

# Environmental Management Authority of Trinidad and Tobago



## National Halon Bank Management Plan

**Multilateral Agency: United National Environmental  
Programme (UNEP)**

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## **Disclaimer**

This document was produced by the consultant for the Ozone Depleting Substances Sub-Unit of the Pollution Prevention and Control Services Unit of the Environmental Management Authority of Trinidad and Tobago.

The information used to compile this document was obtained from documentation available within the Ozone Depleting Substances Sub-Unit (ODSS), information gathered based on interviews with stakeholders representing the private sector and other stakeholders.

This document is intended to act as a guide to the ODSS in the establishment of the National **Halon** Bank and was compiled following the guidelines outlined with the consultant's terms of reference (Appendix 1)

To the best of the consultant's knowledge, the information contained within this document is a true reflection of the situation in Trinidad and Tobago as it applies to **Halons**. The recommendations contained herein are based on this information. However the consultant makes no guarantee of this and accepts no liability for the use of or events resulting from the use of this document.



## **EXECUTIVE SUMMARY**

The Government of Trinidad and Tobago entered into a Memorandum of Understanding with the United Nations Environmental Programme (UNEP) in 1999 to develop a **Halon** Bank Management Plan for the English Speaking Caribbean. The objective of this plan is to assist member countries to meet the international commitments under the Montreal Protocol for the Phase Out of ODS specific to **Halons**.

The National **Halon** Bank Management Plan of Trinidad and Tobago is one of the deliverables under the Regional **Halon** Management Plan for the English Speaking Caribbean.

The principal elements of the Plan are:

1. To reduce and eventually stop the emissions of **Halons** into the atmosphere.
2. To educate the public about the negative effects of **Halons** on the environment.
3. To identify essential and non-essential uses of **Halons** while seeking adequate alternatives for essential uses.
4. To recover all **Halons** from non-essential uses and distribute only for essential uses.
5. To achieve the targeted phase-out programme for **Halons** in Trinidad and Tobago.

The commendable initiative demonstrated by the private sector with regards to **Halon** phase-out has resulted in a situation where **Halon** 1211 has almost been totally eliminated. The January 1<sup>st</sup>, 2002 freeze consumption l for **Halons** has been achieved and surpassed through the voluntary actions of industry.

Presently, the **Halon** of concern is **Halon 1301**. This Halon represents the largest of installed capacities in Halons. As such, there are two challenges for the HBMP. These are:

- Reduction in the consumption of **Halon 1301**
- Reduction and ultimate elimination of the installed capacity of **Halon 1301**

In Trinidad and Tobago, the best estimates available indicates that the installed capacity of **Halon 1301** for the year 2000 was 35,000 Kg., the annual reduction of this installed capacity at 20% and the consumption for 1999 was 0.5 tonnes.

Given that there is no existing recovery and reuse programme for Halons, this 20% annual reduction is considered as vented into the atmosphere.

It is proposed that a Steering Committee be formed to manage the deliverable of the HBMP. The composition of this committee will be representative of Governmental, Private Sector and Non-governmental Stakeholders. This committee will be chaired by the ODS Unit of the Environmental Management Authority.

The estimated cost for establishing this bank is US\$162,000 distributed over a five-year period.

## 1. INTRODUCTION

### 1.1 The Montreal Protocol

*The Montreal Protocol on Substances that Deplete the Ozone Layer* (Montreal Protocol) was drawn up in September 1987 under the guidance of the United Nations Environment Programme (UNEP). The Montreal Protocol resulted from the *Vienna Convention for the Protection of the Ozone Layer* at which Nations agreed to take appropriate measures to protect human health and the environment against adverse effects resulting or likely to result from human activities that modify or were likely to modify the Ozone Layer. The Montreal Protocol identified a series of chemical substances, designated Ozone Depleting Substances (ODS) that, once released into the environment, contribute to the depletion of the Ozone Layer in the Stratosphere. This Montreal Protocol also set out a specific timetable by which these substances are to be phased out.

To date, approximately **177** countries have ratified the Montreal Protocol, including Trinidad and Tobago. Trinidad and Tobago is classified as an Article 5 country under the Montreal Protocol.

### 1.2 : Halons

**Halons** are halogenated hydrocarbons, which are used as fire fighting agents. They have been identified under the Montreal Protocol as an ODS and are classified as Annex A Group II ODS. There are three principal **Halons** and some of their specific characteristics as applicable to the Montreal Protocol are reflected in Table 1.

**Table 1: Selected Characteristics of Halons**

<i>Substance</i>	<i>Chemical Formula</i>	<i>Ozone Depleting Potential</i>	<i>Uses</i>
<i>Halon -1211</i>	CF <sub>2</sub> BrCl	3.0	Used mainly in portable fire extinguishers
<i>Halon -1301</i>	CF <sub>3</sub> Br	10.0	Used mainly in fixed fire extinguishing systems
<i>Halon - 2402</i>	C <sub>2</sub> F <sub>4</sub> Br <sub>2</sub>	6.0	No data available on its use in Trinidad and Tobago

**Halons** are the most potent of all the ODS. The average Ozone Depleting Potential (ODP) of other ODS does not exceed 1.0 while the ODP of **Halons** ranges from 3.0 to 10.0.

The specific timetable for the phase of **Halons** in Article 5 countries are as follows:

- **January 1, 2002**- Freeze in consumption at the 1995 - 1997 average level
- **January 1, 2005**- Reduction in consumption by 50% of 1995 – 1997 average levels
- **January 1, 2010**- Total phase-out of **Halon** consumption.

