

Disposal of Gaseous Ozone-Depleting Substances (ODS) by High-Temperature Incineration

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Introduction

To protect the earth's ozone layer and to fulfil the international obligations under the 1987 Montreal Protocol, Hong Kong has put into effect legislation that control the import, export and manufacture of ozone depleting substances (ODS)¹. As a result, spent ODS that can no longer be recycled or re-used have to be destroyed. Table 1 shows the major types of ODS generated in Hong Kong.

Table 1 Types of ODS in Hong Kong

Common Name	CFC-11	CFC-12	Halon-1211	Halon-1301
Chemical Formula	CFCl_3	CF_2Cl_2	CBrClF_2	CBrF_3
Boiling Point (°C)	23.7	-29.8	-4	-58
Vapor Pressure at 20°C (Psi)	12.9	63.2	52.9	189
Application	Used as refrigerant		Used in fire extinguisher	

Overview of Incineration Technology for ODS

There are several commercial ODS destruction technologies approved by the United Nations Environment Program (UNEP), such as

- liquid injection incinerator
- rotary kiln incinerator
- reactor cracking
- gaseous/fume oxidation
- cement kiln
- municipal solid waste incinerator (for foams only)

The primary overall products of thermal oxidation of ODS are carbon dioxide, water, hydrogen chloride, and hydrogen fluoride, and, in addition, hydrogen bromide (and/or bromine). By-products

¹Environmental Protection Department. *Environment Hong Kong 1998*, Government of the Hong Kong Special Administrative Region, 1998.