



# **THE HALON PROBLEM**

Depletion of the ozone layer and climate change have become synonymous with gaseous discharges into the atmosphere. Besides the carbons, one of the more notorious gases responsible for the damage is Halon - which was commonly used in fire extinguishers until 1994 when the Montreal Protocol signatories agreed to phase out the use of this substance

# COVER STORY



AS IS NOW well known, depletion of the ozone layer and its consequences on the Earth's environment, was proven by leading international scientists over a decade ago. Destruction of ozone was identified to be caused by certain chemicals, with one of the main 'culprits' being Halons when released into the atmosphere.

As a result, many countries were persuaded via the United Nations Organisation to agree to measures to counter this threat to the environment.

Since 1994, when countries signed the Montreal protocol and in subsequent amendments, signatories have agreed to policies and programmes to phase out the use of Halon.

The South African Government has signed this protocol, and has established the Halon Bank in terms of the protocol requirements.

Information published by the Bank, and the influence of insurers and contractors, has since then resulted in many responsible end-users voluntarily adopting these global protocols.

## International legislation

All countries that have signed the Montreal protocol and Amendments, are legally bound to effect the requirements in these agreements.

Of all the signatories, the European community has most notably promulgated a variety of laws and regulations: European Regulation No. 2037/2000 was adopted by the Parliament on the 13 June 2000 and by the Council on the 20 June 2000. Overall, the new regulation provided for a significant improvement of the ozone layer through a quicker elimination of

all ozone depleting substances, than the Montreal Protocol programme.

The Regulation includes a ban on the sale and use of Halons after 31 December 2002 (except for critical uses), with mandatory decommissioning of non-critical Halon systems required by 31 December 2003. The new regulations also make compulsory the recovery and disposal of Halons from fire protection equipment.

HCFCs can be used to replace Halons in critical use systems as long as the removed Halon is destroyed and 70% of the destruction costs are covered by the supplier of the HCFCs.

The Regulation includes the following list of critical Halon uses which can be substituted by HCFCs:

- ▲ in aircraft for the protection of crew compartments, engine nacelles, cargo bays and dry bays,
- ▲ in military land vehicles and naval vessels for the protection of spaces occupied by personnel and engine compartments,
- ▲ for the making inert of occupied spaces where flammable liquid and/or gas release could occur in the military and oil, gas, and petrochemical sector, and in existing cargo ships,
- ▲ for the making inert of manned communication and command centres of the armed forces or otherwise essential for national security,
- ▲ for the making inert of spaces where there may be a risk of dispersion of radioactive matter,
- ▲ in the Channel tunnel and associated installations and rolling stock.

The Regulation also restricts the import and export of ozone depleting substances, including Halons. The Regulation states that exports of halons are prohibited, except for those

contained in products and equipment aimed for critical uses.

## South African legislation

The Montreal Protocol's Decision X/7, requires all countries to apply the following policies:

1. Discourage the use of Halons in installations and equipment;
2. Encourage the use of a replacement acceptable from an environment and health standpoint, taking into account their impact on the ozone layer, on climate change and any other environmental issue;
3. Promote appropriate measures to ensure the environmentally safe and effective recovery, storage, management and destruction of Halons.

In response to these international legislative requirements, the Halon Bank of South Africa applies these objectives on behalf of the Government.

Although South Africa has not developed specific legislation, such as for example requiring mandatory decommissioning of Halon systems, there is other legislation in place that practically imposes compliance.

For example, in terms of Safety Regulations, Halon cylinders installed on site have to be hydro tested at regular intervals. This means that the gas inside the cylinder will have to be decanted, the empty cylinder then tested, and if passing the test, then be refilled. The processes commonly used results in amount of 10 -15% Halon being lost into the atmosphere. Permission from the Halon Bank of South Africa is thus required to top up the cylinders with Halon Bank stock.

The Halon Bank will however not grant such permission for applications that are not critical as defined by the Montreal protocol amendments (such as aircraft and military applications).

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This effectively results in halon replacement and halon decommissioning.

### Halon replacement

Since the establishment of the Montreal protocol's requirement to phase out Halons, many alternative extinguishants have been introduced into the market.

At present, if Halon systems are removed and replaced with an alternative gas, it is usually with one of the many products available in our market e.g. Inergen, Argonite, FM200, HFC125 or CO<sub>2</sub>.

Part of this replacement process usually requires removal of the Halon containing cylinders, more commonly known as Halon decommissioning.