### 1.3 Trinidad and Tobago Status

Trinidad and Tobago does not manufacture any **Halons** or **Halon**-based equipment. Consumption is limited to **Halons** 1211 and 1301. The latest information available (Appendix 2) indicates that the consumption<sup>1</sup> of **Halons** for the year 1999 was as follows:

- **Halon** 1211 0 Metric Tonnes
- **Halon** 1301 0.5 Metric Tonnes

#### *Positive noteworthy developments are:*

1. The consumption of **Halon** 1211 in non-essential situations have been reduced to practically zero and this has been industry led and supported
2. Many private sector companies with fixed **Halon** 1301 systems are voluntarily replacing these systems with ozone friendly alternatives. These replaced systems are being stored by suppliers. One known case is of the decommissioned **Halon** being sold to a recycling facility in the United State of America (USA)

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<sup>1</sup> Under the Montreal Protocol: Consumption: Imports + Production- Exports

## 1.4 Definitions

The UNEP Report of the **Halons** Technical Options Committee (December 1994) set certain conventions where **Halons** Banking is concerned. Sections 6.3 and 6.5 respectively of this report states the following:

- “ ... *bank management which consists of keeping track of **Halon** quantities at each stage, initial filling, installation and recycling*”
  
- “ ***Halon** Banking is a concept to manage the nations existing **Halon** stock wisely and to ensure that the needs of the few critical applications that truly require **Halon** can be met*”

The UNEP Report of the **Halons** Technical Committee (April 1999) established the following definitions:

- *INVENTORY:* “ The total **Halon** holding of a country or an organization.”
- *REPOSITORIES:* “ The **Halon** held in purpose built physical stores.”
- *CLEARINGHOUSES:* “ Agencies, which facilitate contacts between those offering and those requiring **Halons**.”

## 1.5 General Objectives of the Halon Bank Management Plan

In the near future the non-availability of **Halons**, especially **Halon** 1301, could make it difficult to recharge currently installed fire protection systems. This lack of availability could then leave important facilities unprotected from the threat of fire until alternative fire protection systems can be installed. As recycled **Halons** are now the only source of supply, the cost of **Halons** is rising.

The establishment of a National **Halon** Bank Management Plan (HBMP) will enable Trinidad and Tobago to manage its current banked **Halon** supply, identify and proceed with a shift to non-**Halon** alternatives in all but essential uses, establish an appropriate

National Policy Framework and participate in Regional and International **Halon** Banking programmes. It is estimated that the HBMP will be fully operational by January 2002.

## 2.0 MAIN STAKEHOLDERS

In Trinidad and Tobago, **Halons** are used as fire fighting agents. The types of **Halons** being used are 1211 (portable extinguishers) and 1301 (fixed systems). The main stakeholders of this HBMP are:

1. Insurance Companies
2. Fire Equipment Suppliers
3. Users of **Halons**
4. Government Departments
  - a. Ministry of Finance - Customs and Excise Department
  - b. Ministry of Enterprise Development, Foreign Affairs and Tourism
  - c. Ministry of Labour, Manpower Development and Industrial Relations  
Occupational safety and Health Department
  - d. Ministry of Works and Transport – Civil Aviation Division
  - e. Ministry of Community Empowerment, Sport and Consumer Affairs  
- Trinidad and Tobago Bureau of Standards
  - f. Environmental Management Authority  
Ozone Depleting Substances Sub Unit.
  - g. Ministry of National Security – Military Services  
– Fire Services Department

For this HBMP to be implemented successfully, each stakeholder has an important role to play. The general role of each stakeholder is outlined in Table 2. A listing and details of the individual stakeholders are given in Appendix 3.

**Table 2: Main Stakeholders and Their Proposed Role in the HBMP.**

<i>Main Stakeholder</i>	<i>Proposed Role</i>
<b>Insurance Companies</b> ATTIC (Association of Trinidad and Tobago Insurance Companies)	To ensure that proposed substitutes meet the requirements of the insurance industry's safety standards.
<b>Fire Equipment Suppliers</b> (Non Governmental Organisation)	Provide information on and access to substitutes to <b>Halons</b> . To liaise with users and manufacturers of <b>Halon</b> substitutes. To supply storage facilities for <b>Halons</b> to be kept.
<b>Halon Users / Owners</b>	Commit to the use of <b>Halon</b> alternatives as far as practically possible, and to the use of <b>Halons</b> for essential purposes only
<b>Ministry of Finance</b> <i>I) Customs and Excise Department</i>	To record and monitor the importation of <b>Halons</b> and <b>Halon</b> substitutes into the island as well as to enforce the import / export permit requirements for <b>Halons</b> .
<i>ii) Ministry of Enterprise Development, Foreign Affairs and Tourism</i>	To assist in the routine inspection of the storage facility. To issue import and export license To allocate Quota limits to importers Submit data to the ODS Unit on Annual Imports
<i>iii) Environmental Management Authority(EMA)</i>	Act as the National focal point for the Vienna Convention and Montreal Protocol
<i>iv) The Ozone Depleting Substances Subunit of the EMA</i>	Responsible for the implementation of the National <b>Halon</b> Bank Management Plan.
<i>v) Ministry of National Security</i> <i>Fire Services Department</i>	To ensure that proposed substitute meet fire and safety standards as stipulated and enforced by the Fire Services Department. To provide regular inspection of storage facilities, ensuring that unnecessary discharges are kept to a minimum and that an accurate inventory is kept of <b>Halons</b> in the facility.
<i>Military services</i>	To provide information on the critical need and usage of <b>Halons</b> within the military services.

### **3.0 REGULATORY FRAMEWORK**

#### **3.1 The Fire Services Act, Chapter 35:50 (Amended in 1997)**

There are no specific safety or building codes that set standards for the use of fire fighting devices in Trinidad and Tobago. However, the Fire Services Act, Chapter 35:50 Amended in 1997 (Appendix 4), can be interpreted as giving the Chief Fire Officer the authority to adopt standards and set directives where the use of these devices are concerned.

#### **3.2 Environmental Management Act No. 3 of 2000**

Ozone Depleting Substances can be considered an air pollutant or hazardous chemical and the Environmental Management Authority may implement measures to regulate emissions of **Halons** under the Environmental Management Act No. 3 of 2000. This can be done under Sections 49 (1) (a) and 49 (3) (Appendix 5).

