

Preventing Diver Fatalities

By Mike Ault, Copyright 3/8/2007

When you scuba dive you are entering a hostile environment that can kill you. As wonderful and beautiful as the underwater world can be, it can also become deadly in less than a heartbeat. Given the dangerous nature of scuba diving there will be fatalities in the sport. By and large there are three types of scuba diving fatalities:

- Preventable
- Not preventable
- Would have happened anyway

Now perhaps category three could be absorbed into category two, but you will see in a moment why this has been broken out into its own category.

Preventable Dive Fatalities

Preventable dive fatalities are those caused by the diver themselves. By and large the preventable dive fatality is the largest of the three categories. What dive fatalities are caused by the diver? Let's make a list:

- Out of air
- Entrapment followed by out of air
- Fatal DCS caused by too rapid ascent
- Preventable equipment failure
- Non-preventable equipment failure

So how can the diver prevent these fatalities? Examine them one-by-one and a common thread prevails: be prepared for eventualities. What is meant by this?

Out of air – Out of air fatalities are caused by the diver running out of breathing gas at depth and either drowning or making a mad dash for the surface and getting DCS or a fatal embolism. Out of air is an entirely preventable situation. Divers must practice gas management. Being constantly aware of the amount of air that is left in comparison to the amount of dive time needed to return safely to the surface is a critical skill. Whether you utilize a hard turnaround pressure (at half a tank we turn around and head back) or a more stringent rule of thirds (Use 1/3 to do the dive, 1/3 to get back and reserve 1/3 for emergencies) or use various calculations to provide a detailed dive profile of gas usage, you must use gas management to be a safe diver. In addition, gas management will require proper dive planning as to depth and time as well as any decompression requirements. In the case of diving with a single tank and a loss of air (hose rupture, first stage freeze-up, regulator failure, you should carry a pony bottle or spare air (most experts say a pony of at least 13 CF is best, but a 6 CF spare air is usually sufficient for most recreational diving) this will ensure that should something happen to you primary gas supply, or that of your partner, there will be enough air to get you both to the surface

safely. When using doubles, be sure you, and your buddy, know how to isolate the tanks should something happen to the regulator or hoses on one side.

Entrapment followed by out of air – Entrapment has never killed a diver, entrapment followed by out of air or hypothermia does. The best way not to die from out of air or hypothermia because you are entrapped is not to become entrapped. Now, in this modern age of nearly invisible fishing line and other hazards not becoming entrapped may be difficult. However, a diver must always have at least two cutting devices to allow the cutting of entangling lines, nets or wires. Many divers carry EMT shears and a knife, however, for heavier wire or rope that may not be adequate especially if you are wreck diving. Be sure that whatever cutting devices you carry can handle the type of entrapment that may occur at the site you are diving. This may involve carrying heavy duty wire cutters for wrecks as an example. If you don't become entrapped you won't run out of air or suffer hypothermia, assuming you don't do something else stupid like practice poor gas management. Practice situational awareness, watch for entanglement hazards and avoid them whenever possible. Don't panic if you get caught, breath, think, then act, by twisting and turning you may only get further entangled in the hazard. Make sure your buddy knows where your cutting devices are and that you know where theirs are.

Fatal DCS caused by too rapid an ascent – Usually this is a result of running out of air, so see that section above first. Another cause of too rapid an ascent is usually a panic reaction to a stimuli, again, breath, think, act, don't panic, panic is the mind killer. Solve underwater problems underwater. As long as your regulator is still providing air you have time to solve the problem underwater. Other rapid ascents are caused by improper buoyancy control. Know your buoyancy needs, practice buoyancy skills in shallow water. Allow for even a bit of over weighting (just enough to allow for panic breathing, not enough to cause you to shoot to the bottom like a stone) when you do your weight check. Always allow for the buoyancy swing of your air tank, even if it is still negative at 500 pounds, you have lost the weight of the air you breathed. Make sure you breathe slowly and deeply. If you wear a dry suit, understand how it vents and be sure the vent is set correctly before ascending. Understand how your BCD or BP/W reacts at depth and near the surface.

Preventable equipment failure – In this category are flooded dry suits (poor seal or sipper care), BCDs that work improperly (bad dump or fill valves, bad inflator, bad bladder), regulators and BCDs that haven't been properly serviced, weight belts, harnesses or pockets that weren't properly setup or checked before the dive or lights that needed fresh batteries or a recharge or spools that were broken or jammed. You can probably add to the list. Check out everything before you enter the water, do a complete buddy check as well. Get your equipment serviced at the specified intervals. Dive within the limits of your gear. If you take care of your gear properly then you eliminate preventable gear failure from the list of possibly fatal dive accidents.

Non-Preventable equipment failure – Sometimes stuff happens, why is that your fault? Well, you must always plan for redundancy. If you don't have redundancy you are asking for a single point of failure to kill you. A failed regulator, a ruptured hose, broken dive

light, all of these are examples of things that could put you in jeopardy. Carry a pony bottle or spare air, (if you are diving singles) carry a spare dive light. Make sure your buddy is close at all times. Understand how to share air. Make sure you have enough air to allow a share to the surface. Understand what can fail on your equipment and carry a backup to take its place should it fail.

Non-Preventable and Would Have Happened Anyway

So what does that leave? What are would have happened anyway fatalities? An aneurism blows out killing you instantly while diving, undiagnosed lung cancer causes an embolism, sudden fatal heart attack, these are things you can't prevent or plan for. Non-preventable means nothing you could have done (other than not going diving that day) could have prevented the fatality. Some one deliberately does you in or something happens beyond your control while diving that results in your death (a wreck falls on you, a whale runs over you, a stingray harpoons you through the heart) these types of accidents you can't prevent.

Hopefully you take from this article that only a very few diver fatalities are non-preventable, almost all dive fatalities could have been prevented with proper training, equipment and equipment maintenance. As a diver you are taking your life, and your buddies life into your hands on each dive. You owe it to yourself and your buddy to be prepared to handle any dive emergency and thus preventing an adventure from becoming a fatality.