the importance of deminer safety in all clearance activities, we are not the appropriate entity to take up this exhaustive database. We would however be pleased to get the existing data to use in global reporting as we do with other historical datasets that we receive, if that is possible. Thank you for offering to share it.

2. The ICBL is deeply disturbed by the lack of adequate assistance for deminers who are killed or injured in the course of their life-saving and similarly, the lack of assistance for innocent civilians who may lose their lives or their limbs in the course of their daily activities. This is probably the greatest inspiration for the movement against landmines and it remains a huge motivation for our work to this day.

   As one of its highest priorities, the ICBL advocates for comprehensive assistance and the fulfillment of the rights of all victims of landmines, including deminers. We also advocate that programs and policies for victims should not discriminate among victims, which is a necessity according to the states’ commitments made under humanitarian disarmament conventions. The Convention on the Rights of Persons with Disabilities provides us with an additional tool to advocate that all persons with disabilities (including disabled deminers) should receive assistance at the highest standard available, including through sustainable social protection programs, like pensions, etc.

3. The third item relates to injury caused by skipping safety steps in the process of pursuing "faster" mine clearance. This is as much a philosophical as practical measure. What the ICBL can offer is

> clear advocacy and a statement that the pursuit of clearance goals should never be at the expense of safety. Sometimes this may mean that compliance with the Ottawa Treaty deadlines will be compromised because safety cannot be.
>
> We certainly agree that safety should never be sacrificed in meeting treaty clearance obligations, and we thank you for highlighting the importance of stating this. We have not advocated for mine clearance that is “faster” than safety permits. In fact, demining accidents have been a part of both casualty and mine action reporting, and the absence of accidents is presented as a measure of a good program, along with other measures such as the pace of clearance and the understanding of the problem etc. We will certainly continue to reiterate these messages and underscore the importance of meeting international standards in complying with treaty obligations into the future. Clearly the objective of a mine-free world is complementary, as with no mines the safety threat is eliminated.

So, they would like the data – but the absence of the data is a “measure of a good program”. Sigh.