#### **3.3 National Environmental Policy**

The Government of Trinidad and Tobago developed a National Environmental Policy which was accepted by Cabinet in June 1998. This document deals with Ozone Depleting Substances (ODS). Section 4.5 (Appendix 6) of this document deals with Ozone Depleting Substances and section 4.5.b deals specifically with fire prevention systems. However within this document where reference is made to ODS it is taken to mean Chloroflorocarbons (CFC's)

#### **3.4 Ministry of Enterprise Development, Foreign Affairs and Tourism**

**Halons** have been placed on the Ministry of Enterprise, Development, Foreign Affairs and Tourism “Negative List” (Appendix 7). This requires that a Minister’s license has to be granted prior to the importation of any **Halon** into this country. This allows the quantities of substances being imported or exported to be regulated. The Customs Act, Chapter 78:01 has been amended with the reclassification of **Halons** in the Customs

(Common External Tarrif) Order, 1998 heading No. 29.03. This requires the Customs and Excise Department to have Ozone Depleting Substances classified as a separate heading of chemicals (Appendix 8).

#### **4.0 INSTALLED HALON CAPACITY**

The installed capacity of **Halons** in Trinidad and Tobago is divided as follows:

- Non-Essential Uses - **Halon** 1211
- Essential Uses – **Halon** 1211
- Non-Essential Uses - **Halon** 1301
- Essential Uses – **Halon** 1301

The UNEP **Halon** Technical Options Committee in its 1998 report advised that while no suitable substitutes have been identified for some uses of **Halons**, no list of essential uses should be developed as this encourages complacency among these users. Essential users of **Halons** should be granted exemptions but be constantly pressured into seeking adequate substitutes to **Halons**. The installed **Halon** capacities in Trinidad and Tobago are based on data compiled from two surveys undertaken by the ODS Sub-Unit between the years 1997 and 2000. A summary of the data is given in Appendix 9.

##### **4.1 Non-Essential Uses - Halon 1211**

The non-essential uses of **Halon** 1211 are those for which suitable alternatives are available.

Based on the survey data (Appendix 9) the installed capacity of **Halons** in applications that are considered non- essential uses is estimated at **1916 kg**.

##### **4.2 Essential Uses - Halon 1211**

At present, the essential use of **Halon** 1211 in Trinidad and Tobago is determined to be the aviation industry. Based on the survey conducted by the ODSS in the year 2000, the local aviation industry has an installed capacity of 108kg, which is distributed as 73 x 3lbs cylinders. These are distributed among 16 aircrafts.

The consumption of **Halons** in this category has been **nil** over the past two years. The relatively small quantities of **Halon** 1211 required to satisfy the annual needs of this

category should there be a discharge, can easily be satisfied from the installed capacity of non-essential uses. However indications are that the classification of **Halon 1211** in the aviation industry as essential use is no longer valid as there are suitable alternative to service the industry. Further, Nationally Owned aircraft are serviced in the United States of America. The servicing agent will provide for the Halon needs of the aircraft. This consumption usage will not be reflected in the national consumption of Trinidad and Tobago.

#### **4.3 Non-Essential Uses -Halon 1301**

**Halon 1301** is used as a fire suppressant in fixed fire extinguishing systems. These systems are found in “occupied spaces” and are easier to monitor. As a result, the uses of **Halons** in this category are less diverse and more easily quantified. These include:

- a) Records vaults
- b) Telecommunications equipment rooms
- c) Libraries
- d) Electricity plants (turbines) etc.

Based on the survey conducted by the ODSS in the year 2000, the collected data indicated an installed capacity of **19,479 kg**. However, because of the level of non-responsiveness this data is not considered accurate.

Discussion with industry specialists estimates the installed capacity to be approximately **35,000 kg** with an annual reduction of 20%. It is anticipated that this 20% is vented given that there are no mechanisms for recovery and recycling.

#### **4.4 Essential Uses - Halon 1301**

In accordance with the Montreal Protocol, the essential uses of **Halon 1301** are the aviation industry and military services. Presently there is only one registered National airline, which is BWIA West Indies Airways. This airline has indicated an installed capacity of 909 Kg. in the 1997 survey. However efforts to have this figure updated in the year 2000 survey was unsuccessful. It is assumed that the capacity has remained the same. Telephone interviews with officials from the Civil Aviation Department and

Trinidad and Tobago Civil Aviation Authority reveals that the Aviation industry in Trinidad and Tobago has no policy for the control or phase out of **Halons**.

For the military services, due to the sensitivity of information as it relates to this service, information on installed capacities could not be obtained.

It should be noted however that while the Montreal Protocol recognizes these activities as essential uses, it recommends that no list of essential uses be produced and that constant pressure be placed on these uses to find suitable alternatives.

## **5.0 PROPOSED NATIONAL HALON BANK MANAGEMENT PROGRAMME**

### **5.1 Objectives and Strategies**

The overall objective of Trinidad and Tobago's **Halon** Bank Management Plan (HBMP) is to eliminate the local dependency for **Halons** and achieve an eventual phase-out of **Halons** while educating and causing the least possible inconvenience to users by providing a supply of **Halons** in the interim to satisfy essential uses.

The principal elements of the Plan are:

1. To reduce and eventually stop the atmospheric emissions of **Halons**.
2. To educate the public about the negative effects of **Halons** on the environment and in particular the stratospheric ozone layer.
3. To identify essential and non-essential uses of **Halons** while seeking adequate alternatives for essential uses.
4. To recover all **Halons** from non-essential uses and distribute only for essential uses.
5. To achieve the targeted phase-out programme for **Halons** in Trinidad and Tobago.

The HBMP shall be implemented and coordinated by the Environmental management Authority through the Ozone Depleting Substances Sub-Unit. The Action Plans associated with these activities are listed in Table 5.

#### **5.1.1 Review of Halon Consumption for the Period 1995 – 2000.**

A review was conducted on the consumption patterns for **Halons** for the period 1995-1997 to determine the average consumption for that period. Additionally, the information presented in Appendix 9 reveals that the consumption to 1999 has been reduced below the targeted level for the year 2002.

### **5.1.2 Estimated Need for Halons to the Year 2005**

As discussed in section 4.2, it was concluded that there were no essential uses for **Halon** 1211. As such, all services in which **Halon** 1211 is being utilized can be serviced by suitable alternatives. In light of this no further consideration will be given to **Halon** 1211.

It is noted that the installed capacity for **Halon** 1301 was reduced from approximately 44 tonnes to approximately 35 tonnes over the three-year period 1997 - 2000.

