## 5. HALOTHANE AND HYPERBARIA *

(General Instruction to all Hospitals No. 1842 from the Hospitals Commission of New South Wales H18326 of 11 August 1972)

Recently information was sought from this Commission regarding the inflammability of Halothane with various mixtures of other anaesthetic gases.

Advice from several anaesthetists indicated some thoughts on this subject, and the manufacturer's assistance was sought. The following extract from the manufacturer's booklet on Halothane indicates the limits of flammability of various mixtures of Halothane with oxygen and nitrous oxide, as well as precautions to be observed under hyperbaric conditions:

### INFLAMMABILITY

Mixtures of 'Fluothane' and oxygen, and 'Fluothane' nitrous oxide and oxygen are non-inflammable and non-explosive in the proportions used in anaesthetic practice.

In the following table compositions of mixtures of 'Fluothane' nitrous oxide and oxygen at lower flammability limits are indicated; the figures in the left-hand column indicate the lowest concentration of 'Fluothane' which will ignite (Brown and Morris, 1966).

| **'Fluothane'** | **Oxygen** | **Nitrous Oxide** |
|---|---|---|
| **% v/v** | **% v/v** | **% v/v** |
| 1 | 0 | 99 |
| 4 | 24 | 72 |
| 4 | 32 | 64 |
| 17.5 | 82.5 | 0 |

The values shown in the table should only be regarded as absolute limits with reference to the experimental conditions described by the authors.

Mixtures of 'Fluothane' and air are non-explosive and non-inflammable in all proportions.

### Hyperbaric Conditions

The inflammability of 'Fluothane' under hyperbaric oxygen conditions has been investigated by Gottlieb et al. (1966). They found that 'Fluothane' in the range of 1 to 6.5% at pressures of up to 4 atmospheres, did not explode and did not show evidence of being inflammable. It was therefore concluded that 'Fluothane' can be used safely in conjunction with hyperbaric oxygen.

Brown and Morris (1966) have recommended that certain precautions be taken when ‘Fluothane’ is used at increased pressure.

i. Nitrous oxide should not be used as a vehicle for ‘Fluothane’ in pressure chambers;
ii. cautery and coal gas flame should be excluded from the pressure chamber;
iii. the increase in atmospheric pressure should not exceed 2.5 atmospheres.

The attention of all medical officers, anaesthetists and theatre staff should be directed to this information.

* *The above script was supplied by Dr John Clift, with the post-script that cautery and coal gas flame seem a little on the dangerous side, whether fluothane is used or not, under hyperbaric condition. It seems a reasonable comment.*