treatment is "not right" because the diver has used a special mix. There is too much more to this issue to tackle here, but we can be sure that a prompt treatment with oxygen at 2.8 bar (USN Table 6) will cure most decompression disorders, regardless of the mix. A good thing to think about at this point is that the tough treatments usually result from operational problems like abrupt surfacing or missing the entire decompression. Good planning, high quality equipment properly maintained, and thoughtful gas management are what it takes to avoid the circumstances that result in such incidents.

Finally, let me address briefly the matter of enriched air, the so called "nitrox" diving. There seems to be more dialogue on this practice (which is not technical diving) than on technical diving, probably because it seems more likely to invade the domain of "recreational" diving and hence is more threatening to the "industry." Actually, not much in the way of extra diving skills are needed to do enriched air diving, but some care needs to be taken in mixing and handling the mixes. The issue of enriched air diving was addressed in a workshop at the time of the big DEMA (Diving Equipment Manufacturers' Association) show in January 1992. Because that Workshop settled some issues and defined others more clearly, most the controversy has died down (at least in the USA). For example, misinformation that enriched air corrodes tanks more than air, or that standard treatments do not work, has been laid to rest, good oxygen-compatible lubricants have been identified and both good and bad practices outlined. These are included in a report on the workshop.[3] Because I have no vested interest in enriched air diving (except perhaps to try to get people to call it by its right name, enriched air, and to save "nitrox" for the mixes lower in oxygen that air), it was my privilege to be engaged to help organize and to chair this meeting. In addition to the report, a working group was organized to deal with several remaining issues.

Let me add one last point to both my essay and Des Gorman's. I, too, want to discourage anyone from technical diving, but especially anyone who is not equipped and inclined to do it right. It involves a considerable investment in planning, equipment, decompression tables, gases, training, practice, organization, team-work and patience, and of course considerable risk. If you must go into this, go into it with your eyes open and be well prepared.

R.W. (Bill) Hamilton

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3 Hamilton RW. *Workshop findings: Evaluating enriched air ("nitrox") diving technology.* Boulder, Colorado: Scuba Diving Resource Group, 1992*

* Available from Outdoor Recreation Council of America / Scuba Diving Resource Group (ORCA/SDRG), P.O.Box 3353, Boulder, Colorado (International phone 1-303-444-3353) for $US 10.00 plus postage ($US 2.00 in U.S.A., $US 5.00 outside). Also available by telephone/ credit card from DUI (International phone 1-619-236-1203, International fax 1-619-237-0378).

ASTHMA AND DIVING

Whitsunday Diving Medical Centre
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25th August, 1992

Dear Editor,

The safety of asthmatics scuba diving has been an continuing controversy. The fact that many asthmatics do dive with little obvious catastrophe has been countered with many anecdotal series of catastrophic cases but none of scientific persuasion.

Most "diving doctors" would agree that "conventional wisdom" would advise "active asthmatics" not to scuba dive. The problem has been how many years without symptoms are needed after a history of asthma before diving can be allowed. Edmonds et al.[1] suggest a history of no asthma for five years is acceptable providing lung function is normal. This is a softening of "conventional wisdom" which used to advise that anyone with a past history of asthma should not dive.

The most useful objective investigation to assess "reactivity" of the airways is a challenge test, usually using inhalation of metacholine, histamine or hypertonic saline. The techniques used are rapid, inexpensive, reproducible and safe.[2-5]

Histamine and metacholine challenge tests require minimal equipment but are fiddly and involve a high patient compliance. Both histamine and metacholine are intermittently hard to get, costly and the solutions need to be constantly refrigerated and changed frequently.

Hypertonic saline challenge tests require an ultrasonic nebuliser (with an output of at least 1.2 ml/minute) and 4.5% saline. They are easy to perform and easily justified to a diver...."If salt water will make you wheeze in the surgery it will also do it while diving underwater". Moreover, when

a diver becomes wheezy breathing the nebulised saline they recognise the potential danger and are more accepting of being told that they are not fit to dive.

Whereas inhaling high concentrations of histamine and metacholine can induce a positive result in normal divers, it has not been possible to induce such a degree of airway narrowing with hypertonic saline.[6]

Furthermore there is a similarity in both the sensitivity and the reactivity of asthmatic subjects to inhalation of hypertonic saline and exercise, presumably due to the water loss induced by hyperventilation causing a hyperosmolar state in the bronchial tree.[7]

In the past the only available ultrasonic nebulisers with an adequate output available in Australia were the MISTOGEN (cost Aus $2,500) or the Divilbiss ULTRANEB 99 (cost Aus $1,500). Moreover to deliver the nebulised saline in adequate amounts, a low resistance, non-rebreathing 2 way valve was essential. The Hans Rudolf 2,700 valve is best suited at the outrageous cost of over Aus $400. Setting up to perform such tests was very costly and not economically viable for the average "diving doctor".

Recently I have been using a new ultrasonic nebuliser, the Omron model NEU06. It has an output of about 1.5 ml/minute. At a cost of Aus $340 it is most economical. Moreover being hand held with an on/off button at the finger tip the patient can inhale the nebulised spray direct from the nebuliser on demand, negating the need for an expensive non-rebreathing valve. It is available from J.A.Davey Pty. Ltd., P.O.Box 171, Warringah Mall, New South Wales 2100.

Armed with such affordable equipment I now test anyone with a past history of asthma with 5 years or longer free of symptoms or anyone with an uncertain history of asthma. With experience I feel new indications will become apparent.

For anyone wishing to perform airway reactivity challenge tests I commend the Omron model NEU06 nebuliser (beware other models which might not have adequate output). It makes the selection of asthmatics fit for scuba diving a more rational and logical process.

John Parker

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BOOK REVIEWS

OXYGEN AND THE DIVER.
Kenneth Donald
ISBN 1-85421-176-5
The SPA Ltd., Hanley Swan, Worcestershire.
RRP (UK) £14.95 P&P £2.50

I was surprised and very pleased to receive a letter earlier this year from Professor Donald asking the SPUMS Journal to accept an advertisment for Oxygen and the Diver. I had thought that he must must have been long dead as I had assumed that he had been a middle aged, established researcher when he did his work with divers breathing 100% oxygen between 1942-45. It turns out that he was 30 in 1942. This work was driven by the need to combat the Italian torpedo frogmen's success in sinking ships in Allied harbours and to be able to clear mines in newly captured harbours. I was taught my anaesthetics at the Royal Naval Hospital, Haslar, near Portsmouth, by Bill Davidson who had worked from 1943-45 with Professor Donald, so know about the work, which was largely unavailable to the profession because of wartime secrecy restrictions.

This is an attractive and well produced book. I could only find three typographical errors. In it Professor Donald has provided the full story and results of the 3 years of experimentation. He also has been given access to much unpublished information from the USN and Dr Ed Lanphier. Besides oxygen diving his Admiralty Experimental Diving