In light of the fact that industry has been playing a more active role in the phase-out of **Halons** and was more up to date with developments in the industry it was agreed to use the data provided by them to estimate the needs for **Halons** to the year 2000. The base data that will be utilized for **Halon** 1301 is as follows:

- **Installed Capacity in year 2000** (84% private, 16% public) **35,000 Kg.**
- **Average Annual Rate of Reduction in Installed Capacity** **20%**

The estimated installed capacity of **Halon** 1301 for the period 2001 to 2005 is based on an average annual reduction of 20%. This is reflected in Table 3. However it is important to note the variation between the projections made in Table 3 and those made in the Country Programme for the Phase out of Ozone Depleting Substances (Tables 1, 2 and 2.5). Within that document projections were made for unconstrained demands for **Halons** in the year 2010 in the order of 61.82 ODP Tonnes and the complete phase out of **Halons** by the year 1996 (Appendix 10) These variations may be due to more reliable information being available during the compilation of this plan

A review of the consumption pattern for **Halon** 1301 over the period 1995 to 1999 (Appendix 9) reveals that the average annual consumption of the substance is 3100 Kg and this reflects less than 10% of the installed capacity during any of those years. If an allowance of 10% installed capacity is made for each year under consideration then the demand for **Halon** 1301 will be as reflected in Table 3. In all instances this need can be serviced from recovered **Halon**.

**Table 3: Estimated Installed Capacity and Need for Halons to the Year 2005.**

<i>YEAR</i>	<b>Estimated Installed Capacity (Kg)</b>	<b>Estimated Need for Halon (Kg)</b>
<i>2001</i>	28,000	2,800
<i>2002</i>	21,000	2,100
<i>2003</i>	14,000	1,400
<i>2004</i>	7,000	700
<i>2005</i>	0	0

### **5.1.3 Restrict / Prohibit the Importation of Halons**

The information provided in Section 4 shows that the essential uses of **Halon** 1301 can easily be satisfied from recoverable stocks of that presently available for non-essential uses. Therefore, it is evident that if import restrictions on **Halons** are imposed, the following will result:

- The essential needs for **Halons** can be satisfied
- Non-essential users will be encourage to replace their existing installed systems
- The phase-out process will be accelerated.

#### **5.1.4 Justification for a National Halon Bank.**

To facilitate the transition to alternative substances and accelerate the phase-out of **Halons** it is determined that there is need for a National **Halon Bank**

#### **5.1.5 Overall Function of the Bank.**

A National **Halon Bank** should take the form of a Virtual Storage Facility for **Halon** 1301. The reasons for this are:

- There is sufficient recoverable stocks of **Halon** 1301 to satisfy the projected annual needs
- There are no identified essential uses for **Halon** 1211
- There is need to preserve the present non-essential stock to allow for a planned phase-out.
- Provide for a Clearing house mechanism for the availability of decommissioned **Halons**
- A National **Halon Bank** will facilitate integration into the Regional **Halon Management Bank**.

#### **5.1.6 Implement Monitoring Programmes**

Monitoring programmes will be implemented by the ODSS in collaboration with the Ministry of Finance - Customs and Excise Department and the Ministry of Enterprise Development, Foreign Affairs and Tourism to ensure the following:

- The phase out of non-essential uses of **Halons**.
- Consumption reduction commensurate with the phase out schedule of the Montreal Protocol.

A Steering Committee will be established to direct the overall phase-out effort and to advise the relevant government agencies on measures that should be adopted to ensure an effective monitoring regime. This steering committee will be chaired by the ODS Sub-unit of the Environmental Management Authority.

## 5.2 Public Awareness and Education Programmes

Awareness Raising Programmes will be designed and developed by the ODSS in collaboration with the Ministry of the Environment, the Ministry of Consumer Affairs, the Fire Services Department and other relevant agencies, both private and public, to target the stakeholders and the general public about the need to phase-out **Halons**. The focus will be to ensure that all stakeholders and the public are made aware of the requirements of the Montreal Protocol, the laws of Trinidad and Tobago as it applies to **Halons** and the negative effects of **Halons** on the environment. The key agencies and their roles in the development of education programmes are outlined in Table 4.

### 5.2.1 Awareness Programmes for Stakeholders.

The Awareness programmes for stakeholders will take the form of:

- a) Seminars to provide information about the negative effects of **Halons** on the environment.
- b) Utilize UNEP Ozone clearing house for **Halons** in order to disseminate global and regional information on **Halon** phase out and alternatives.
- c) Stakeholder groups, during which each category of stakeholder may present to other stakeholders the advancements made by their group towards the phase-out programme and new requirements and demands. For example, Insurance companies may collectively present to other stakeholders, any changes made in the insurance safety standards to accommodate alternatives to **Halons**.
- d) Programmes on Alternative Technologies relevant to Trinidad and Tobago.

### 5.2.2 Public Awareness Programmes

This will take the form of:

- a) Development and distribution of brochures to the public, including schools, which would highlight the general uses of **Halons**, their negative effects on the ozone layer as well as a comprehensive summary of the Montreal Protocol and its requirements.
- b) Public presentations (speeches, television, presentations etc.) by members of the stakeholder group
- e) Publications in newspapers and other print media.

**Table 4: Agencies Responsible for the Awareness Programmes.**

<i>Agency</i>	<i>Responsibility</i>
<i>Trinidad and Tobago Fire Department</i>	i) To conduct training and encourage stakeholders to change their fire protection systems from <b>Halons</b> to suitable alternatives.  ii) To continuously monitor international developments in fire protection technology and inform stakeholders.  iii) To promote <b>Halon</b> Banking
<i>ODSS</i>	i) To provide the service of Information Clearing house.  ii) To represent the EMA as the National focal point for the Montreal Protocol and National <b>Halon</b> Bank Management Plan. (NHBMP)  iii) To coordinate public awareness programmes.  iv) To co ordinate training for stakeholders.
<i>Private Sector</i>	i) To market new alternatives.  ii) To promote good environmental practices.