### Halon decommissioning and destruction

The Halon removed from these sites can be tested and if found to be of suitable quality, can be allocated for use in critical applications.

However +/- 90% of the Halon returned to the Bank to date has been found to be of such poor quality that it can not be used in any applications. It appears that in the past suppliers were blending 1211 with 1301 or in some cases filling 1301 cylinders with 1211. Other impurities are usually also found in the samples assayed by the Bank.

This has resulted in the Halon Bank vendors storing large quantities of halon that cannot be reused and has resulted in the most pressing requirement to be for Halon destruction.

The Halon Bank of South Africa has recently managed to secure destruction facilities in South Africa.

This is great news as now Halon Bank vendors can start reducing the Halon stocks by having it destroyed. End-users can now return their Halon

to a Halon Bank vendor who will then transfer Halon into bulk containers and transport these to destruction facilities. As can be appreciated, there are charges associated with the destruction of the Halon - to find out more on costs and procedures please make contact with the Halon Bank.

As soon as financial arrangements have been finalised, the first batch of reject stock will be destroyed in the near future, thus marking a milestone in the history of the application of the Montreal Protocol in Southern Africa.

### What should end-users do?

If you have Halon on the premises, here are a few steps that could help you.

Firstly, check the date on the storage cylinders. According to our local regulations these cylinder have to be inspected and tested every 10 years.

This will require a Halon Bank approved service agent to arrange for the decanting of the Halon into bulk containers, testing of the cylinders and refilling if so authorized by the Bank. Even if Halon Bank approval is obtained,

## Halons return policy

Halon can be returned formally into the care of the Halon Bank of Southern Africa, by delivering containers of the extinguishant to a Halon Bank approved vendor.

The Vendor will take the delivery into its stock holding on behalf of the Halon Bank, for disposal as subsequently determined by the Bank. An official certificate declaring the quantities so taken into stock will be issued, on payment of an administration fee of R1250 per batch.

The Vendor will process the stock as subsequently determined fair and reasonable by the Bank. This may involve decanting the contents into a holding tank, or retaining the halon in the returned containers. If decanting is done, a cost is incurred as the process is time-consuming, requires expensive equipment, and incurs holding tank demurrage charges. Retaining the halon in the delivered containers also incurs costs, such as storage, labour and parts costs when content extraction is done at a subsequent time.

After receipt of the delivery, there are two options:

- a) If the Vendor or the Bank considers assay testing to be feasible, the delivering agent can elect to have samples taken and tested. A testing fee of R4 500 per test plus the Vendor's sampling charge, is currently applicable and payable in advance. If the results are per the ISO standard for halon 1301, a payment for the product will be made per present market conditions.
- b) If assay testing is not feasible or elected, the stock will be designated for destruction. A charge, presently R22 per kg, will be levied for this purpose to the delivering agent.

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10-20% of the extinguishant could get lost in the process and spare components may not be available for your system. Note that unattractive costs can be thus be incurred in updating a system having a short remaining service life.

Secondly, if the validity of the cylinders is still current, you can arrange to have the Halon tested (assayed) by the Halon Bank. The results may well be negative, in which case your Halon will not offer you any valid form of fire protection. If your Halon is found to be of acceptable quality, it may be of value as this Halon can be sold for critical applications approved by the Halon Bank.

Thirdly, if either of the above steps reveal problems, arrange for decommissioning. Make sure whoever

removes your Halon will get certification from the Halon Bank South Africa that the Halon stock has been taken into stock (decommissioned) in accordance with requirements. This is an important corporate responsibility to prevent unscrupulous contractors reselling unauthorized Halon of questionable quality to unsuspecting end-users.

Finally, plan for or select a suitable replacement extinguishant. If as a service contractor, your clients have a Halon system installed or you know of sites where these systems are installed, communicate with the client's responsible person and inform them of the above.

Additional policy and procedure documents can also be obtained from

the Halon Bank to support your advice.

### Conclusion

While Halon replacement and decommissioning is not mandatory, in many cases safety regulation requirements or ageing has resulted in replacement with alternatives and decommissioning of Halon systems, throughout the country.

Many responsible end-users have voluntarily returned their Halon to the Bank – a policy that all vendors, contractors, concerned parties and end-users still in possession of Halon are encouraged to apply and support whenever possible. ▲

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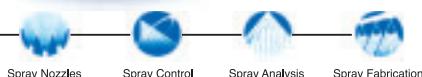
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