



**ProHBO**  
*Hyperbaric Medical Services*

AT HEALTH HORIZONS, INC.

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### Safety Concerns

This is in response to a few statements being posted on a variety of list referencing hyperbaric treatments and the safety concerns I have related to those comments and ideas.

I am reluctant to send this response due to the possible barrage of hate mail, but I feel I have a responsibility to do so. To start, I feel it is appropriate to give my background: please view a short bio at [http://www.prohbo.com/Chris\\_BIO.htm](http://www.prohbo.com/Chris_BIO.htm), I also lecture on diving and hyperbaric safety, and have co-instructed Certified Hyperbaric Technologist courses for techs and Physicians.

I have many of the same feelings about the majority of issues related to the hyperbaric industry, insurance and government that are expressed on this list. That is also why I chanced everything in my life to start my own company, to place and manage hyperbaric oxygen therapy centers. I was also prompted to provide and emphasize a safe service, in comparison to some of the facilities I have seen out there and have heard about.

The statements about oxygen being safe are correct, if you have been trained to handle it. You may be a very intelligent person and can figure things out very easily. Put Einstein in a fighter jet and tell him to take off. What do you think would happen? Hey it's not rocket science or maybe it is. NASA thought it was a great idea to fill the Apollo capsule with 100% oxygen — which killed the entire crew. Lesson learned: electronics and oxygen do not mix. Neither does an untrained person in a fighter jet.

These may be extreme examples, but such a simple thing as a bottle of oxygen can do the most extreme things if not handled and used correctly by trained people. Over the past 20 years I have seen so many safety violations and at the same time a lot of lucky people who did not get hurt and a few unfortunate ones who did.

I know that some people believe that a few policy makers of the NFPA have a hidden agenda. I respect your opinion and I am not trying to defend or argue that point. However, many of the guidelines are based on tragic experiences and scientific study. According to the NFPA, industry standards and hyperbaric education, the audible alarm point for oxygen is 23.5% (NFPA 99, sec. 20.2.8.4.2.1). This is typically geared towards multi-place chambers and not 100% environments with mono-places. If you go beyond the 23.5% and a fire starts, it becomes uncontrollable even with fire suppression systems.

I would like to respond to some of the more recent things I have read and heard about. One example is the individual who took an oxygen monitor into a bag chamber and watched the oxygen concentration get to 40% at 1.3 ATA which is equivalent to a partial pressure of 52% oxygen. At that point you are in a volatile environment and the last thing you should have is an oxygen monitor with a 9-volt battery. The monitor should have been placed outside and the sensor could take readings from a gas sampling tube placed in a pass-through.

I have heard of people being in the same environment with their cell phone, walkman, newspaper and etc. This scares me and troubles me greatly. I do not care what type of chamber you use, just use it safely and understand all of its potential hazards. Safety is also the patient's responsibility.

It is so simple to be safe and everyone should take on that responsibility. This especially applies to the owners, directors and staff of all and any hyperbaric chambers. Remember that complacency is also very dangerous.

Sure, you may think nothing has happened yet, but you may not know all the stories. Why do you buy insurance? Because you know something is going to happen or for just-in-case? Everyone should adopt conservative safety standards. In the past I have run freestanding multi-place centers and have challenged the UHMS to compare my facility to hospital based facilities and that they would find the same if not greater standards. I still hold those high standards with my company, ProHBO.

It's not just the oxygen and lack of training that is a concern; it is the pressure as well. There are so many things going on when we add pressure to an environment and a human being, which we do not even understand yet. But we have learned lessons throughout our history.

A few life lessons from the industry:

(The following were told directly to me from the people present at the events.)

- Shands Hospital in Gainesville, Florida: A staff member fully opened a ball-valve on an oxygen line which was high pressure on one side of the valve and low to zero pressure on the other. Due to the rapid velocity and turbulence of the oxygen inside the valve, the valve caught fire internally and exploded. The heat from the line fire was transmitted to the chamber, thus causing burns on the attendant when her nylon bra strap melted.

Point: It does not take a match.

- Florida State University swimming pool, Tallahassee, Florida: A scuba diving student became frantic underwater in the three foot section of the pool and stood up rapidly, thus causing herself an air embolism.

Point: It does not take much pressure to get hurt. (3 ft = 1.09 ATA)

Please be safe. Learn all that you can. Be an advocate for safe treatments, no matter what type of treatment you are going through. Take on the responsibility for your own safety. Ask a lot of questions.

I commend everyone on this list and it is your dedication that adds fuel to my desire to help everyone that I can.

Be safe and God bless,

Chris Grant, President

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