### 5.3 Training Programme

Through discussions and surveys, it has become evident that while some companies are aware of the issues surrounding **Halons** and have adopted proactive approaches towards the phase-out of **Halons**, there are still some companies that display a lack of understanding about the effects of **Halons**. The training programmes will target these companies. Training programmes will also be held for all stakeholders focusing specifically on supply companies and users. It will take the form of several one-day seminars and will address the following:

- The problem of ozone depletion, the seriousness of the contribution of **Halon** emissions to this depletion and the need to reduce the use and emissions of **Halons**
- The phase-out schedule for **Halons**
- The alternatives to **Halons**
- The need for a National **Halon** bank and cost benefit analysis.

Expertise will be drawn from the Environmental Management Authority, The Ministry of the Environment and other relevant companies/agencies.

### 5.4 Policy, Regulations and Code Setting Programme

The positive and proactive initiatives of the private sector in relation to phase out of **Halons** have led to a significant reduction in the installed capacities of **Halons** in Trinidad and Tobago. This is supported by the actions of the Ministry of Enterprise Development, Foreign Affairs and Tourism to place all **Halons** on the “Negative List”, thus necessitating a Ministers Licence for their importation, and the amendment of The Customs Act, Chapter 78:01 in which **Halons** and other Ozone Depleting Substances have been specifically reclassified in the Customs (Common External Tariff) Order, 1998.

The following additional measures are proposed:

- a) The National Environmental Policy (June 1998) be amended such that sections 4.2 and 4.5 which deals with Ozone Depleting Substances, are expanded to encompass all Ozone Depleting Substances and not only CFC’s.

- b) The National Air pollution Rules of Trinidad and Tobago be amended to include and Classify **Halons** as an air pollutant.
- c) Implementation of a reducing quota system or accelerated phase out programme for the importation of **Halons** consistent with the phase-out schedule
- d) Introduction of incentives to further encourage users to replace their stock with more environmentally friendly substitutes
- e) The ODSS to work with the Trinidad and Tobago Bureau of Standards to ensure mandatory requirements are introduced for the labeling of any equipment containing **Halons**. Reference is made to the National Fire Prevention Agency Standards (10, 12 A and B).
- f) Amend the Fire Services Act (Chap. 35:50) to allow for the establishment of a national building and safety code as it applies to fire protection systems.
- g) To review the proposed Occupational Health and Safety Bill for its incorporation of a non-**Halon** fire protection system.
- h) To prepare guidelines Under the Certificate of Environmental Clearance for the use of Technologies that are in Accordance with the Montreal Protocol.

## 5.5 Phase-Out Support Programme

The current initiative of the private sector has facilitated the progress made to date in the phase-out of **Halons**. However, this is not enough and requires more positive action by the State to ensure the phase-out schedule is realized. To date the following have been achieved:

- For the period 1997 – 2000 there has been an almost total phase-out of the uninstalled capacity of **Halon** 1211 and a 20% annual reduction in the installed capacity of **Halon** 1301.
- For the period 1995 – 1997 the average consumption of **Halons** was 3.04 Tonnes for **Halon** 1211 and 3.75 Tonnes for **Halon** 1301. For the year 1999 this consumption had fallen to 0 Tonnes for **Halon** 1211 and 0.5 Tonnes for **Halon** 1301. (*Source: National ODS Consumption Data, 1995 – 1999 Submitted by the Environmental Management Authority to the Ozone Secretariat*). This indicates that the consumption

of **Halons** predicted for the year 2002 freeze level (3.04 Tonnes for **Halon** 1211 and 3.75 Tonnes for **Halon** 1301) has already been achieved.

To maintain this phase-out momentum, it is proposed that an Information Clearing House for **Halons** should be the establishment in addition to the awareness raising programmes and the import quota system. This Clearing House should be maintained by the ODSS.

## **5.6 Halon Bank Management Programme**

The ODSS will establishment a Steering Committee comprising of the key stakeholders as outlined in Table 2. This Committee will overview this programme and establish a Management Team to execute the programme. The Management Team will be responsible for:

1. Maintaining registers of the following:
  - All companies which import and export **Halons**
  - All companies which require and use **Halons**
  - Essential and non essential users of **Halons**
  - Deposits to and withdrawals from the bank
- 2 Providing incentives for consumers to deposit **Halons** into the bank and use adequate substitutes.
- 3 Providing semi-annual reports to the Committee on the progress of the HBMP.

Ensuring that at the end of the phase-out period, all **Halons** have been phased-out and properly disposed of.

**Table 5: Action Plans for the Establishment of the Halon Bank.**

<i>Activities</i>	<i>Action Plan</i>	<i>Expected Results</i>	<i>Responsible Agencies</i>	<i>Time Frame</i>
<b>1 Establishment of a Steering Committee</b>	ODSS to liaise with relevant government ministries and stakeholders to establish a Steering Committee, which will direct the programme.	Steering Committee comprising all Stakeholders established and a plan of action developed.	- ODSS - EMA - Ministry of the Environment.	August 2001
<b>2 Establishment of an HBMP Management Team</b>	Steering Committee to appoint a Management Team to execute the <b>Halon</b> Bank Management Programme	A HBMP Management Team established and a plan of action developed.	- Steering Committee	September 2001
<b>3 Institution of measures to ensure achievement of 2002 Freeze level for Halon</b>	<ul style="list-style-type: none"> <li>• Verify consumption data.</li> <li>• Implement quota restrictions</li> <li>• Monitor <b>Halon</b> consumption</li> <li>• Monitor <b>Halon</b> export</li> </ul>	Attainment of January 1 <sup>st</sup> 2002 freeze level for <b>Halons</b> .	- ODSS - Management Team	October 2001
<b>4 Verification of installed capacity of Halons for 2001-2002</b>	• Liaise with fire department and suppliers and users of fire protection systems (Appendices 1 & 4).	Increased reliability of Data to inform HBMP	Management Team	Oct. 2000 to Dec. 2002

