A BRIEF SUMMARY OF INHALATIONAL ANAESTHETICS

A RANGE OF SIMPLE BUT DIVERSE CHEMICAL COMPOUNDS WITH GENERAL ANAESTHETIC PROPERTIES.

<table>
<thead>
<tr>
<th>Compound</th>
<th>Year Available for Clinical Use</th>
<th>Status</th>
<th>Key</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrous Oxide</td>
<td>1844</td>
<td>Currently Clinically Utilised</td>
<td>C</td>
</tr>
<tr>
<td>Chloroform</td>
<td>1846</td>
<td>Rarely or No Longer in Use</td>
<td>R</td>
</tr>
<tr>
<td>Trichloroethene</td>
<td>1847</td>
<td>Rarely or No Longer in Use</td>
<td>R</td>
</tr>
<tr>
<td>Halothane</td>
<td>1875</td>
<td>Rarely or No Longer in Use</td>
<td>R</td>
</tr>
<tr>
<td>Enflurane</td>
<td>1925</td>
<td>Currently Clinically Utilised</td>
<td>C</td>
</tr>
<tr>
<td>Desflurane</td>
<td>1951</td>
<td>Currently Clinically Utilised</td>
<td>C</td>
</tr>
</tbody>
</table>

Key: C - Currently Clinically Utilised; R - Rarely or No Longer in Use

Nitrous Oxide
- Also known as Laughing Gas
- Colourless gas with a slightly sweet odour and taste
- Like other inhalational anaesthetics, it also induces a degree of analgesia.
- It is a weak general anaesthetic, so is often used as a carrier gas for other, more powerful anaesthetics.

Chloroform
- Produced by many kinds of seaweed
- Dyed blue to avoid confusion with chloroform

Trichloroethene
- Colourless, non-flammable liquid, with a sweet smell
- When used as an anaesthetic it was almost always combined with nitrous oxide. It smells similar to chloroform, which it replaced, but was itself replaced by faster acting agents.

Halothane
- Only inhalational anaesthetic containing a bromine atom
- Colourless liquid with a sweet odour resembling that of chloroform
- Unstable in light. A potent anaesthetic, though it is a weak analgesic. Hepatitis links resulted in a dramatic reduction in use, & replacement with newer agents.

Enflurane
- Rapid induction & recovery from anaesthesia
- Volatile, colourless liquid, with a sweet smell, light-sensitive
- Used increasingly in the 1970s and 80s, but no longer as common. It lowers the threshold for seizures in epilepsy sufferers, and can also be toxic to the kidneys.

Desflurane
- Boils at room temperature; low potency
- Colourless, non-flammable liquid, with an unpleasant, pungent odour
- Highest onset and offset of action of the volatile anaesthetic drugs. However, it has a low potency, and its high cost prohibits its use in less developed countries.

Diethyl Ether
- Commonly used as a solvent
- Colourless, volatile and highly flammable liquid
- Also known simply as 'ether', it was commonly used with chloroform or alcohol. It was found to have undesirable side-effects, such as nausea and vomiting.

Cyclopropane
- Extremely reactive under normal conditions
- Colourless and highly flammable gas with a sweet, petrol-like odour
- Often combined with oxygen, and gave a rapid onset of anaesthesia. However, its high cost and explosive nature limited its use, leading to it being largely phased out.

Fluoroxene
- The first volatile anaesthetic containing fluorine
- Colourless liquid, with a less pungent smell than diethyl ether
- Compared to other agents available at the time, fluoroxyne, whilst of use, did not provide any distinct advantages, although it did appear to minimize respiratory irritation.

Methoxyflurane
- Significant respiratory depressant
- A colourless liquid with a strong, fruity aroma and high boiling point
- Extremely potent, but with slow onset and offset times, and also a powerful analgesic. Abandoned in 1970s due to kidney toxicity, but still used in emergencies in Australia.

Isoflurane
- Structural isomer of enflurane
- Colourless, non-flammable liquid, with a pungent, musty odour
- Always administered with oxygen; nitrous oxide can also be used. Often used to maintain anaesthesia induced with another drug. Its use is beginning to decline.

Sevoflurane
- Name derives from the seven fluorine atoms it contains
- Colourless, non-flammable liquid, with a mildly unpleasant sweet odour
- Most commonly used volatile anaesthetic, often administered with nitrous oxide & oxygen. Its onset & offset are slower than desflurane, but it irritates mucus membranes less.