<i>Activities</i>	<i>Action Plan</i>	<i>Expected Results</i>	<i>Responsible Agencies</i>	<i>Time Frame</i>
<b>5 Strengthening of Monitoring Programmes to ensure total phase-out on or before, 2010</b>	The ODSS with the collaboration of the Customs and Excise Department, The Ministry of Enterprise Development, Foreign Affairs and suppliers and users of <b>Halons</b> will put in place effective measures to strengthen the monitoring mechanisms for consumption and installed capacity of <b>Halons</b> to ensure compliance with the phase out schedule	Semi-annual reports on <b>Halon</b> consumption and installed capacity to be submitted to the Steering Committee.	- ODSS - Management Team	2001-2002
<b>6 Amendment of Fire Services Act</b>	Prepare draft amended Fire Services Act for approval - Lobby for changes to the Act	An amended Fire Services Act that prohibits the use of <b>Halons</b> for fire suppression services except in clearly defined essential uses.	Steering Committee	2002 -2003

<i>Activities</i>	<i>Action Plan</i>	<i>Expected Results</i>	<i>Responsible Agencies</i>	<i>Time Frame</i>
<b>7 Implement Public Awareness Programmes</b>	<ul style="list-style-type: none"> <li>- Hold periodic seminars for stakeholders and the General Public to discuss the need to phase-out <b>Halons</b></li> <li>- Develop and distribute through appropriate media, up to date bulletins to various targeted audiences</li> <li>- Host regular public presentations</li> <li>- Publish information in the print media on the subject</li> </ul>	A well informed public	<ul style="list-style-type: none"> <li>- ODSS</li> <li>- Management Team</li> </ul>	2001 - 2005
<b>8 Establishment of Halon Bank</b>		Attainment of January 1 <sup>st</sup> 2002 freeze level for <b>Halons</b>	<ul style="list-style-type: none"> <li>- ODSS</li> <li>- Management Team</li> </ul>	Feb. 2003

<i>Activities</i>	<i>Action Plan</i>	<i>Expected Results</i>	<i>Responsible Agencies</i>	<i>Time Frame</i>
<b>9 Establishment of a Halon Information Clearinghouse</b>	- Collect and maintain updated information on <b>Halons</b> and HBMPs internationally, regionally and locally to facilitate easy access by potential users	Supporting system for the efficient access to information and decision making	ODSS	2002-2003
<b>10 Decommissioning Residual stock of Halons</b>	- Develop a programme for the decommissioning of existing stocks. - Implement programme	Elimination of <b>Halons</b> on a permanent basis	-ODSS - Management Team	2005

## 5.7 Timetable and Estimated Costs

The estimated timetable for the establishment of the **Halon** Bank Management Plan is eighteen months. It is believed that within this time frame the public awareness programmes would have achieved their goals, the necessary consultations would have taken place and the mechanisms and committees would have been established. The estimated costs of this plan are outlined in table 6.

**Table 6: The Estimated Cost of the HBMP and Proposed Sources of Funding:**

<i>Year</i>	<i>Activities</i>	<i>Source of Funding.</i>			<i>Total Cost (US\$)</i>
		<i>UNEP</i>	<i>Gov't.</i>	<i>Private Sector</i>	
<i>Year 1.</i>	Continue monitoring programmes by conducting <b>Halon</b> surveys,	70	20	10	\$10 000.00
<i>Year 2.</i>	Conduct awareness programmes. Conduct seminars. Produce educational and information materials. Establish bank (includes legal costs).	50	35	15	*\$50 000.00
<i>Year 3&amp;4.</i>	Continue awareness programmes. Continue seminars and brochures. Implement bank.	30	30	40	**\$52 000.00
<i>Year 5.</i>	Decommission existing stock	10	20	70	\$50 000.00
<b>Total</b>					<b><u>\$162 000.00</u></b>

- *Values quoted are estimates and the sources of funding are to be negotiated by the ODSS. The percentage allocations are recommended to vary in this way since it is perceived that the HBMP would eventually be run by the private sector.*
- *\* Includes legal costs*
- *\*\* \$26,000.00 per year*

## 5.8 Overall Coordinating and Monitoring Mechanisms

The Ozone Depleting Substances Sub-Unit of the Environmental Management Authority, will act as the central coordinating body for the implementation of the HBMP. It will also form part of the Management Team to implement the project. The ODSS, as part of the Management Team, shall have the responsibility for initiating monitoring programmes, hosting meetings of the Steering Committee, collecting data, reporting and the co-ordination of public awareness programmes.

The ODSS and Team shall draw upon the advice and expertise of the members of the Steering Committee in order to effectively coordinate this effort and to achieve phase-out in the required time frame. It is proposed that increasing responsibility for the Management of the HBMP will be transferred to the private sector with the ultimate aim of the programme being totally managed by the private sector. The ODSS is expected to manage this transfer process.

## 6.0 CONCLUDING REMARK

The commendable initiative demonstrated by the private sector with regards to **Halon** phase-out, has resulted in a situation where **Halon** 1211 has almost been totally eliminated and the **Halons** consumption freeze levels for January 1st 2002 have already been achieved.

The **Halon** of concern at this point in time is **Halon** 1301 and an important consideration in the phase-out process is the reduction of the installed capacity of **Halon** 1301. As such, there are two challenges for the HBMP. These are:

- Reduction in the consumption of **Halon** 1301
- Reduction and ultimate elimination of the installed capacity of **Halon** 1301
- Elimination of emissions of **Halons**

The best estimates available put the installed capacity of **Halon** 1301 in Trinidad and Tobago in the year 2000 at 35,000 Kg., the annual reduction of this installed capacity at 20% and the consumption for 1999 at 0.5 tonnes.

Recommendations have been made for the HBMP to do the following:

1. Reduce and eventually stop the emissions of **Halons** into the atmosphere.
2. Educate the public about the negative effects of **Halons** on the environment.
3. Identify essential and non-essential uses of **Halons** while seeking adequate alternatives for essential uses.
4. Recover all **Halons** from non-essential uses.
5. Provide the facility for essential uses.
6. Achieve the targeted phase-out programme for **Halons** in Trinidad and Tobago.

It is proposed that a Steering Committee be formed to direct the overall programme, with members drawn from Government Agencies and Stakeholders. This Steering Committee will also be given the responsibility of ensuring ultimate transfer of responsibility of the HBMP to the private sector stakeholders.

It is also proposed that a **Halon** bank be established essentially for the storage and distribution of **Halon** 1301 for essential uses and to provide a source of **Halon** during the period of decommissioning of existing **Halon** 1301 systems.

To ensure success of the Bank it is essential that the other supporting elements of the programme, such as the public awareness and training programmes, inclusions and amendments to the regulatory framework etc., be implemented within the given time frame.

It is felt that with the continued support of the **Halon** stakeholders and the implementation of the various activities under the HBMP, Trinidad and Tobago will phase out **Halons** well before the year 2010 as allowed by the Montreal Protocol.

## **REFERENCES**

- 1) Laws of Trinidad & Tobago Environmental Management Act No. 3 of 2000
- 2) Laws of Trinidad & Tobago, (Chapter 35:50), Fire Services Act (Amended 1997).
- 3) Republic of Trinidad & Tobago (June 1998), National Environmental Policy
- 4) Republic of Trinidad & Tobago (August 1996) Country Programme for the Phase Out of Ozone Depleting Substances.
- 5) Ozone Depleting Substances Sub-unit. (June 2000), Report on the use of Ozone Depleting Substances in Trinidad & Tobago. (unpublished).
- 6) UNEP (1997), Update of the Handbook for the International Treaties for the protection of the Ozone Layer.
- 7) UNEP (July 1995), Information Paper, National **Halon** Banking Sourcebook.
- 8) UNEP (April 1999), 1998 Report of the **Halons** Technical Options Committee.
- 9) UNEP (1999), Handbook on Data Reporting under the Montreal Protocol.
- 10) UNEP (1999), Regional **Halon** Bank Management Plan.

**APPENDIX 1**

**CONSULTANTS TERMS OF REFERENCE**







**APPENDIX 2**

**CONSUMPTION OF HALON 1301 FOR THE PERIOD 1995 –1999**

<b>YEAR</b>	<b>Consumption of Halon 1301 (Kg)</b>
<b>1995</b>	<b>3700</b>
<b>1996</b>	<b>3770</b>
<b>1997</b>	<b>3770</b>
<b>1998</b>	<b>3770</b>
<b>1999</b>	<b>500</b>

**Source: National ODS Consumption Data,1995 – 1999, Submitted by the Environmental Management Authority to the Ozone Secretariat**

## Appendix 3

## Contact list of Main Stakeholders

<b>Type/ Stakeholder</b>	<b>Company name</b>	<b>Address</b>	<b>Phone #</b>	<b>Fax #</b>	<b>Contact name</b>
Supply Company	<b>Safe Tec</b>	Clare St & Eastern Main Rd. Laventille	624-fire	627-4326	Mr. Gregory Farah
“	<b>UAL Weldequip</b>	Churchill Roosevelt Hwy & Cyrus Rd. El Socorro	675-3473	674-9332	Mr. Keith Burcant
“	<b>Fire Protection &amp; Prevention Consultants</b>	LP#61 El Socorro Rd. San Juan	638-2324	638-5964	Mr. Francis Charles
“	<b>Fire Sec</b>	132 Wrightson Rd. P.O.S.	628-5819		
“	<b>Safety Supplies Ltd.</b>	Churchill Roosevelt Hwy & Cyrus Rd. El Socorro	675-7474	675-2055	Mr. Steven Mansingh
“	<b>Serve Tec Ltd</b>	76 Boundary Rd. San Juan	675-8135	675-8127	Mr. Gregory Stone
“	<b>Cole &amp; Assoc.</b>	21 Stone St. P.O.S.	625-2653	625-1450	Mr Brian Leying
“	<b>Survival Systems</b>	Lot 3A Plaisance Park Industrial Est. Pointe A Pierre	659-3611	659-1679	Mr. Stewart Darwent
“	<b>Frank Moultet Ltd.</b>	19 Borde St. P.O.S	623-7191	623-4996	Peter Farinha
<b>Insurance Association</b>	<b>Association of Trinidad &amp; Tobago Insurance Companies.</b>	22 Cotton Hill, Port Of Spain	622-8994	622-2111	Mr. George McAlpin. Ms. Aliza Dwarika
<b>Insurance</b>	<b>British American Insurance</b>	11 – 13 Fifth St. Barataria.	638-2110	675-3363	Ms. Shirley Ann David
“	<b>GTM Fire</b>	95 – 97 Queen St. Port Of Spain		625-0950	Ms. Dyan Loutan-Ali

“	<b>Gulf Insurance</b>	1 Gray St. St. Clair Port Of Spain	622-5878	628-0272	Ms. Marcia Forde/ Mr. Faizal Khan
“	<b>Presidential Insurance</b>	# 54 Richmond St, Port of Spain	625-4788 ext 123	625-6496	Mr. Aslim Ali
“	<b>Colfire</b>	Cor. Duke & Abercromby St. Port Of Spain	623-2201 ext 370	623-0925	Mr. Sean Jack
“	<b>Goodwill Insurance</b>	88 – 90 Abercromby St. Port of Spain	623-1695	627-1010	
“	<b>Great Northern Ins</b>	29A Edward St. Port of Spain	625-1116	625-4996	Mr. Winston Alexander
“	<b>Caribbean Home</b>	63 Park St. Port of Spain	625-4461 ext 23215	625-5985	Mr. Frank Leung/ Ms. Savitri Dematas
“	<b>Citizen Insurance</b>	41 Leotaud St. San Fernando	657-7016	657-3259	
“	<b>Clico</b>	29 St. Vincent St. Port of Spain.	625-4444	627-3821	
“	<b>Tatil</b>	11 Maraval Rd. Port Of Spain	628-2845	628-0035	Mr. Ramjit Singh (underwriting Dept)
“	<b>Bankers Insurance</b>	177 Tragerete Rd. Port Of Spain	622-0721	628-6808	Mr. Eric Matamoro (underwriting)
“	<b>ALGICO</b>	Algico Plaza 91 –93 St. Vincent St. P.O.S.	625-4426 ext 6049	623-4923	Ms. Sumintra Ramoutar
“	<b>The Beacon Insurance Co.</b>	13 Stanmore Ave. Port of Spain	625-1113	623-9900	
Standard Writing Agency	<b>Trinidad &amp; Tobago Bureau Of Standards</b>	Trincity Industrial Estate	662-2832	663-4335	Mr. Ishmel Soobrattee

Building and fire code organisation	<b>Town &amp; Country Planning Dept.</b>	Level 17, Eric Williams Finance Building Brian Lara Promenade, Port of Spain	627-9700 ext 2134	625-8445	Ms. Carol Smarte Acting Director
User	<b>Water &amp; Sewage Authority</b>	Farm Road, St. Joseph	662-9272	645-9364	Mr. Patrick Mahase
“	<b>BWIA West Indies Airways</b>		669-3000 ext 2241	669-3370	Mr. Ramesh Luthmedial
“	<b>Lever Bros. West Indies Ltd.</b>	Eastern Main Road Champs Fleurs	663-1787 ext 262		Mr. Esmond Andrews
“	<b>West Indian Tobacco Company Limited</b>	Eastern Main Road Champs Fleurs	662-2271 ext 312	645-5105	Ms. Margery Stevenson
“	<b>National Petroleum Marketing Company</b>	Sea Lots Port of Spain	625-1364 ext 278	627-4028	Mr. Anthony Millette
“	<b>Central Bank Of Trinidad &amp; Tobago</b>	Eric Williams Financial Complex, Brian Lara Promenade, Port of Spain.	625-2601	627-4696	Mr. Sammy Building Services
“	<b>Petroleum Company of Trinidad And Tobago</b>	Pointe - A - Pierre	658-4200 ext2979		Ms. Janice Chitaman
“	<b>Power Generation Company of Trinidad And Tobago</b>	6A Queens Park West Port of Spain	624-0383 ext2236	627-2251	Mr. Lester Boodoo
“	<b>British Petroleum</b>		623-2862	627-3831	Mr. Brian Croft

“	<b>Telecommunications Services of Trinidad &amp; Tobago</b>	TSTT House 1 Edward St. Port of Spain	624-2005	625-4882	Mr. Randy Mohammed
“	<b>Trinidad Cement Ltd.</b>	Southern Main Road, Claxton Bay	659-2381	659-2640	Ms. Hanna Wei-Mudden
“	<b>National Flour Mills</b>	27-29 Wrightson Road Port of Spain	625-2416	625-4389	Mr. Abdul Haqq
Monitoring Agencies and Trade Control	<b>Customs &amp; Excise Division</b>	Customs House Nicholas Court Abercromby St. P.O.S	625-5525	625-4138	Mr. Watty
Fire prevention Authorities	<b>Trinidad And Tobago Fire services Department</b>	Wrightson Road. Port of Spain	665-5781 665-5728 665-5729 Cell 682-7397	671-6196	Fire Officer Noel Jones (Divisional Fire Officer)
Environmental Legislation	<b>Environmental Management Authority</b>	# 5 Elizebeth St. ST. Clair Port of Spain.	628 8042	628 9122	Dr. Dave Mc Intosh Chief Executive Officer.
Civil Aviation	<b>Civil Aviation Department</b>		624 6907		Mr. Errol Ashby Director
	<b>Trinidad and Tobago Civil Aviation Authority</b>		669 4302		Mr. Anthony Withier

**APPENDIX 4**  
**Fire Services Act.**  
**Chapt 35:50**  
**(Page 22)**



**APPENDIX 5**  
**Environmental Management Act**  
**No. 3 of 2000**  
**(Pages 38 and 39)**





**APPENDIX 6**  
**National Environmental Policy**  
**(Pages 16 and 17)**





**APPENDIX 7**

**Ministry of Enterprise Development, Foreign  
Affairs and Development**

**“NEGATIVE LIST”**









**APPENDIX 8**  
**Ministry of Finance**  
**Customs and Excise Department**  
**Customs “Common External Tariff” Order 1998**







## APPENDIX 9

HALON users for 1997 and 2000							
Company Name	Tel # & Contact	Location	1997		Location	2000	
			Halon 1211 (kg)	Halon 1301 (kg)		Halon 1211 (kg)	Halon 1301 (kg)
Water & Sewage Authority	662-9272	Records Vault	000	5455	To replace with inergen	*	*
British West Indian Airways	669-8047 ext 222	Electronics & Avionics	000	909		108	909
Lever Brothers Ltd.	663-1787 ext 262 Mr. Andrews	Information Systems	000	90	Information systems	000	41
West Indian Tobacco Co.	662-2271 ext312 Margery Stevenson	Information Systems	000	150	Information systems Administration Bld.	000	54
Eric Williams Med. Science Complex	645-2640	Information Systems	000	75		000	75
National Petroleum Marketing Co.	625-1364 ext 278 Mr. Millitte	Information Systems	000	143		000	247
Central Bank of Trinidad & Tobago	625-2601 Mr. Sammy Building Services	Information Systems. Vaults	720	720	Information systems	720	689
Ministry of Finance	627-9700ext3101	Telephone room	750	250	Telephone room	750	250
Petroleum company of Trinidad & Tobago	658-4200ext2500 Allan Subero	Records Refinery Offshore	000 000 000	300 400 1000		000	1601
Power Generation Company of Trinidad & Tobago	624-0383ext2236 Lester Boodoo	Turbines	000	280		000	280
Hydro Agri Ltd.	636-2020ext2154 Mr. Maraj	Turbines	000	2250	Replaced by INERGEN	00	00
B.P. AMOCO	6232862ext 5264	Offshore Plat.	400	800		338	162
PCS Nitrogen				1000			1000
Telecommunications service of Trinidad & Tobago	624-2005 Randy Mohammed		000	30 000		000	12 728
Trinidad Cement Ltd.	659-2381 Mr. Garibsingh		000	300		000	1247
National flour mills	625-2416 Mr. Haqq		No Data	No Data		000	15

\* Where no data was available in 2000, it is assumed that there is no change in these quantities.

**APPENDIX 10**

**Country Programme for the Phase Out of Ozone  
Depleting Substances**

**(Pages 1,2 and 9)**





